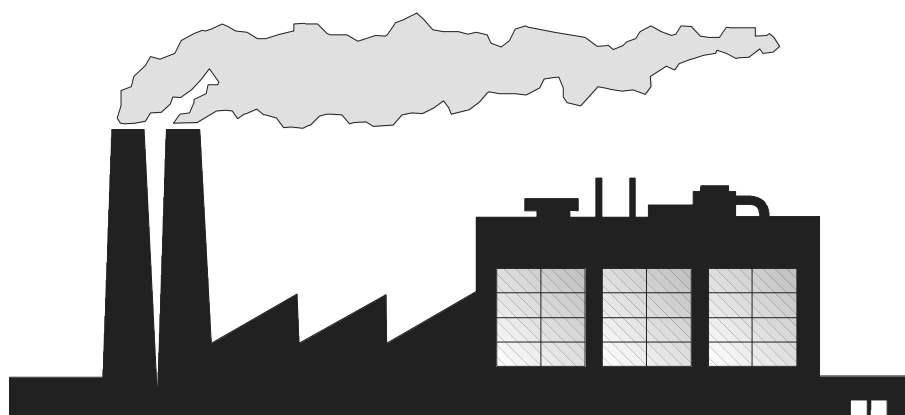


Senate Bill (SB) 1731 Risk Reduction Audits and Plans



General Guidance for Preparing Risk Reduction Plans

California Environmental Protection Agency
 Air Resources Board

Stationary Source Division
Emissions Assessment Branch
November 1997

Acknowledgments

In appreciation for their participation in developing this guidance, the Air Resources Board staff extends their thanks to the following members of the General Workgroup:

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Dave Arrieta	DNA Associates
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Walt Murray	Manufacturers Council of the Central Valley
Millie Yamada	Northrop Corp
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Jerome Cole / Rosalynd Volpe	International Lead-Zinc Research Organization
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GENERAL GUIDANCE FOR PREPARING RISK REDUCTION PLANS

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GENERAL GUIDANCE FOR PREPARING RISK REDUCTION PLANS

Introduction

What is the purpose of this document?

This document has been prepared to provide assistance to business and industry in complying with the requirements of Senate Bill (SB) 1731 (Chapter 1162, Statutes of 1992) that are found in Sections 44390 through 44394 of the California Health and Safety Code. This State law requires operators of certain facilities to perform an audit to identify the source of air toxics emissions and risk, and then develop and carry out a plan to reduce the emissions and risk. The facilities for which audits and plans are required are those that have air toxics emissions that are associated with a significant risk of harm to public health, as judged by an air pollution control district or air quality management district (district) through the Assembly Bill (AB) 2588 Air Toxics “Hot Spots” Program (AB 2588 Hot Spots Program).¹

This document presents information that can be used to develop a risk reduction audit and plan. It provides more detailed information than does the “General Checklist for Completion of a Risk Reduction Audit and Plan,” which is a separate, step-by-step checklist on how to do a risk reduction audit and plan. You can order a copy by filling out and returning the form in the back of this document. Even if it isn’t a requirement, you may want to consider doing an audit and carrying out risk reduction measures. Some risk reduction measures can actually reduce the cost of operations (for instance, if solvent evaporation is reduced), or of waste disposal (if lower toxicity materials are substituted in a process).

You are not required to use the checklist. It is provided as assistance to you and to the districts to make it easier to comply with the statute.

What is the General Checklist?

The General Checklist is a suggested method to organize information about your facility’s risk assessment, to identify risk reduction options, and to choose and evaluate risk reduction measures. It provides a format for reporting the results of the audit and the facility’s risk reduction plan to the district. The General Checklist covers these steps:

¹ SB 1731 amended the “Air Toxics ‘Hot Spots’ Information and Assessment Act of 1987,” which was originally enacted by AB 2588, Chapter 1252, Statutes of 1987.

1. Identifying what causes the risk;
2. Identifying how you can reduce the risk;
3. Determining which of the options will work for you; and,
4. Writing and filing the risk reduction plan.

This document provides general information about available risk reduction options and more information on how to carry out each of these steps.

Who is affected by SB 1731?

Facilities that have been designated as significant risk facilities by their district must comply with SB 1731. This designation will be based on the district-approved health risk assessment done by the district or the facility under AB 2588. The district is responsible for notifying significant risk facilities that they must complete a Risk Reduction Audit and Plan. Facilities have six months after they've been notified to complete a risk reduction audit and file a risk reduction plan with the district. The risk reduction plan must specify how the facility will reduce the risk to below the significance level.

How is the risk from a facility estimated?

Either the district will estimate your facility's risk based on an industrywide risk assessment and notify you of the result, or the district will approve the risk assessment you conducted for the AB 2588 Hot Spots Program. If the district did an industrywide risk assessment for your type of business, and you believe your facility's risk is different from the typical facility used, you may do your own facility-specific emission inventory and risk assessment. If you choose to do this, you need to work with your district to make sure the work is acceptable to them.

What will the district do with my risk reduction plan?

The district will review your plan to make sure it meets the requirements of SB 1731. If it does not, the district will notify you and tell you what more needs to be done to make the plan complete. After your plan is approved, the district will track your progress in implementing the plan. This may include making the risk reduction measures in the plan conditions of your air permit.

When must the plan be implemented?

The plan must be implemented within five years. The district may require that the plan be implemented sooner if it finds that it is technically feasible and economically practicable, or if it finds that the emissions from the facility pose an unreasonable health risk. Under certain circumstances, the district has the option--but isn't required--to allow up to five more years (on a case-by-case basis) to implement the plan. The district can allow this additional time only for

specific reasons: if it determines that allowing additional time will not result in an unreasonable risk to the public; if it finds that there would be an unreasonable economic burden on the facility operator to meet the five year schedule; or, if it determines that it is not technically feasible to reduce the risk within five years.

Section I: Identifying What Causes the Risk

The goal of SB 1731 is to reduce the air toxics risk from specific facilities to acceptable levels. To do this, the first thing you need to know is what chemicals are causing the risk and where they're coming from.

The potential health risk from a facility is the result of one or more toxic air pollutants being released to the air, dispersing through the air, and contaminating food and water, being breathed in by someone, or being absorbed through the skin. A risk assessment is a formal way to estimate how much risk results from a facility's emissions. Because a district-approved risk assessment is the basis for the designation as a significant risk facility, facilities required to implement risk reduction plans under SB 1731 will already have completed a risk assessment, or have had one done for them by the district. For details on how to do an AB 2588 risk assessment, the reader may consult the CAPCOA Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines or other guidelines that may supersede these.² To get a copy, you can write to the California Air Pollution Control Officer's Association (CAPCOA) at 3232 Western Drive, Cameron Park, California 95682 or call (916) 676-4323. The key parts of a risk assessment are listed below:

- An estimate of the type and amount of pollutant emissions;
- An evaluation of the dispersion of the pollutants in the atmosphere; and,
- An evaluation of the potential of the pollutant to cause adverse health effects.

Each of these areas is briefly discussed below, followed by a discussion of how to relate the risk to the process or emission point.

A. Emissions

There are two ways to determine the amount of pollutants being released from a facility: a test conducted at the facility, or calculated estimates based on either tests of similar facilities or processes, or other calculations. Direct measurement is the most accurate method of estimating emissions. This approach is typically based on a source test. The pollutants emitted from a stack, vent, or other emission point are measured and related to the process rate or another parameter to calculate a site-specific emission rate. An example of this for a foundry operation is "pounds of arsenic emitted per ton of metal melted." Although it gives the most accurate information, stack testing is relatively expensive and is not feasible in every case. There are alternatives.

The most common alternative to facility-specific emissions data from a source test is an

² As required by SB 1731, the Office of Environmental Health Hazard Assessment (OEHHA) is currently preparing official Hot Spots Program risk assessment guidelines. Contact OEHHA at (916) 454-7572, (510) 540-3324, or <http://www.calepa.ca.gov/oehha/> for information on the guidelines' availability.

emission factor developed for a similar source. Many general emission factors have been calculated and published by the United States Environmental Protection Agency (U.S. EPA) and by the Air Resources Board (ARB). Documents in which you might find applicable emission factors are included in the directory of resources (Appendix B of this document). In some cases, a mass balance approach can be used to estimate emissions of a material that is used in the process and becomes a pollutant when it gets into the air. In a mass balance, the amount of the pollutant that is consumed in the process or disposed of in the waste is subtracted from the amount purchased to estimate the amount emitted to the air. In any case, the district must approve the approach used to estimate the amount of emissions.

In addition to pollutants that are emitted from stacks and vents, there are pollutants that may get into the air from leaks in equipment, from storage piles (dust from solids) or containers (vapors from liquids), from emission collection systems that don't capture all of the emissions, or from processes that are not served by emission collection systems. These pollutants are called fugitive emissions. Because they aren't collected into a stack or vent, fugitive emissions are difficult to measure. Consequently, alternative methods are usually used to develop emission factors for fugitive emissions. These alternative methods typically rely on emission factors or a mass balance.

B. Dispersion of the Pollutants in the Atmosphere

When the pollutants are released into the air, they will spread out, or disperse. How a pollutant disperses depends on how it's released, the speed and direction of the wind, other weather conditions, and the surrounding terrain. The amount of the pollutant that reaches people (the exposed population) depends on the dispersion and the distance to the exposed population (also known as receptors). Air quality dispersion models take these factors into account and predict the amount of pollutant that will reach a given location. There are some factors that strongly influence dispersion that should be considered in preparing a risk reduction plan.

The way a pollutant is released to the air strongly influences how it disperses. There are three general ways in which pollutants are emitted; these are called emission source types. An individual facility may have more than one emission source type. Point sources are discrete locations where emissions are released, such as exhaust stacks or vents. Emissions from point sources are usually released higher than ground level and with some velocity. Emissions from point sources are often at higher than ambient temperatures. Area sources are open areas where pollutants get into the air from other than a vent or stack. Examples include open solvent containers, holding ponds, or piles of dry materials. In general, a pound of pollutant that is emitted from a point source will disperse better, and so result in lower concentrations and risks than a pound of the same pollutant emitted from an area source. This means that you'll probably get a bigger risk reduction from controlling a pound of emissions of a given pollutant from area sources than from point sources; on the other hand, it's usually easier to put pollution control equipment on a point source (a stack or vent) than on an area source. Volume sources are sources where the pollutant is mixed into a quantity of air before it is released to the outside air.

An example is a building containing an emission source without an emission collection system; the emissions are mixed into the building air and released through doors or windows. Dispersion from volume sources is greater than from area sources.

There are instances where emissions from a point source can reach the ground before dispersing to a normal extent. Buildings or hills near the release point may cause the plume to be pulled down to the ground before the pollutant has time to disperse. This effect is called downwash. There are rules of thumb as to when downwash is a concern. Downwash may occur if there are any structures within a certain distance of the stack or vent. This distance is five times the larger of either the building height or the maximum projected width (the diagonal of a rectangular building). There are circumstances where it's considered unlikely that downwash will occur. If the plume height calculated at a certain distance from the building is higher than either 2.5 times the building height, or the sum of the building height and 1.5 times the projected building width, downwash is not considered to occur. This distance is 2 times the height of the building from the release point.

A taller stack or vent will usually increase the dispersion of pollutants, and so result in lower concentrations of pollutants at ground level. Because of this effect (called the dispersive effect of stacks), a taller stack is a way to reduce risk if emission reduction approaches aren't feasible or don't by themselves reduce risk enough. If you're considering the use of a taller stack to reduce risk from the facility, you should be aware that there are federal requirements that, in certain circumstances, limit the amount of credit you can take in estimating increased dispersion from higher stacks. Stacks that also emit criteria pollutants, such as oxides of nitrogen or particulate matter, may be subject to "Good Engineering Practices" guidelines for stack heights. Contact your district or the ARB for more information on whether the federal regulations concerning these "Good Engineering Practices" would apply.

C. Health Effects

The final step in doing a risk assessment is to make an estimate of the pollutants' potential to cause adverse health effects. The risk assessment may report risk to exposed residents, off-site workers, or both. Risks to on-site workers are considered by workplace regulations.

The term "maximally exposed individual" (MEI) is often used to describe the risk to a person who may be living or working at the location of the highest estimated health risk from a facility's emissions. There are two types of MEI: maximally exposed individual resident (MEIR) for a residential area, and maximally exposed individual worker (MEIW) for a commercial or industrial area. In some instances, the calculated risk to off-site workers (MEIW) may be adjusted to account for a reduced period of exposure. If this adjustment was made and you have both MEIRs and MEIWs over the significance level, you may need to complete an audit and checklist for both to ensure that they are both reduced to below the significance level. You would need to do this if either of the following conditions apply: you have multiple emission points, or you choose a risk reduction measure that requires that the dispersion modeling be redone. If neither of these conditions apply, the risk at both the MEIR and the MEIW will be reduced by the same percentage.

There are three general types of health effects: cancer; chronic non-cancer; and, acute non-cancer. There are several ways in which exposure to a toxic pollutant may increase the likelihood of developing cancer. Cancer may occur as a result of short term or longer term exposure and may develop many years after the exposure. An example is mesothelioma. Chronic non-cancer health effects are those that may occur after longer-term exposure to a pollutant. An example is respiratory irritation. Acute non-cancer effects are those that may occur after short-term exposure to a pollutant. An example is the development of asthma. Pollutants can have more than one health effect. For instance, nickel and nickel compounds may increase cancer risks, and also may affect the immune system with both chronic and acute exposure.

For some pollutants, information has been developed so that estimates of health risks can be made. The approach used to estimate health risks due to specific levels of individual pollutants is outlined below.

Estimating Cancer Risk--For carcinogens, potency values are used to estimate the relative chance of contracting cancer from exposure over an average lifetime (70-years). Potency values for this purpose are reviewed by the Office of Environmental Health Hazard Assessment (OEHHHA) and used with an estimate of exposure to estimate relative cancer risk. Potency values that describe the relative risk of developing cancer from exposure to a "unit" concentration of pollutant (for example, one microgram of pollutant per cubic meter of air) are called "unit risk factors." When these are multiplied by the concentration to which a person is exposed, the result is the probability that the exposed person will develop cancer as a result of that exposure. Such probabilities are referred to as individual excess cancer risk. You may see these expressed in two ways; as a risk per million (for example, 200 per million), or in scientific notation (200×10^{-6} , or 2×10^{-4}). Cumulative risks to exposed individuals can be estimated by summing the risks estimated for each of the pollutants. Cumulative risk to an exposed population can be estimated by summing the risks estimated for the individuals in the population. The number of cancer cases predicted to occur in a population due to exposure to a facility's emissions is called an "excess cancer burden."

Exposure to airborne pollutants can occur through routes in addition to inhalation. Additional exposure may result when the pollutant in the air finds its way into food or water, is absorbed through the skin, or takes other routes into the body, such as through soil ingestion. The Health Risk Assessment (HRA)³ model is one way to calculate this type of risk, called non-inhalation risk. The total risk is the sum of the inhalation risk and the non-inhalation risk. Substances for which non-inhalation risks are calculated are listed in Table I.⁴ In some circumstances, the non-inhalation risk can be greater than the risk due to inhalation.

Table I: Substances For Which Non-inhalation Risks Are Calculated
(From CAPCOA 1992 Risk Assessment Guidelines)

Arsenic	Beryllium
Cadmium	Chlorobenzene
Chlorinated dioxins & dibenzofurans	2-Chlorophenol
Hexavalent Chromium	Hexachlorobenzene
p - Dichlorobenzene	Lead
Hexachlorocyclohexanes	Nitrosamines
Mercury	Polychlorinated biphenyls (PCBs)
PAH (polycyclic aromatic hydrocarbons)	2, 4, 6-Trichlorophenol
Pentachlorophenol	2, 4, 5-Trichlorophenol

The risk assessment will contain a list of pollutants emitted by the facility and the risk due to each. Knowing which pollutants contribute most to the risk (and what processes are emitting them) can help you figure out the best way to reduce the risk. In assessing the relative contribution of each emission point to the estimated risks at a complex facility where a variety of pollutants come from multiple emission points, the toxicity of the pollutants emitted from an emission point may have as great an influence as the quantity emitted.

³ You can download a copy of the HRA model from the ARB's site on the Internet at "<http://www.arb.ca.gov>" From the home page, select "CARB Programs and Information Resources," then "Health Risk Assessment Computer Program." You may also request a copy of the HRA model by contacting Mr. Mark Williams of the Air Resources Board at (916) 327-5633.

⁴ New information on health effects of pollutants occasionally prompts the development or re-evaluation of potency estimates. Please contact the district or OEHHA for updates on the substances for which non-inhalation risks are calculated.

Most cancer risk assessment methods assume that the cancer risks from different chemicals are additive. They do not take into account the possibility that the effect of one carcinogen will be magnified by exposure to another (synergism), or the opposite possibility (antagonism).

Estimating Non-Cancer Health Effects--Three pieces of information are needed to estimate non-cancer health effects. They are the exposure (concentration in the air), the organ or organ system affected (toxicological endpoint), and the reference exposure level (a level below which adverse health effects aren't likely to occur). Different averaging times for the air concentration are used in estimating whether acute effects and chronic effects are likely to occur. In both cases, the concentration used is the one predicted for the maximally exposed individual. For acute effects, the highest one-hour concentration is used. For chronic effects the annual average concentration is used.

A "hazard index" is calculated for a pollutant emitted from a facility by dividing the predicted concentration by an acute or chronic reference exposure level for that pollutant. A reference exposure level is an air concentration below which a single pollutant is not thought to pose a non-cancer hazard. However, several pollutants may combine to create a significant stress on an organ or an organ system. Thus, for each toxicological endpoint being considered, a total hazard index must be calculated by summing the hazard indexes for all the pollutants that affect the same organ or organ system.

Systems or organs affected (toxicological endpoints) by pollutants with non-cancer effects are as follows:

- the cardiovascular or blood system (CV/BL);
- the central or peripheral nervous system (CNS/PNS);
- the immune system (IMMUN);
- the kidney (KIDN);
- the gastrointestinal system and liver (GI/LV);
- the respiratory system (RESP);
- the reproductive system including birth defects (teratogenic) and developmental effects (REPRO); and,
- skin irritation or other effects (SKIN).

An AB 2588 risk assessment may have a table like Table II, which shows how individual hazard indexes contribute to the total hazard indexes for each toxicological endpoint. The values in the boxes are hazard indexes specific to the pollutant (the concentration in the air near the maximally exposed individual divided by the reference exposure level). The total hazard indexes are specific to the toxicological endpoint.

Table II: Example of a Table of Hazard Indexes from a Risk Assessment

POLLUTANT	Toxicological Endpoints							
	CV/BL	CNS/PNS	IMMUN	KIDN	GI/LV	REPRO	RESP	SKIN
benzene		0.70						
1,4-dioxane		0.50		0.50	0.50		0.50	
lead/lead compounds	0.33	0.33	0.33	0.33		0.33		
total hazard index	0.33	1.53	0.33	0.83	0.50	0.33	0.50	

Non-cancer effects differ from cancer risks in that only the effects of pollutants affecting the same toxicological endpoint are considered additive. The analyses of non-cancer health effects in Step 1 of the Checklist can be limited to those pollutants that affect the organs or organ systems for which significant total hazard indexes were found. However, if you choose a risk reduction measure that substitutes a pollutant with non-cancer health effects for another pollutant, you need to consider the effect of the new pollutant and any other pollutants that affect the same toxicological endpoint in assessing whether the change would achieve the risk reduction goals.

The CAPCOA Air Toxics “Hot Spots” Program Revised 1992 Risk Assessment Guidelines give information on potency factors and health effects for pollutants covered by the AB 2588 program. SB 1731 requires OEHHA to revise risk assessment guidelines for use in the Hot Spots Program; these may include revised potency factors and/or endpoints.⁵ For more information on the OEHHA guidelines, contact the Air Risk Assessment Unit of OEHHA at (510) 540-3324.

D. Relating the Risk to the Process or Emission Point

The risk assessment for a facility will typically list the cancer risk or non-cancer hazard by pollutant for the entire facility. At larger facilities, a pollutant may be emitted at more than one point, or from more than one process. It's often at the emission point (a stack or vent) or at the process (solvent wipe cleaning, for instance) where some action is taken to reduce emissions and the resulting risk. If your facility has multiple processes that cause the risk, or processes vented to multiple emission points, it's important to identify which emission points and processes contribute most to the risk.

Because emissions from a process may be vented to more than one emission point, and because emission points may have different dispersion characteristics, the risk attributable to a process may not be directly proportional to the emissions. Also, a pollutant may be emitted from

⁵ If you are considering a risk reduction option that involves substitution of one chemical for another, you should contact your district for guidance.

more than one process, so the risk from a specific pollutant must be split out (or allocated) to the process or processes emitting it.

The information needed to allocate the risk to the processes and emission points at a facility can be found in the emission inventory and risk assessment done to comply with AB 2588. The format and calculational methods given in the Checklist and its appendices are one way the data may be organized to help choose risk reduction measures and evaluate their effectiveness in reducing the overall facility risk. You may use another format if you choose. The objective is to identify what processes, pollutants, and emission points should be the focus of risk reduction options, and to estimate the risk reductions that will result from each option.

The Checklist gives directions for doing an audit and plan for a simple facility with one emission point. The appendices are designed for a complex facility with processes vented to multiple emission points, or where there's more than one emission point. For a complex facility where individual emission points affect separate populations of receptors, you may need the assistance of the district or a modeling consultant.

Section II: Identifying Ways to Reduce the Risk

You have wide latitude to choose how you're going to reduce the risk from your facility to below the significant risk level as set by your district. There are a few limitations, however, as to how you can reduce the risk. Senate Bill 1731 states that risk reduction measures do not include measures that will increase risk from exposure to the chemical in another media, or that will increase the risk to workers or consumers.

The wide range of risk reduction measures can be divided into three types: process modifications, emission capture and control, and other approaches. Process modifications include substitution or elimination of a pollutant or a process, or production system changes/modifications, such as process isolation with enclosures. Emission capture and control approaches are generally applied at the emission point and include vent hoods, ducts, and emissions control or conversion devices. Other approaches include changes in how and where the pollutant is released to increase dilution (dispersion) so that pollutant concentrations and exposures are lower. The risk reduction measures you consider will depend on the degree to which specific pollutants and processes contribute to the risk, and how much the risk from each emission point can be reduced.

A. Substitution

One way to reduce or even eliminate the risk from a pollutant or process is to switch to an alternative that uses lower toxicity or non-toxic materials. This will reduce the facility cancer risk or total hazard index by the part of the risk attributable to the pollutant(s) eliminated, taking into consideration the toxicity of the substitute. If you switch to another carcinogenic pollutant, you will have to consider the non-inhalation routes of exposure as well as the unit risk factor to assess whether the substitution results in a reduction in risk. If you switch to a chemical that has non-cancer health effects you will have to consider the risk it poses as well as the risk from any other pollutants emitted by the facility that affect the same toxicological endpoints. Finally, if you switch to compounds that are reactive organic gases, are flammable, or contribute to stratospheric ozone depletion, there may be other laws and regulations you will have to consider.

B. Process Modifications

Process modifications can include the use of a different material/chemical, a different form of the chemical, a change in equipment or process configuration, or isolation of the process. An understanding of how, where, and why the pollutant is emitted will help identify process changes that will reduce emissions and risk. The following questions may help you.

- * Where in the process is the pollutant emitted?
- * What physical or chemical conditions in the process cause the creation or release of the pollutant(s)?
- * How is the pollutant created or used in the process?
- * How is the pollutant introduced into the process?
- * What physical or chemical characteristics of the pollutant or process favor release of the pollutant to the air?

Some specific process changes for common processes are listed in Appendix A. If your emission inventory did not include estimates of emissions from some of these processes, you may not know how much is emitted. However, if the emissions were estimated on the basis of how much of the chemical you bought, (as is the case with some solvents) anything you do to reduce evaporation will reduce emissions, and may save you money. To estimate how much the risk is reduced in these cases, you may have to do some small scale or short term tests and measure the rate of usage with and without them.

C. Collection and Control

There are a wide range of control technologies available. You can choose control technology specific to the pollutant (e.g., selective absorbents or catalysts), specific to the type of pollutant (e.g., baghouses, or high efficiency particulate air (HEPA) filters for particulate pollutants), or more general (e.g., scrubbers). Your choice should be based on consideration of which pollutants cause the risk and how much risk reduction you need. Many other factors may affect the choice of a control device. These include whether the gas stream is corrosive, whether the pollutant to be controlled is a gas, liquid, or solid, other characteristics of the emission stream (for instance whether pollutant concentrations are steady or vary a lot), the control efficiency needed, and the cost, size, energy consumption, and operation and maintenance needs of the control device.

Appendix A gives some general information about common types of control technology. This information is a summary intended to give you a basis for comparing various control options. If your plan includes an emission control device to reduce risk, you should consult with equipment vendors, your industry association, consulting companies, or the district to ensure that the device is properly designed, installed, and tested. The risk reduction possible from a control device will vary, depending on the baseline emissions, the difference between the efficiency of your existing control technology (if any) and the new control device, and the fraction of the risk due to the pollutants being controlled.

The cost of control technology is proportional to the volume of polluted air being cleaned. The more you can minimize the amount of air collected while maintaining a high capture efficiency for the pollutant, the better. There are other things to consider, such as worker exposure or creation of fire or explosion hazards, but the more you can isolate emitting processes from the general building air, the more cost-effective control will be.

Frequently, the installation of control technology will change the emission release parameters and thus require additional dispersion modeling to be done for the risk assessment. In addition, the capture of pollutants from the emission stream will often result in the creation of aqueous or solid waste that may be subject to regulations requiring special handling and disposal.

D. Other Approaches

Besides the amount and toxicity of a pollutant being emitted, risk depends on how much of the pollutant people are exposed to. This is affected by the distance to the exposed population and the way the pollutant disperses in the ambient air.

You can reduce the exposure by increasing the distance to the receptors, or by increasing dispersion by increasing the temperature or flow rate of emissions from the stack, increasing the stack height, or eliminating the potential for downwash. We recommend that these approaches be used only in conjunction with risk reduction measures that reduce the amount of pollutant released.

In a few cases where site-specific meteorological data were not available and simplifying assumptions were used for the modeling, the risk assessment might be changed by the collection and use of more accurate, site-specific meteorological data in a revised risk assessment. One situation where the risk might be reduced by this process is a facility with receptors located nearby in a direction in which the wind almost never blows.

If you chose any risk reduction options that change the way the pollutant is released to the air, you will have to redo your risk assessment to show the effect of the changes.

Section III: Determining Which Options Will Work

After you have developed the list of available risk reduction options, you will have to evaluate for each one how much the risk will be reduced, how much it will cost, and whether it can be implemented within five years. The discussion in this section corresponds to Step 3 of the Checklist, which includes worksheets for evaluating the options.

A. How Much Will the Risk be Reduced?

To estimate how much the risk will be reduced if an option is done, the first step is to calculate how much emissions will be reduced. If the factors affecting dispersion (such as stack height or gas temperature) don't change, the reduction in the risk for an option will be proportional to the reduction in the emissions for each pollutant.

When plans include two or more measures that affect emissions from the same process, the cumulative risk reduction from all the measures will not necessarily be the sum of the risk reductions for each measure. For instance, if the emissions from a process have been reduced by a process modification, the risk reduction from installing collection and control equipment will be less than if the process modification had not been made. The overall effectiveness of these measures must be calculated by applying the individual risk reduction efficiencies in the following order: process-based measures first, control technology next, and lastly any other options.

For any measure that involves substitution of another toxic pollutant, the estimated risk reduction must include consideration of the risk added by the substitute. For any control technology that will replace existing air pollution control equipment, the risk reduction achieved will be the incremental reduction in risk. If the measure shifts a pollutant from one emission point to another, the risk reduction will be the difference between its impact from the two emission points.

B. Evaluating the Cost

To estimate the cost to implement a plan, you should consider the options you have identified and the existing situation at the facility. All costs should be evaluated as a change from the baseline costs. If you will be modifying the process, you may incur costs to validate the new equipment or procedures. You may also have changes in purchase or waste disposal costs or emission fees. If you will be installing new process or emission control equipment, you will have the usual expenses for purchase, installation, financing, and permitting. However, if you are replacing existing equipment, you may also consider the remaining useful life of the old equipment. Appendix A gives some comparative costs for control equipment. Actual costs will depend on site specific considerations. An estimate of the time required to implement the options will be based on many of the same considerations as the cost estimate.

C. Evaluating Media Transfer

Moving a pollutant from one environmental medium, such as air, to another, such as water, is called media transfer. Your evaluation of the feasibility of risk reduction measures should consider media transfer effects. For example, if you are considering a measure such as substitution of a non-toxic compound for a toxic compound, the measure could have a media transfer effect that is also favorable for hazardous waste source reduction. Similar media transfer effects can occur with water quality and water conservation.

Conversely, an air toxics risk reduction measure such as carbon adsorption might increase the generation of hazardous waste which would need to be managed appropriately to ensure that the risk reduction measure did not result in an increased risk to the public. Similarly, the waste water from installation of a wet scrubber might need to be treated to avoid public health and environmental impacts.

Consideration of media transfer effects will affect the estimate of cost, and the time needed to implement the plan.

Section IV: Writing and Filing the Risk Reduction Plan

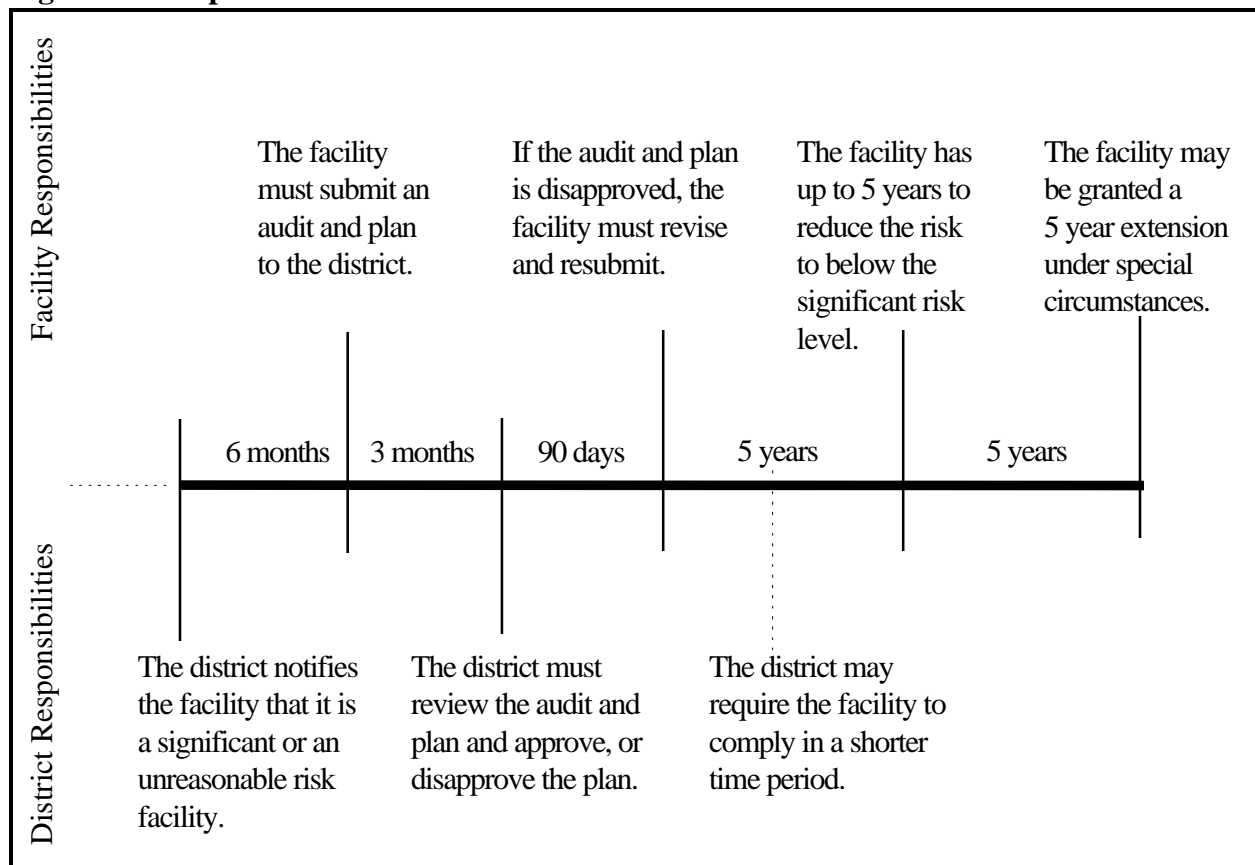
When you have evaluated the available risk reduction measures and decided which to implement, you can use the process and forms contained in the Checklist to complete a risk reduction plan. Check with your district to see if they will accept the completed form from the checklist; if not, or if you choose not to use the form, you can write the plan using another format.

Figure 1 lists the elements that must be included in the plan. It is included for facilities that cannot or choose not to use the Checklist. Figure 2 is a graphic representation of the compliance schedule specified in SB 1731. The district may establish its own time lines consistent with this.

Figure 1: Elements of a Risk Reduction Plan

1. The name and address of the facility.
2. The SIC code for the facility.
3. A source characterization including:
 - a. Summary data from the applicable district-approved air toxic emission inventory.
 - b. Summary data from the related health risk assessment.
 - c. Identification of the processes/emission points contributing to risks over the significant risk level(s).
5. An evaluation of the risk reduction measures to be implemented including:
 - a. Identification of risk reduction measure(s).
 - b. Emission reduction potential.
 - c. Risk reduction potential.
6. A schedule for implementing the risk reduction measures as quickly as feasible, including:
 - a. Dates for filing applications for permits to construct.
 - b. Dates equipment will be installed (if applicable).
 - c. Dates process changes will be completed (if applicable).
 - d. Dates for demonstrating the effectiveness of risk reduction measures.
7. An estimate of residual risk following implementation of the risk reduction measure(s) specified in the plan. If the significant risk level cannot be reached within the time period allowed by the district, the plan must also include the following:
 - a. A request to the district for an extension of time to comply.
 - b. An evaluation of all risk reduction measures available.
 - c. A demonstration of technical infeasibility or unreasonable economic burden for risk reduction options that will not be implemented.
 - d. Identification of activities to identify or develop additional risk reduction measures to enable the operator to comply by the specified date.
8. A certification that the risk reduction plan meets all requirements. The person who makes this certification must be one of the following:
 - a. An engineer who is registered as a professional engineer pursuant to Section 6762 of the Business and Professions Code.
 - b. An individual who is responsible for the operations of the source.
 - c. An environmental assessor registered pursuant to Section 25570.3 of the Health and Safety Code.

Figure 2: Compliance Time Line



APPENDIX A

RISK REDUCTION OPTIONS

Appendix A

Risk Reduction Options

This appendix contains information on risk reduction options. The first section deals with process changes. Figure A-1 gives some examples of risk reduction options to reduce emissions of particulate matter from specific processes. Figure A-2 gives some examples of process changes to reduce emissions of gaseous pollutants or volatile liquids. Figure A-3 gives general process changes to reduce gaseous and particulate matter emissions. This section also contains a process assessment worksheet designed to help you identify risk reduction opportunities based on understanding of where and how the pollutant is introduced into, produced in, or emitted from the process.

The second part of this appendix deals with pollution control technology. Figure A-4 presents a comparison of particulate matter control technologies. Figure A-5 gives factors that affect the efficiency and cost of particulate matter control technology. Figures A-6 and A-7 give the same information for control technology for gaseous pollutants.

Figure A-1: Examples of Specific Process Changes to Reduce Particulate Matter Emissions

Process/Activity	Potential Risk Reduction Options
Adding particulate materials to a solution	<ul style="list-style-type: none"> * Add in a different form (e.g., paint manufacturers add pelletized pigments or unopened bags of additives). * Sub-surface feed system. * Vortex feed system to submerge material rapidly (e.g., aluminum smelters adding cans to molten metal).
Agitation in a solution	<ul style="list-style-type: none"> * Increase freeboard. * Cover tank. * Blanket surface to reduce splattering (e.g., foaming additives or polyballs in chrome plating tanks). * reduce surface tension (e.g., additives used in chrome plating tanks).
Container filling	<ul style="list-style-type: none"> * Variable height nozzle to reduce drop (retracts as container is filled). * Submerged fill pipes. * Enclosure with grated floor and dikes to contain spills (may permit recovery and reuse).
Container emptying	<ul style="list-style-type: none"> * Reduce drop distance. * Shroud or enclose transfer point(s). * Remove material from bottom of container.
Fuel combustion	<ul style="list-style-type: none"> * Use cleaner fuel. * Use alternate power source. * Increase combustion efficiency.
Material storage	<ul style="list-style-type: none"> * Enclosures to limit wind action. * Cover or coating to limit surface disturbance. * Improved housekeeping.
Material conveying	<ul style="list-style-type: none"> * Enclose conveyor. * Shroud transfer points. * Reduce drop distance.
Material crushing and mixing	<ul style="list-style-type: none"> * Enclose mixer and vent to a filter when mixing is complete. * Use low-impact crushing techniques (e.g., grinding rather than hammering). * Spray with water or a dust suppressant to aggregate fines.
Spray coating application	<ul style="list-style-type: none"> * High transfer efficiency application methods. * Alternative coatings.
Solution dragout	<ul style="list-style-type: none"> * Lower the viscosity of the solution. * Increase the drainage time over the solution.
Waste combustion	<ul style="list-style-type: none"> * Increase residence time. * Segregate feed materials. * Optimize temperature.

Figure A-2: Examples of Specific Process Changes to Reduce Emissions of Gaseous Pollutants and Volatile Liquids

Emission Type	Potential Risk Reduction Options
Storage losses	<ul style="list-style-type: none"> * Minimize temperature changes by insulating pipes, containers, and storage tanks. * Increase inspection frequency. * Institute maintenance plan. * Cover tanks. * Investigate floating covers. * Investigate inert gas blankets. * Use a less 'wetable' container.
Handling losses	<ul style="list-style-type: none"> * Upgrade valves and flanges. * Increase inspection frequency. * Set up a maintenance program to find and repair leaks promptly.
Process losses	<ul style="list-style-type: none"> * Use additives to retard evaporation. * Optimize temperature. * Optimize process stoichiometry.
Evaporation from equipment in use (e.g., brushes, wipe rags)	<ul style="list-style-type: none"> * Store in closed containers between uses.

Figure A-3: Examples of General Approaches to Process-Based Options

Pollution Type/Approach	Potential Risk Reduction Options
<p>Individual</p> <ul style="list-style-type: none"> – Eliminate the pollutant from the process – Substitute a less toxic compound – Modify the process to use or produce less of the pollutant 	<ul style="list-style-type: none"> * Substitute another paint or coating process that does not contain the pollutant (e.g., chromate-free paints). * Substitute an aqueous cleaning process for one using chlorinated solvents. * Use a formulation with a lower concentration of the pollutant. * Use a pollutant with a lower unit risk number (see notes 1 and 3 on the next page). * Use a pollutant with a higher REL (see notes 2 and 3 on the next page). * Use high pressure-low volume spray guns * Reduce dragout from tanks * Optimize the process temperature, pressure, and other conditions to minimize emissions. * Use the pollutant in a form less likely to be emitted (use pellets or a gel rather than a powder).
<p>Gaseous</p> <ul style="list-style-type: none"> – Keep volatile liquids cool or covered – Reduce leaks from gaskets and seals 	<ul style="list-style-type: none"> * Physical covers should minimize air infiltration and headspace. * Temperatures should be kept as low as possible. * Insulate tanks and vessels to minimize emissions. * Verify compatibility of seals with gases. * Check for leaks whenever doors or hatches have been opened. * Check for leaks on a scheduled basis. * Recheck repaired connections within a week.
<p>Particulate Matter</p> <ul style="list-style-type: none"> – Institute a dust control plan – Reduce overspray and agitation 	<ul style="list-style-type: none"> * Cover or enclose dusty storage piles. * Periodically clean high-traffic areas. * Treat dirt roads with a dust suppressant. * Use high transfer-efficiency equipment. * Use a spray booth. * Shield processes and materials from turbulence.

Figure A-3: Examples of General Approaches to Process-Based Options (continued)

Pollution Type/Approach	Potential Risk Reduction Options
Both Gaseous and Particulate Matter <ul style="list-style-type: none"> – Eliminate the process – Enclose processes – Optimize process parameters – Institute a maintenance plan – Use a cleaner power source – Alter the configuration of the equipment 	<ul style="list-style-type: none"> * Contract with another facility. * Purchase instead of manufacturing components. * Streamline production to eliminate duplicative steps if possible. * To help concentrate pollutants and reduce control costs. * To reduce dispersal by air currents. * Use lowest temperature possible. * Minimize agitation. * Schedule regular inspections for process and pollution control equipment. * Prevent leaks. * Natural gas rather than diesel. * Electricity rather than fuel. * Reduce the distance between process steps.

NOTES:

1. If you switch from a carcinogen to another carcinogen, you must consider the effects of both the unit risk factor and the potential for multipathway effects.
2. If you switch to a pollutant with non-cancer health effects, you must consider the toxicological endpoint(s) affected by the substitute and any other pollutants emitted.
3. If the substitutes you are considering are reactive organic gases (as defined by district rules) or stratospheric ozone depleting compounds (as defined by the U.S. EPA), your options may be limited by the district rules or U.S. EPA regulations.

Worksheet A-1: Process Assessment

If you know how the pollutants are introduced into, produced in, and/or emitted from the process, you can more easily see ways to reduce the emissions from the process. For example, in a combustion process, high concentrations of chlorine in the feed material and short residence times at high temperature favor the production of dioxins. Therefore, process changes that would reduce the chlorine or increase the residence time would reduce dioxin emissions.

NOTE: This worksheet can be copied and used for each process.

Process _____ Pollutant _____

This pollutant is: (check as many as apply)

- | | |
|---|--|
| <input type="checkbox"/> a product | <input type="checkbox"/> a waste (or by-product) of production |
| <input type="checkbox"/> a catalyst | <input type="checkbox"/> a cleaning agent |
| <input type="checkbox"/> feedstock | <input type="checkbox"/> a fuel |
| <input type="checkbox"/> a coating | <input type="checkbox"/> a contaminant in the feed |
| <input type="checkbox"/> exhaust from fuel combustion | |
| <input type="checkbox"/> other, specify _____ | |

How does this pollutant get into the air? (check as many as apply)

- ☐ agitation in the process
- ☐ evolution from the process
- ☐ evaporation from the process, routine spills or leaks, storage, transport, or transfer (other than accidental release)
- ☐ wind or traffic affecting dusty materials or areas
- ☐ transfer or processing of particulate matter
- ☐ entrainment in turbulent gases as from combustion
- ☐ overspray in a coating application
- ☐ other _____

Figure A-4: Particulate Matter Control Technology

Technology	Effectiveness	Relative Cost		Pros & Cons
		Capital	Operating	
Cyclones	80 - 95%	Moderate	Moderate	<ul style="list-style-type: none"> * Can recover product. * Easy maintenance. * Efficiency depends on design and particle size. * Often used as precleaner for heavily loaded gas streams.
Electrostatic Precipitators	80 - 99+%	Highest	Moderate	<ul style="list-style-type: none"> * Efficiency depends on number of stages not on particle size. * Can recover product. * Not effective on particles with low resistivity. * Cannot be used for a flammable gas stream.
Fabric Filters	95 - 99+%	Low	Moderate	<ul style="list-style-type: none"> * Maintenance and operating practices affect efficiency. * Easy maintenance. * Sensitive to gas stream moisture and temperature. * Can recover product. * Effective for submicron particle sizes.
Venturi Scrubbers	95%	Lowest	High	<ul style="list-style-type: none"> * Good for particles above 0.5 micrometers. * Not affected by gas stream conditions as much as fabric filters or electrostatic precipitators. * High pressure drop increases operational cost. * Low maintenance.
HEPA Filters	99+%	Moderate	Moderate	<ul style="list-style-type: none"> * Best for submicron particle sizes. * Best for light loading. * Normally used behind primary control system. * No maintenance, requires change out after saturation occurs.

Figure A-5: Particulate Matter Control Technology - Factors Affecting Efficiency/Cost

Technology	Factors Affecting Efficiency/Cost
All Particulate Control	<ul style="list-style-type: none"> * Costs increase as volume of air needing cleaning increases. * Removal efficiency is better for high particulate loading in the gas stream. * Size profile of particulate matter, gas stream chemistry, temperature, and particulate loading influence the technology choice.
Cyclones	<ul style="list-style-type: none"> * Equipment design - height to width ratio will affect both cost and efficiency. * Size of particulate to be captured will dictate design; smaller particulate matter requires higher pressure drop and therefore higher energy costs.
Electrostatic Precipitators	<ul style="list-style-type: none"> * Design - greater number of stages equals greater control efficiency. * Concentration of particulates - lower efficiency for heavily loaded gas streams. * Resistivity of particulates - uncharged particles are not collected. * Requires expert maintenance capabilities.
Fabric Filters	<ul style="list-style-type: none"> * High moisture content of gas stream may cause clogging of pores in filter media. * Temperature of gas stream must be high enough to prevent condensation and low enough to prevent damage to the bags. * Contaminants in the gas stream that cause aggregation can clog pores and reduce filter efficiency, or retard cake release and increase cost. * Cost is particularly sensitive to volume of air. * Operating procedures - excessive removal of filter cake (prolonged cleaning cycle) reduces control efficiency.
Venturi Scrubbers	<ul style="list-style-type: none"> * Components of gas stream - poor capture for hydrophobic particles. * Emissions increase as concentration of pollutant in circulating liquid increases.
HEPA Filters	<ul style="list-style-type: none"> * Procedure for disposal of used filters will greatly affect cost. * High moisture content of gas stream may cause clogging of pores in filter media. * Temperature of gas stream must be high enough to prevent condensation and low enough to prevent damage to the filter medium. * Cost is particularly sensitive to volume of air.

Figure A-6: Control Technology for Gaseous Pollutants

Technology	Effectiveness	Relative Cost		Pros & Cons
		Capital	Operating	
Absorption	95%	Low	Moderate (low flow units)	<ul style="list-style-type: none"> * Can recover product. * Can result in increased volume of waste. * Pollutant must be soluble in absorbant.
Adsorption Using Carbon or Other Compounds	80% to 99%	Moderate	Low	<ul style="list-style-type: none"> * Can recover product. * Capacity can be reduced by the presence of liquid, solid particulates, high boiling organic or polymerizable substances. * Pollutant must be stripped from adsorbent at appropriate intervals to maintain control efficiency, or adsorbent replaced and waste properly managed (recycled or appropriately disposed). * Efficiency is reduced by high humidity.
Catalytic Incineration	98%	Moderate - High	Moderate - High	<ul style="list-style-type: none"> * Reduced cost versus thermal incineration due to fuel savings. * Limited number of catalysts available. * Not suitable for gas streams containing chlorinated solvents or any source of chlorine.
Flares	98%	High	High	<ul style="list-style-type: none"> * Sensitive to heat content of gas stream. * Good for waste gas. * Not suitable for gas streams containing chlorinated solvents or any source of chlorine. * Must consider potential toxicity of combustion products.
Thermal Incineration	99%	Moderate - High	Moderate - High	<ul style="list-style-type: none"> * Applicable only to constant flow streams. * Must be no more than 25% lower explosive limit. * Suitable for gas streams containing chlorinated solvents or any source of chlorine if temperatures and residence time necessary to prevent the formation of dioxins are maintained.
Condensers	50% to 90%	Low	Low (for low air flows)	<ul style="list-style-type: none"> * Can recover product. * Requires relatively high inlet concentration. * Complex to operate. * The cost estimate includes cost savings from product recovery.

Figure A-7: Gaseous Control Technology - Factors Affecting Efficiency/Cost

Gaseous Control Technology	Factors Affecting Efficiency/Cost
All	<u>The physical properties of the emission stream</u> * heat content * moisture content * molecular weight * pollutant concentration <u>The chemical/electrical properties</u> * solubility * vapor pressure * condensability * boiling point * heat of vaporization

APPENDIX B

DIRECTORY OF RESOURCES

APPENDIX B DIRECTORY OF RESOURCES

California Environmental Protection Agency

Air Resources Board (ARB)

The ARB Web Site

The ARB Web site provides information on the ARB and its programs as well as access to a number of documents. This site can be accessed at <http://www.arb.ca.gov>. The site includes the following features:

- * A Business Assistance feature which allows viewing and/or downloading of the following:
 - An Environmental Directory phone listing, which is a quick reference to California environmental business assistance resources;
 - A list of other environmental bulletin boards;
 - All Business & Environmental Topics (BET) Newsletters;
 - A small business loan program overview;
 - The Final Permit Streamlining Guidance Document;
 - The Equipment Pre-certification Program Workshop Notice and Draft Guidelines;
 - The ARB Staff Report Listing (1982-93); and
 - The ARB's Air Pollution Glossary.

- * Air Pollution Statutes and Regulations that pertain to the subject of air pollution control in California. While this feature is not yet complete, the following data are available for viewing, downloading and key word searching:
 - The entire text of the federal Clean Air Act.
 - The entire text of the volume, California Air Pollution Control Laws, an electronic version of the current "Blue Book" prepared annually by ARB's Legal Office. The statutes contained in the book can be viewed in their ASCII format and can be downloaded. In addition, the entire Blue Book can be downloaded in either ASCII or WordPerfect 5.1/5.2. Finally, the key word searching can be applied to any particular code book such as the Health and Safety code or the entire Blue Book.
 - A district Rules Database that will eventually contain the current rules of the 35 districts, as adopted by the individual district boards. In addition, a superseded rules database has been set up to contain the history of rule changes. Please note that the official status of rules can be confirmed by contacting the district. Also, for

purposes of determining the status of the U.S. EPA's enforcement of any specific rule, i.e.; the applicable SIP, please contact the district or Cynthia Allen of U.S. EPA at (415) 744-1189.

- * Air Toxics Program information relating to air toxics identification and control activities including the Toxics Updates, eight air toxics control measures (ATCMs), and information on the Air Toxics Hot Spots (AB 2588) Program including an overview of the program and the fee regulation.
- * The U.S. EPA's Hazardous Air Pollutants (HAPS) Health Effects Notebook. This notebook contains fact sheets on 187 of the 189 HAPS. All files are stored in WordPerfect 5.1/5.2 and therefore cannot be directly viewed on ARBIS. Instead, they are available for download at either the chemical level or the entire database can be downloaded as a single compressed file. Any questions regarding the HAPS Health Effects Notebook should be directed to the Air Risk Information Center of the U.S. EPA at (919) 541-0888. Plans are underway to add the California version of chemical fact sheets which will be viewable on ARBIS and key word search capability will be available.
- * The Consumer Products Program information, including the Antiperspirant and Deodorant Regulation and the Consumer Products Regulation. This feature also contains a list of contact persons that may answer questions regarding different elements of this program.
- * California Air Pollution Control Officers Association (CAPCOA) information including listings of district addresses, key staff in each district and voice, daytime and after hour phone numbers. This area also includes a list of the CAPCOA Committees and a listing of documents available from CAPCOA.
- * ARB Compliance Program information on the ARB Compliance Division's current Training Schedule and Course Descriptions and the ARB Compliance Assistance Program.
- * Board meeting agendas, summaries and transcripts are now viewable and downloadable for meetings since January 1995. Also, a brief summary of the Board appointment process, the duties of the Board and its current membership is available.

Emission Factors and the AB 2588 Program

These documents have been produced by the Technical Support Division of the ARB to assist facilities in complying with the emission inventory requirements of the AB 2588 Air Toxic Hot Spots Act. They provide technical guidance and emission factors derived from source testing done in compliance with AB 2588. They can be obtained by contacting the ARB Public Information Office at (916) 322-2990 or P.O. Box 2815, Sacramento, CA 95812. In addition, you may be able to download them from the ARB web site at: <http://www.arb.ca.gov>.

- * Emission Inventory Criteria and Guidelines for the Air Toxics "Hot Spots" Program, California Air Resources Board, effective July 1, 1997, including the following:
 - Emission Inventory Criteria and Guidelines Regulation Pursuant to the Air Toxics "Hot Spots" Information and Assessment Act of 1987, Title 17 of the California Code of Regulations, Sections 93300 through 93300.5;
 - Emission Inventory Criteria and Guidelines Report, May 15, 1997, California Air Resources Board, incorporated by reference into the above Regulation.
- * California Air Toxics Emission Factors (CATEF): A CARB Database, Version 1.2, Technical Support Division, California Air Resources Board, May 1996.
- * Technical Guidance Document to the Criteria and Guidelines Regulation for AB-2588, Technical Support Division, California Air Resources Board, August 1989.
- * Status and Capabilities of the ARB's Air Toxics Emission Data System (ATEDS), and
- * Supplement to the ATEDS Status and Capabilities Report: Preliminary Analysis of the Phase I "Hot Spots" Data, Technical Support Division, California Air Resources Board, October 1993 (Revised January 1994).
- * FATES (Facility Air Toxics Electronic Submittal): User's Manual (Version 3.0), California Air Resources Board, August 1995. (Anticipated to be replaced with CEIDARS-lite software by the end of 1997.)
- * Toxics Emission Inventory for Mobile, Area, and Natural Sources, 1989, (Prepared Pursuant to the Air Toxics "Hot Spots" Information and Assessment Act of 1987); Technical Support Division, California Air Resources Board, May 1990.
- * "California's Air Toxics 'Hot Spots' Data: An Analysis Including Smaller Sources, and a Comparison to Federal 'Major' Source Results", Beth Schwehr, Proceedings of the Fifth Annual Air and Waste Management Association (AWMA) Conference on "Current Issues in Air Toxics", Sacramento, California, November 9-10, 1994.

- * "Streamlining and Status of the Air Toxics 'Hot Spots' Emission Inventory Program", Beth Schwehr, Richard Bode, Marcelle Surovik, and Patrick Gaffney, Proceedings of the Fourth Annual Air and Waste Management Association (AWMA) Conference on "Current Issues in Air Toxics", Sacramento, California, November 15-16, 1993.
- * Identification of Volatile Organic Compound Species Profiles, ARB Speciation Manual, Volume 1, August 1991.
- * Identification of Particulate Matter Species Profiles, ARB Speciation Manual, Volume 2, August 1991.

The Compliance Assistance Program (CAP)

This program publishes documents to help business comply with air pollution rules. The CAP publications explain regulatory requirements, clarify compliance issues, and simplify self-regulation. The publications come in three formats. Handbooks are brief, easy to read, and contain self-inspection checklists. Pamphlets provide a quick reference with detailed flowcharts, checklists, and diagrams. Technical Manuals are more comprehensive and an order form is included in Appendix C.

- * Technical manuals covering the following topics are available:

- Aerospace Coating Operations
- Asbestos Demolition/Renovation
- Asphalt Hot Mix Facilities
- Automotive Refinishing
- Baghouses
- Cargo Tanks
- Electrostatic Precipitators
- Motor Vehicle Fuels
- Gasoline Facilities Phase I & II
- Metal Container, Closure & Coil Coating Operations
- Metal Parts & Products Surface Coating Operations
- Soil Decontamination
- Solvent Cleaning Degreasing
- Stationary Internal Combustion Engines
- Oil Field Production
- Graphic Arts Production
- Consumer Products
- Aggregate Plants
- Incinerators

- Dry Cleaning
- Petroleum Refining
- Concrete Batch Plants
- VOC Control Devices/Scrubbers

* The following Handbooks and Pamphlets are available:

- Aerospace Coating Industry
- Agricultural Burning
- Agricultural Burning (in Spanish)
- Automotive Refinishing (in Spanish)
- Gasoline Facilities Phase I & II
- Hot Mix Asphalt Facilities
- Woodburning Handbook
- Solvent Cleaners
- Surface Coating of Metal & Plastic Parts & Products
- Surface Coating of Metal & Plastic Parts & Products (in Spanish)
- Vapor Recovery Systems on Cargo Tanks
- Fugitive Dust control
- Oil Field Production
- Visible Emissions
- Forest Management Burning
- Dry Cleaning Industry
- Dry Cleaning Industry (in Korean)
- Consumer Products
- Baghouses
- Soil Decontamination
- Stationary Internal Combustion Engines
- CAP Information Pamphlet

Department of Toxic Substances Control (DTSC)

Alternative Technologies Section SB 14 Waste Reduction Reports

The Department of Toxic Substances Control has produced a number of publications to aid compliance with the Hazardous Waste Source Reduction and Management Review Act of 1989. This law required that hazardous waste generators consider source reduction as the preferred method of handling hazardous waste. These Waste Audit Studies or Hazardous Waste Minimization Checklist and Assessment Manuals are full of waste minimization techniques that might also qualify as risk reduction options.

* Waste Audit Studies on the following subjects have been completed:

- Automotive Paint Shops
- Automotive Repair
- Building and Construction Industry
- Commercial Printing Industry
- Drug Manufacturing and Processing Industry
- Fabricated Metal Products Industry
- Fiberglass-reinforced and Composite Plastic Products
- General Medical and Surgical hospitals
- Gold, Silver, Platinum, and other Precious Metals Product and Reclamation
- Marineyards for Maintenance and Repair
- Mechanical Equipment Repair Shops
- Metal Finishing Industry
- Nonagricultural Pesticide Application Industry
- Paint Manufacturing Industry
- Pesticide formulating Industry
- Printed Circuit Board Industry
- Research and Educational Institutions
- Stone, Clay, Glass, and Concrete Products Industries
- Thermal Metal Working Industry

* In addition, the DTSC has completed Hazardous Waste Minimization Checklist and Assessment Manuals for the following:

- Automotive Repair Shops
- Auto Paint Shops
- Building Construction
- Ceramic Products
- Metal Finishing Industry
- Marine Ship and Pleasure Vessel Boat Yards
- Paint Formulators
- Pesticide Formulators
- Printed Circuit Board Manufacturers

A list of publications available from DTSC is included in Appendix C. For additional information or to obtain a copy of these documents you may contact the Office of Pollution Prevention and Technology Development at:

Department of Toxic Substances Control
Office of Pollution Prevention and Technology Development
400 P Street Fourth Floor
P.O. Box 806
Sacramento, CA 95812-0806
(916) 322-3670

The Office of Environmental Health Hazard Assessment

The OEHHA Web Site

This site contains information on OEHHA's programs and a number of documents that can be read or downloaded. The address is: <http://www.calepa.ca.gov/oehha>. At this site, you can find information on health effects and potency factors and keep informed on health effects evaluations that OEHHA is conducting.

U. S. Environmental Protection Agency

OAQPS Technology Transfer Network

This is a network of electronic bulletin boards developed and operated by the Office of Air Quality Planning and Standards (OAQPS). The service is free except for the cost of using the telephone. It is available 24 hrs/day, 7 days/week except Monday morning from 8-12 (EST) when the system is down for maintenance.

The site can be accessed from the World Wide Web at: <http://www.epa.gov/ttn> or using TELNET at: ttnbbs.rtpnc.epa.gov. You can also access the TTN directly from your computer using a modem and communications software. Set the communication parameters to Data Bits = 8, Parity =N, Stop Bits = 1, Terminal Emulation = VT100 or VT/ANSI, Duplex = Full. Then direct your communications software to dial (919) 541-5742 (for modems up to 14,400 bps). Log on and select unregistered users and complete the user registration form. Once registered you will have access to any of the following bulletin board systems including:

- * The Control Technology Center (CTC) Hotline which can provide engineering assistance and technical guidance with respect to prevention and control for emissions of air pollutants;
- * The Clearinghouse for Inventories/Emission Factors (CHIEF) which provides access to tools for estimating emissions of air pollutants (including the emission factors published in AP-42); and,
- * The RACT/BACT/LAER Clearinghouse (BLIS) which contains information on air permits issued by local, state and regional air pollution control agencies.

Solvent Alternatives Guide (SAGE)

The solvent alternatives guide is software that leads the user through a series of questions to generate recommendations for solvent replacements in cleaning and degreasing operations. The program covers chemical alternatives that are not ozone depletors or hazardous air pollutants as well as process alternatives. SAGE can be downloaded from the Control Technology Center Bulletin Board located on the Technology Transfer Network (TTN). SAGE can also be purchased from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703) 487-4650.

Office of Compliance Sector Notebooks

These documents contain process descriptions, pollution prevention opportunities, a summary of applicable federal statutes and regulations, a list of trade associations, and a list of U.S. EPA contact persons for specific topics.

- * Sector notebooks for the following industrial sectors have been published:
 - Dry Cleaning Industry
 - Electronics and Computer Industry
 - Fabricated Metal Products Industry
 - Inorganic Chemical Industry
 - Iron and Steel Industry

- Lumber and Wood Products Industry
- Metal Mining Industry
- Motor Vehicle Assembly Industry
- Nonferrous Metals Industry
- Non-Fuel, Non-Metal Mining Industry
- Organic Chemical Industry
- Petroleum Refining Industry
- Printing Industry
- Pulp and Paper Industry
- Rubber and Plastic Industry
- Stone, Clay, Glass, and Concrete Industry
- Transportation Equipment Cleaning Industry
- Wood Furniture and Fixtures Industry

Hard copies can be ordered from the U. S. Government Printing Office using the order form reproduced in Appendix C. The cost for each ranges from \$5.50 to \$11.00. The Sector Notebooks are also available through two electronic systems, the Enviro\$en\$e Bulletin Board System, and the Environ\$en\$e World Wide Web. The Environ\$en\$e Communications Network is a free, public, interagency-supported system operated by the U.S. EPA's Office of Enforcement and Compliance Assurance and Office of Research and Development. Instructions for accessing this network are also reproduced in Appendix C.

APPENDIX C

ORDER FORMS AND ACCESS INSTRUCTIONS FOR RESOURCES LISTED IN APPENDIX B



Cal/EPA
CALIFORNIA AIR RESOURCES BOARD

Publication Order Form

Compliance Assistance Program

Please circle your choice of handbooks, pamphlets, and/or technical manuals. Send order form and checks payable to the California Air Resources Board, Attention: Michele Vale, Compliance Assistance Program, P.O. Box 2815, Sacramento, California 95812, or call (916) 327-7211. Please be sure to include your name, address, and telephone number with each order.

Handbooks and Pamphlets:

Publication Name	Publication Number	Unit Price* California Business	Unit Price* Out-of-State Business
Aerospace Coating Industry	90-008	No Charge	\$ 3.00
Agricultural Burning	90-007	. .	2.50
Spanish Agricultural Burning	93-022	. .	2.50
Automotive Refinishing	91-015	. .	2.50
Spanish Automotive Refinishing	92-017	. .	2.50
Gasoline Facilities Phase I & II	90-009	. .	2.50
Hot Mix Asphalt Facilities	90-006	. .	2.50
Woodburning Handbook	92-019	. .	2.50
Solvent Cleaners	89-004	. .	2.50
Surface Coating of Metal & Plastic Parts & Products	90-010	. .	2.50
Spanish Surface Coating of Metal & Plastic Parts & Products	90-011	. .	2.50
Vapor Recovery Systems on Cargo Tanks	89-003	. .	2.50
Fugitive Dust Control	92-018	. .	2.50
Oil Field Production	93-021	. .	2.50
Visible Emissions	93-023	. .	2.50
Forest Management Burning	94-024	. .	2.50
Dry Cleaning Industry	95-025	. .	2.50
Consumer Products	95-026	. .	2.50
Dry Cleaning Industry Korean	95-027	. .	2.50
Baghouses	91-014	. .	0.75
Soil Decontamination	91-013	. .	0.75
Stationary Internal Combustion Engines	91-012	. .	0.75
CAP Informational Pamphlet	92-020	. .	0.75

* Governmental agencies are exempt from payment for limited quantity orders.



Cal/EPA
CALIFORNIA AIR RESOURCES BOARD

Publication Order Form

Compliance Assistance Program

Technical Manuals:

Publication Name	Publication Number	Unit Price* California Business	Unit Price* Out-of-State Business
Aerospace Coating Operations	90-207	\$ 15.00	\$ 50.00
Asbestos Demolition/Renovation	90-208	15.00	50.00
Asphalt Hot Mix Facilities	90-209	15.00	50.00
Automotive Refinishing	91-214	15.00	50.00
Baghouses	91-213	15.00	50.00
Cargo Tanks	89-203	15.00	50.00
Electrostatic Precipitators	90-206	15.00	50.00
Motor Vehicle Fuels	92-205	15.00	50.00
Gasoline Facilities Phase I & II	91-201	15.00	50.00
Metal Container, Closure, & Coil Coating Operations	91-212	15.00	50.00
Metal Parts & Products	89-202	15.00	50.00
Surface Coating Operations			
Soil Decontamination	91-211	15.00	50.00
Solvent Cleaning Degreasing	91-204	15.00	50.00
Stationary Internal Combustion Engines	90-210	15.00	50.00
Oil Field Production	92-216	15.00	50.00
Graphic Arts Production	92-217	15.00	50.00
Consumer Products	93-215	15.00	50.00**
Aggregate Plants	93-218	15.00	50.00
Incinerators	93-219	15.00	50.00
Dry Cleaning	93-220	15.00	50.00
Petroleum Refining	94-221	15.00	50.00
Concrete Batch Plants	94-222	15.00	50.00
VOC Control Devices/Scrubbers	95-223	15.00	50.00

Return
Postage

California Air Resources Board
Compliance Assistance Program
P.O. Box 2815
Sacramento, CA 95812

Attn: Michele Vale

Tri-Fold, Staple and Mail

APPENDIX A - INSTRUCTIONS FOR DOWNLOADING NOTEBOOKS

**Electronic Access to the Sector Notebooks via
the EnviroSense World Wide Web (ESWWW) and
the EnviroSense Bulletin Board System (ESBBS)**

The Sector Notebooks are available through two electronic systems, the EnviroSense Bulletin Board System (via modem connection), and the EnviroSense World Wide Web (via Internet). The EnviroSense Communications Network is a free, public, interagency-supported system operated by EPA's Office of Enforcement and Compliance Assurance and the Office of Research and Development. The Network allows regulators, the regulated community, technical experts, and the general public to share information regarding: pollution prevention and innovative technology; environmental enforcement and compliance assistance; laws, executive orders, regulations and policies; points of contact for services and equipment; and other related topics. The Network welcomes receipt of environmental messages, information and data from any public or private person or organization. This document first provides summary information on ESWWW access, then provides information on downloading protocols from within the ESBBS.

A. ACCESS THROUGH ENVIROSENSE WORLD WIDE WEB

To access the Sector Notebooks through the EnviroSense World Wide Web, set your World Wide Web Browser to the following address:

WWW/INTERNET ADDRESS: <http://wastenot.inel.gov/envirosense/>

HOTLINE NUMBER FOR ESWWW ONLY: 208-526-6956

EPA ESWWW MANAGER: Myles Morse, 202-260-3161

From the EnviroSense home page, click on "Compliance and Enforcement" to obtain instructions on how to access the Sector Notebooks and how to provide comments. Names, e-mail addresses, and telephone numbers will also be provided should you require assistance. The same documents listed below under the ESBBS instructions are available on the ESWWW.

B. ACCESS THROUGH THE ENVIROSENSE BULLETIN BOARD SYSTEM - Instructions for Connecting, Registering and Downloading Notebooks

ESBBS MODEM CONNECTION NUMBER: 703-908-2092

HOTLINE FOR ESBBS ONLY: 703-908-2007

MANAGER: BBS Platform: Louis Paley, 202-260-4640

The following instructions are condensed from longer documents that provide information on the full features of the EnviroSense Bulletin Board. Further documentation is available on-line in the files that are listed at the end of this Appendix.

STEP 1. ESTABLISHING MODEM SETTINGS

Connecting to the ENVIROSENSE BBS is done using a modem and communications software. The modem can be either an internal or external model connected directly to your computer or part of a modem pool that is accessible through your Local Area Network (LAN) system. The communications software (e.g., CrossTalk, ProComm, QModem, Microphone, etc.) is what allows you to access and control your modem. Your software needs to be set to the values noted below (many of these settings are the standard defaults used):

- **Telephone number** - 703-908-2092 (Tip: Be sure you have entered the appropriate dialing prefix; e.g., 9 for an outside line, 1 for long distance...)
- **Baud rate** - up to 14,400 BPS is supported (always select the highest speed which YOUR modem will support).
- **Terminal Emulation** - BBS, ANSI, VT-100, VT-102 etc. (Tips: Do not use TTY. After you log in, if you see screen characters appear on the lines where you need to enter information, chances are that you need to properly set your terminal emulation. The emulation can normally be reset before or during communication with EnviroSense).
- **Data Bits** - 8 (Eight).
- **Stop Bits** - 1 (One).
- **Parity** - None.
- **Transfer Protocols** - ZModem, YModem, XModem, HS/Link, BiModem, ASCII (text files only). If your communications software supports ZModem, this will increase upload/download efficiency. You must select the same protocol that BOTH your communications software and the BBS support so that they can "talk the same language" when sending and receiving files.
- **Error correction/data compression protocols** - v.32, v.42, and other older, hardware-dependent ones are supported.

Refer to your communications software manual on how to set and save the communication parameters noted above (these will generally be the default). Also check to make sure you know where the communications software will send the files you download. Due to document sizes it is best not to download Sector Notebooks to floppy disks.

STEP 2. CONNECTING AND REGISTERING

- Connect to ESBBS via a modem, using communications software set to the above settings by dialing:

(703) 908-2092

NOTE: EPA Employees can access ES directly via LAN from the Agency Lan Services Menu or Icon and then follow the instructions below. The end of this document lists additional resources for accessing ESBBS through the LAN.

- Once you are in the BBS, hit the ENTER/RETURN key twice (2) to accept the default values for the screen.
- on successive pages, type your first name and hit ENTER/RETURN; type your last name and hit ENTER/RETURN; and type your password (if you have NOT registered yet, **make one up, and remember it for subsequent logons to ES**) and hit ENTER/RETURN; and
- Register (first time only) and immediately receive access to the BBS for 120 minutes per day;
 - Type responses to the Registration questions, and hit ENTER/RETURN to begin using ENVIROSENSE. (Tip: the last registration question is Country? _____)
 - You may need to hit ENTER/RETURN several times to move past System News and Alert messages.

STEP 3. DOWNLOADING SECTOR NOTEBOOKS

The files that appear on the following table can be downloaded from ES. Most files cannot be viewed on-screen within the ESBBS. As indicated on the following table, each document appears in several formats - WordPerfect 5.1 (PC), WordPerfect 6.1 (PC), Microsoft Word 5.1a (Mac) or WordPerfect 2.0 (Mac). Please note that the quality of formatting and graphics is highest in the file version in which the notebook was originally created. The high quality versions are underlined on the following list of filenames.

Information on Macintosh/Microsoft Word Files

Available Macintosh files are not compressed. The files are easily identified by the seventh and eighth position in the filename - which is "MA." The extension They can be directly downloaded and read using Microsoft Word 5.1a, or within other word processing software that supports conversion of Microsoft Word 5.1a documents. Conversion to other programs may alter formatting and graphics quality.

Information on PC/WordPerfect Files

The WordPerfect files are all compressed ("zipped" files ending with the .ZIP extension) files that need to be decompressed ("unzipped") after they are downloaded. The notebooks that are available in WP 5.1 and WP 6.0 are zipped together (this is why the filenames on the following table are the same). When these files are downloaded and "unzipped," you will have a version with the extension ".WPS" and one with ".WP6".

Available Notebooks, Filenames and File Formats

<u>Profile of the.....Industry</u>	<u>PC WP 5.1</u>	<u>PC WP 6.1</u>	Macintosh <u>Word 5.1a/WP2.0</u>
Dry Cleaning	DRYCLNSN.ZIP	<u>DRYCLNSN.ZIP</u>	DRYCLNMA.WP2
Electronics and Computer	ELECMPSN.ZIP		<u>ELECMPSN.WD5</u>
Wood Furniture and Fixtures	WDFURNSN.ZIP		<u>WDFURNMA.WD5</u>
Inorganic Chemical	INRGCHSN.ZIP	<u>INRGCHSN.ZIP</u>	INRGCHMA.WP2
Iron and Steel	IRONSTSN.ZIP	<u>IRONSTSN.ZIP</u>	IRONSTMA.WP2
Lumber and Wood Products	LMBRWDSN.ZIP		<u>LMBRWDMA.WD5</u>
Fabricated Metal Products	FABMETSN.ZIP		<u>FABMETMA.WD5</u>
Metal Mining	METMINSN.ZIP		<u>METMINMA.WD5</u>
Motor Vehicle Assembly	MOTVEHSN.ZIP		<u>MOTVEHMA.WD5</u>
Nonferrous Metals	NFMETLSN.ZIP		<u>NFMETLMA.WD5</u>
Non-Fuel, Non-Metal Mining	NOMTMISN.ZIP		<u>NOMTMIMA.WD5</u>
Organic Chemical	ORGCHMSN.ZIP	<u>ORGCHMSN.ZIP</u>	ORGCHMA.WP2
Petroleum Refining	PETREFSN.ZIP	<u>PETREFSN.ZIP</u>	PETREFMA.WP2
Printing	PRINTGSN.ZIP	<u>PRINTGSN.ZIP</u>	PRINTGMA.WP2
Pulp and Paper	PULPPASN.ZIP	<u>PULPPASN.ZIP</u>	PULPPAMA.WP2
Rubber and Plastic	RUBPLASN.ZIP		<u>RUBPLAMA.WD5</u>
Stone, Clay, Glass and Concrete	STCLGLSN.ZIP		<u>STCLGLMA.WD5</u>
Transportation Equipment Cleaning	TRNSEQSN.ZIP	<u>TRNSEQSN.ZIP</u>	TRNSEQMA.WP2

Note: Underlined files contain the highest quality format/graphics

STEP 3 CONTINUED - PROCEDURES FOR DOWNLOADING

- From the E5 Main Menu, select "D" to Download then hit ENTER/RETURN.
- Type in the Sector Notebook filename from above that you would like to select for downloading and hit ENTER/RETURN.
- The system will ask you to select a file transfer protocol. Select the file transfer protocol that matches what you have selected within your PC communications software (ZModem is recommended) and hit ENTER/RETURN. (Tip: ZModem users may also be allowed to enter more than one filename to download more than one document at a time. Simply continue to enter a new filename each time a new filename prompt appears on the screen. This option is disabled for other users.)
- At this point, you may
 - begin downloading by hitting ENTER/RETURN. This should begin the download if you are using the ZModem transfer protocol. If you don't see information on the screen showing the progress of the download, follow the next step.
- If the download does not begin after following the last step, you need to tell your communications software to start receiving the file. To do this, look for a "RECEIVE" icon or command on your communications software menu and activate it. This tells your software to begin the download.

- When the download is completed, a message will appear on the screen to confirm transmission.
- The downloaded file will appear in the folder or directory that you defined in your communications software.
- Repeat the above procedure to download other notebooks.
- Macintosh users can logoff using the [G]oodbye command from the main menu
- **THE FOLLOWING STEP MUST BE TAKEN BY ALL USERS THAT HAVE DOWNLOADED ZIPPED FILES (files with a ".ZIP" filename extension) FROM ES. MACINTOSH USERS CAN SKIP THIS STEP.**
 - In order to read the zipped file(s) you have downloaded, you must download the decompression software required to "unzip" your files. To download the decompression software, follow the same download instructions given above. Type in the filename "PKZ204G.EXE" and hit ENTER/RETURN. You only need to download this file to your hard drive once.
- Logoff using the [G]oodbye command from the main menu.
- To end the phone connection, the user should use the "hang up" or "terminate call" option provided with your communications software.

STEP 4 DECOMPRESSING ".ZIP'D" DOWNLOADED FILES (PC Only - Macintosh files do not need to be decompressed)

After you have downloaded a compressed (".ZIP") file to your PC, you must decompress it to its original format and size by using the "PKUnzip" file which you downloaded at the beginning of Step 3. The file which you downloaded; "PKZ204G.EXE", contains PKZip.EXE and PKUnzip.EXE files. PKUNZIP will decompress the file, returning it to its original size and format as if it had never been compressed or transmitted over the BBS. To use the PK commands (pkunzip.exe & pkzip.exe), you must be at the DOS prompt (third-party software interfaces exist for Windows). For details on how to use either command, simply type the command at the DOS prompt (without any parameters, i.e., just type "PKUNZIP") and hit ENTER/RETURN. Since parameters are required for the PKs to work they will automatically go into help mode and give you a brief explanation of how they work. If a user needs more direction, there is full documentation included in the PKZ204G.EXE in the "Hints" file.

To decompress any file, use PKUNZIP.EXE by taking the following steps:

- Go to the DOS C: prompt and type PKUNZIP.EXE; then,
- Type "PKUNZIP [Filename]" (e.g., the filename and the path of the compressed file you wish to decompress).

NOTE: after the paired files are unzipped, two files will exist, one with the extension ".WPS" and one with the extension ".WP6."

C. COMMENTING OR PROVIDING ADDITIONAL INFORMATION ON THE SECTOR NOTEBOOKS VIA ESBBS

Comments on the Sector Notebooks, or supplemental documents of interest can be uploaded to the EnviroSense BBS. Follow upload instructions that appear on the screen, or look at the instructions for compressing and uploading documents. The instructional documents are listed below under Section D of this Appendix. All documents that you upload will be publicly accessible, and should contain a short abstract (less than 50 words) that describes the document. It is recommended that this abstract contain the words "Sector Notebook Comments," the title of the Notebook that the comments are directed toward, and the words "SIC <<Insert applicable 2-digit SIC code>>".

NOTE: To help the system operator know what you've uploaded and where it should be put within the BBS, it is helpful to send a message to the system operator. Before logging out of ES, you will be given the option to comment to the system operator (Sysop). Please indicate what files you have sent, and that the comments or supplemental documents should be placed in Directory 51 - "Sector Compliance Information and Notebooks." Messages can also be sent to the Sysop from the main menu using the Message option.

D. ADDITIONAL RESOURCE DOCUMENTS AVAILABLE ON ESBBS

The following files can be viewed from the "Bulletins" section of ESBBS main menu. To receive these documents electronically, the files can be downloaded (and viewed) from Directory #160 (utilities). If you would like to download these files, follow the same procedures that are outlined (Section C). The directions for direct dial modem users are different than the directions for EPA LAN users. How you have accessed the ESBBS determines which of the paired files below that you should follow.

<u>Entered ES</u> <u>via Modem</u>	<u>Entered ES</u> <u>EPA LAN</u>	<u>Description of File</u>
CONREGWP.TXT	CNREGLAN.TXT	How to Connect and Register on the ESBBS via Modem
FINDVIEW.TXT	FNDVWLAN.TXT	Finding and Viewing Files from ESBBS via Modem
CONVCOMP.TXT	CVCMPPLAN.TXT	Converting, Compressing & Uncompressing Files via Modem
DNLDTXWP.TXT	DNLTXLAN.TXT	Flagging and Downloading "Uncompressed" Files from ESBBS
DNLDZFWP.TXT	DNZPLAN.TXT	Flagging and Downloading "Compressed" Files from ESBBS
UPLOADWP.TXT	UPLDLAN.TXT	Directions for Uploading Files via Modem to the ESBBS
SNHOWTO.TXT	SNHOWLAN.TXT	Contains <u>this</u> document "Appendix A - Downloading Instructions"

INTRODUCTION

This Publications List is to provide Department of Toxic Substances Control (DTSC) customers with one source listing all publications available for review. These publications include reports, brochures, fact sheets, manuals, videos, and policy documents from all programs within DTSC. The list is categorized by program for your convenience.

To order a publication:

- 1) Fill out the order form included in this document. Include the document number, publication title, and cost (if any) and submit to DTSC, Accounting Office. As indicated, some publications are only available through the Department of General Services (DGS). There is a separate order form in this document that you must complete and send directly to the DGS, Publications Unit.
- 2) Some publications are available on the Internet (indicated by an "i" in superscript following the publication's title). The DTSC address is: <http://www.calepa.ca.gov/dtsc.htm>.
- 3) If ordering publications that do not have a cost, you may fax your order form to DTSC, Office of External Affairs, Attention: Publications Request at fax # (916) 327-0978.

Due to increased costs for printing, postage, and handling, there is now a cost for most publications. However, if the publication has an asterisk in the cost column next to the price, the first copy is available free, with a charge of .25 cents per page for each copy thereafter. If there is a cost indicated in the cost column without an asterisk, the price listed is for all copies.

If you have any questions regarding the content or availability of certain publications from DTSC programs, you may contact the program directly. The program contact persons are:

Hazardous Waste Management Program

Mardel Rodriguez - (916) 324-2995, fax (916) 327-0978

Site Mitigation Program

Ben McIntosh - (916) 323-3399, fax (916) 323-3700

Administrative Services

Steve Hanna - (916) 324-9924, fax (916) 323-3215

Office of Legal Counsel

Bonnie Amoruso - (916) 322-8693, fax (916) 327-0978

Office of External Affairs

April Moses - (916) 323-9482, fax (916) 327-0978

Office of Legislation

Linda Weightman - (916) 322-3902, fax (916) 327-0978

Science, Pollution Prevention, and Technology Program

Office of Pollution Prevention and Technology Development

Muriel Lyon - (916) 324-4146, fax (916) 327-4494

Human, Ecological Risk Division

Carmen Cruz - (916) 327-2500, fax (916) 327-2509

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Department of Toxic Substances Control Order Form	24

DOCUMENT #	TITLE	PAGES	COST
HAZARDOUS WASTE MANAGEMENT PROGRAM (HWMP)			
HWM-001	Checklist Guidance Document (8/94)	44	*\$11.00
HWM-002	Generator Inspection Checklist (8/94)	10	*\$2.50
HWM-003	Permit Inspection Checklist (8/94)	15	*\$3.75
HWM-004	Generator/Interim Status Inspection (8/94)	30	*\$7.50
HWM-005	Permit Writer Instructions for Storage and Treatment Facilities and Permit Writer Instructions for Closure of Storage and Treatment Facilities (1/94)		\$145.00
HWM-006	Permit Writer Instructions for Closure of Storage and Treatment Facilities		\$45.00
HWM-007	Corrective Action Manual		\$55.00
HWM-008	Certification Guidance and Certification Documents Form DTSC 1178	43	*\$10.75
HWM-009	The RSU Extraction Test Project	195	\$10.00
HWM-100	Asbestos Handling, Transport, and Disposal The regulation of waste in CA including waste classification, analytical methods, handling, transport, licensing, fees, and taxes. (1993)	8	*\$2.00
HWM-102	Handling and Transport of Spent Lead-Acid Storage Batteries Discusses special provisions developed by the Department to encourage the recycling of spent lead-acid batteries including storage, transport, and handling. (1991)	5	*\$1.25
HWM-104	Used Oil Filters: Handling, Storage, and Transport for Recycling Both the expense of managing and disposing, of used oil filters as hazardous waste and testing them to see if they are hazardous can be avoided if they are recycling in accordance with these CA requirements. (1993)	4	*\$1.00
HWM-105	Fluorescent Light Tubes Discusses storage, transportation, recycling and disposal of spent fiorescent light tubes, high intensity discharge lamps and PCB-containing ballasts. (1994)	4	*\$1.00
HWM-600	California Waste Exchange Directory Listing of commercial recyclers. (1993)	50	*\$12.50
HWM-602	California's Compilation of Hazardous Waste Recycling Laws Lists excerpts from the California Hazardous Waste Control Law specific to recycling in California. Laws specific to the recycling of used oil are not included. (1995)	16	*\$4.00
HWM-800	Proposed Treatment Standards for Metal Containing Aqueous Waste (1988)	312	*\$78.00
HWM-801	A Proposed Treatment Standard for Non-RCRA Aqueous and Liquid Organic Waste Vol. I & II (1990)	73	*\$18.25
HWM-802	Treatment Standards for Asbestos Containing Wastes (1990)	62	*\$15.50
HWM-804	Treatment Standards for Foundry Sand (1989)	101	*\$25.25
HWM-805	Treatment Standards for Non-RCRA Fly Ash, Bottom Ash, Retort Ash, Baghouse Waste, and Gas Scrubber Waste (1990)	131	*\$32.75

DOCUMENT #	TITLE	PAGES	COST
HWM-806	Landfill Criteria for Nonliquid Hazardous Waste (1988)	109	*\$27.25
HWM-809	Development of Treatment Standards for Non-RCRA Solvent Waste (1989)	99	*\$24.75
HWM-810	Treatment Standards for PCB Wastes (1988)	1422	*\$355.50
HWM-812	Implementation of SB 2093, Chapter 1417, Statutes of 1988, Health and Safety Residuals Repository (1990)	82	*\$20.50
HWM-814	Treatment Standards for Solids with Organics (1991)	63	*\$15.75
HWM-815	Treatment Standards for Liquid Redox Waste (1990)	98	*\$24.50
HWM-850	Land Disposal Restrictions Bulletins (4/90, 9/90, 3/91, and 12/92)	14	*\$3.50
HWM-852	Land Disposal Restrictions Handbook Provides an overview of the Land Disposal Restrictions (LDRs) for hazardous waste. It serves as a guide to the requirements and treatment standards associated with these restrictions and contains general information about the variances and exemptions available under this program. (1992)	101	*\$25.25
HWM-853	Guidance Manual: Petitioning Treatability Variance from Hazardous Waste Treatment Standards. A treatability variance can be issued if the hazardous waste cannot be treated to meet treatment standards due to technical reasons. This document outlines essential information that must be included in the variance application. (1991)	173	*\$43.25
	Tiered Permitting Onsite Treatment Program		
TP-001	Notification Package for Conditional Exemption (CE), Conditional Authorization(CA), and Permit by Rule (PBR) tiers (available as a complete package or in parts below):	32	*8.00
TP-001A	1996 Notification Form 1772 + Instructions	24	*\$6.00
TP-001B	Fact Sheets (list tier(s) needed on order form) CL CESQT CESW CA PBR	8	*\$2.00
TP-001C	Tiered Permitting Flowchart (1996)	25	*\$6.25
TP-002	Remote Waste/Consolidation Site Annual Notification Form 1196 + Instructions (4/95)	4	*\$1.00
TP-101	Tiered Permitting Onsite Inspection Checklist (4/96)	6	*\$1.50
TP-205	Silver Recovery Fact Sheet (12/94)	2	*.50
TP-206	Vehicle Repair Facility Fact Sheet (6/92)	2	*.50
TP-208	Tiered Permitting Phase 1 Environmental Assessment Checklist & Instructions Form DTSC 1151 (9/95) (Cover letter dated 6/6/96)	19	*\$4.75
TP-211	Financial Assurance for Closure of PBR & CA Operations Regulations (Emergency Regulations (R-96-19) adopted on 2/13/96)	13	*\$3.25
	Transportable Treatment Unit (TTU) Documents		
TP-301	Draft TTU Fact Sheet	2	*.50
TP-303	Permit By Rule & Conditionally Exempt, Transportable Treatment <u>Unit</u> Notification Form 1199	11	*\$2.75

DOCUMENT #	TITLE	PAGES	COST
TP-303A	Instructions for DTSC Forms 1197, 1198 & 1199 (1/96)	24	*\$6.00
TP-304	Permit By Rule TTU <u>Site-Specific</u> Notification Form 1197 (1/96)	9	*\$2.25
TP-305	Conditionally Exempt TTU <u>Site-Specific</u> Notification Form 1198 (1/96)	9	*\$2.25
Temporary Household Hazardous Waste Collection Facilities			
TP-401	Temporary Household Hazardous Waste Collection Facility Fact Sheet (2/96)	6	*\$1.50
TP-402	Temporary Household Hazardous Waste Notification Form DTSC 8464 (12/95)	4	*\$1.00
TP-403	Temporary Household Hazardous Waste Inspection Checklist (1995)	8	*\$2.00
Senate Bill 1082 - Unified Program			
UP-503	Unified Hazardous Waste and Hazardous Materials Management Regulatory Program Fact Sheet (10/96)	4	*\$1.00
Compliance School			
CS-601	Compliance School Brochure To Enroll or Purchase Student Handbook call 1-800-337-1422 (1996)		No Fee
Resource Recovery/Recycling			
RR-701	Directory of Industrial Recyclers and Listing of Hazardous Waste Available for Recycling (1994)	42	*\$10.50
RR-703	Regulations of Consumer Type Batteries (4/95)	4	*\$1.00
RR-706	Handling and Transport of Spent Lead-Acid Storage Batteries for Recycling Fact Sheet (1/93)	5	*\$1.25
RR-708	Asbestos: Handling, Transport & Disposal (3/94)	8	*\$2.00

DOCUMENT #	TITLE	PAGES	COST
SITE MITIGATION PROGRAM (SM)			
Fact Sheets			
SM-001	How to Obtain Information on Sites Containing Hazardous Substances (11/95)	3	*.75
SM-002	Assembly Bill 2061 - The Site Designation Process Under the Unified Review of Hazardous Materials Release Sites (7/95)	22	*\$5.50
SM-003	Senate Bill 2057 - Reporting Non Emergency Hazardous Substances Releases Pursuant to Health and Safety Code Section 25359.4 (5/94)	15	*\$3.75
SM-004	Addendum to the Senate Bill 2057/Assembly Bill 2061 Fact Sheet Reporting Non Emergency Hazardous Substances Releases (1/95)	1	*.25
SM-005	CalSites Validation Program (6/96)	3	*.75
SM-006	Senate Bill 923 Expedited Remedial Action Program (1/97)	2	*.50
SM-007	Senate Bill 1248 Local Cleanup Agreements (2/96)	5	*\$1.25
SM-008	Assembly Bill 1876 Private Site Management Program (8/96)	3	*.75
SM-009	Voluntary Cleanup Program (7/95)	7	*\$1.75
SM-010	Prospective Purchaser Policy (10/96) ¹	65	*\$16.25
SM-011	Brownfield Initiatives (2/97)	2	*.50
SM-012	AB 2061 - Expedite Hazardous Materials Site Cleanups with the Designation of a Lead Agency, Cal/EPA (1/97)	2	*.50
SM-013	Financial Incentives to Clean Up Hazardous Substances Sites (8/24/93)	2	*.50
SM-014	Voluntary Cleanup Program Brochure (7/96)	2	No Fee

DOCUMENT #	TITLE	PAGES	COST
ADMINISTRATIVE SERVICES (ADMIN)			
Hazardous Materials Data Management Program			
ADM-001	Chemical List of Lists (LOL) (hard copy)	104	\$10.00
ADM-002	Chemical List of Lists (LOL) EZ-LOL DATABASE--Windows (diskette 3.5") LOL DATABASE--DOS, ASCII (diskette 3.5" or 5.25")		\$50.00
ADM-003	Facility Inventory Fact Sheet		No Fee
ADM-004	Facility Inventory Entire DATABASE Three 9" reel tapes EBCDIC Per ZIP Code (hard copy) County Information (hard copy) L.A. County only--due to size (hard copy)		\$300.00 \$15.00 \$60.00 \$100.00
ADM-005	Guide to Toxic Databases (hard copy)		No Fee
ADM-006	Guide to Hazardous Substance Reporting Requirements (AB 854)		\$40.00
ADM-007	Hazardous Waste And Substances Sites List (also known as Cortese List)		\$50.00
ADM-008	Ez-Lustis Database--Windows (diskette 3.5")		\$75.00
ADM-009	Lustis Database--ASCII (diskette 3.5" or 5.25")		\$75.00
ADM-010	SARA 313 Annual Summary (hard copy)		\$10.00
ADM-011	SARA 313 TRI Form R's--copies		
ADM-012	SARA 313 TRI Database--per year (diskette-3.5" or 5.25")		\$50.00
ADM-013	SARA 313 Miscellaneous TRI Information (diskette-3.5" or 5.25")		\$25.00
ADM-014	SARA Reporting: By County:		1-7 \$5 ea 7 or more \$35
	By Facility:		1-7 \$5 ea 7 or more \$35
	By Chemical:		1-7 \$5 ea 7 or more \$35
	By SIC: (SIC=Standard Industrial Classification Code)		1-7 \$5 ea 7 or more \$35
	By ZIP:		1-7 \$5 ea 7 or more \$35
ADM-015	Manifest Summary Data On CD-Rom		\$5.00
ADM-016	Hazardous Waste Network Command List (CLIST) Reports AB 2948 (Tanner) Reports	25	*\$6.25
Miscellaneous			
ADM-017	SB 1222 Fee Reform Report	161	\$6.00

DOCUMENT #	TITLE	PAGES	COST
OFFICE OF LEGAL COUNSEL (OLC)			
Office of Program Audits and Environmental Analysis			
OLC-001	Official Department Policy/Procedure Documents related to the California Environmental Quality Act (CEQA) (8/96)	92	*\$23.00
OLC-002	Workbook for Conducting Initial Studies Under the California Environmental Quality Act (10/96)	75	*\$18.75

DOCUMENT #	TITLE	PAGES	COST
OFFICE OF EXTERNAL AFFAIRS (EA)			
EA-001	Hazardous Waste Generator Requirements An Introduction to California's Hazardous Waste Regulations A series of eight concise handouts, each for a specific industry which help familiarize the reader with hazardous waste generator regulations. The industries include: photo processing, electroplating, general medical and surgical hospitals, service stations, printed circuit board manufacturers, dry cleaning, pest control and paint manufacturing.	18	*\$4.50
EA-002	Biennial Report 1992-1994 A report describing DTSC activities and accomplishments submitted to the California Legislature every two years.	135	*\$33.75
EA-003	Cal/EPA Brochure	2	No Fee
EA-004	Groundwater Contamination Brochure describing what groundwater is, how it becomes contaminated, and how it gets cleaned up.	4	*\$1.00
EA-005	Hazardous Waste Enforcement Brochure providing a "Citizen's Guide to Enforcement".	8	*\$2.00
EA-006	Hazardous Waste Sites Health Effects Fact Sheet describing health effects and hazardous waste sites.	6	*\$1.50
EA-007	Hazardous Waste Sites The Legislative Framework Fact Sheet describing the legislative history of hazardous waste regulations.	6	*\$1.50
EA-008	Hazardous Waste Sites The Public's Role Fact Sheet describing community involvement on hazardous waste issues.	4	*\$1.00
EA-009	Hazardous Waste Sites The Penalty Fact Sheet describing DTSC's options for violators of the Hazardous Waste Control Law.	3	*.75
EA-010	The Public Participation Policy and Procedures Manual This manual is designed to address the public participation components of the site mitigation and hazardous waste management processes and ensure compliance with state and federal laws and regulations.		\$20.00
EA-011	Public Records Act Request Manual	68	*\$17.00
EA-012	This Is DTSC Four page pamphlet describing what the Department of Toxic Substances Control does and its main program areas.	4	No Fee
EA-013	Toxics Update ¹ A monthly newsletter of DTSC activities. (Submit your name and address on the order form for inclusion on the mailing list)	4	No Fee
Educational Publications			
* Free to California teachers, minimal charge to those out-of-state			
EA-014	Compost Creations Single sided guideline on starting a compost pile.	1	No Fee
EA-015	Earth Day School Ideas A suggestion list for teachers of activities to celebrate Earth Day.	3	No Fee

DOCUMENT #	TITLE	PAGES	COST
EA-016	<p>*The Hazard House Game An interactive computer game which allows students to move through a house, encounter common household products, make disposal decisions and follow the products into the environment. This game runs on any of the Apple II computers. Good for 3rd - 6th grades. 3.5" or 5 1/4" disks.</p>	Disks	No Fee
EA-017	<p>*The Hazard House Workbook A workbook of activities on hazardous household products and their possible effects on both the environment and our health. This is for use by all youth groups, such as Camp Fire, Boy and Girl Scouts, 4-H, etc. It is not for the classroom teacher. (One leader's manual and ten member's manuals per set.)</p>	163	No Fee
EA-018	<p>*The No Waste Anthology A collection of over 75 environmental activities for grades K-12. Activities address natural resources and pollution; solid waste and how to reduce it; and hazardous waste - in our homes and in our towns. This is a curriculum guide specifically written for classroom teachers.</p>	320	No Fee
EA-019	<p>Kids Save The Earth Booklet which shares environmental success stories of kids.</p>	12	No Fee
EA-020	<p>Recycler's Pledge A pledge for adults or youths to reduce, reuse and recycle (pollution prevention).</p>	1	No Fee
EA-021	<p>10 Things You Can Do In Honor of Earth Day - All Year Long Single sided flyer providing simple tips for environmental protection.</p>	1	No Fee
EA-022	<p>The Three R'S Environmental crossword puzzle for students on reducing, reusing and recycling practices.</p>	1	No Fee
EA-023	<p>Waste Watcher's Checklist A quiz regarding one's lifestyle and waste reducing techniques.</p>	2	No Fee

DOCUMENT #	TITLE	PAGES	COST
OFFICE OF LEGISLATION (LEG)			
LEG-001	Hazardous Waste Legislative Summary - 1995/1996 ¹ Limited hard copies but available on Internet. DTSC address: http://www.calepa.ca.gov/dtsc.htm	32	*\$8.00
7540-958-1016-6	Excerpts From Health and Safety Code, Division 20 (1/97) (See General Service Order form to order this publication)	32	\$29.80

DOCUMENT #	TITLE	PAGES	COST
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SCIENCE, POLLUTION PREVENTION AND TECHNOLOGY PROGRAM (SPPT)

Office of Pollution Prevention and Technology Development

Hazardous Waste Source Reduction and Management Review Act (SB14)

The preferred approach to waste minimization is source reduction. Source reduction is any activity that prevents or reduces the generation of hazardous waste; it does not mean reducing the volume or toxicity of an already generated waste.

SPPT-001	Guidance Manual for the Hazardous Waste Source Reduction and Management Review Act of 1989 - Senate Bill 14 The Source Reduction Act requires generators to examine current hazardous waste generating processes for hazardous waste minimization opportunities and create a plan to implement workable alternatives. Generators of hazardous waste in excess of amounts specified in SB 14 must prepare a Source Reduction Evaluation Review and Plan, a Hazardous Waste Management Performance Report, and a Progress Report according to a fixed time schedule. (1994)	159	*\$15.00
SPPT-004	Hazardous Waste Source Reduction Compliance Checklist The Compliance Checklist serves as substitute format for the Source Reduction Evaluation Review and Plan. The Compliance Checklist can be used by generators and small businesses who are captured under SB 14. (1997)	24	*\$3.00
SPPT-005	Diskette of Hazardous Waste Source Reduction Compliance Checklist Electronic versions of Document No. 004. Will work on IBM compatible PC's. (1997)		*\$10.00
	Waste Minimization Fact Sheets A summary of waste minimization methods for specific industries.		
SPPT-101	PCB Handling, Treatment, and Disposal (1992)	6	No Fee
SPPT-200	Waste Minimization Can Work for You A summary of general hazardous waste minimization definitions and techniques for businesses. (1992)	4	No Fee
SPPT-201	Aerospace Industry (1992)	4	No Fee
SPPT-202	Automotive Paint Shops (1992)	4	No Fee
SPPT-203	Automotive Repair Shops (1992)	4	No Fee
SPPT-204	Building Construction (1993)	4	No Fee
SPPT-205	Commercial Printing Industry (1992)	4	No Fee
SPPT-206	Metal Finishers (1992)	4	No Fee
SPPT-207	Paint Formulators (1992)	4	No Fee
SPPT-208	Pesticide Formulating Industry (1992)	4	No Fee
SPPT-209	Printed Circuit Board Manufacturers (1992)	4	No Fee
SPPT-210	Decorative Plating with Trivalent Chrome (1992)	6	No Fee
SPPT-211	Research and Educational Institutions (1993)	4	No Fee

DOCUMENT #	TITLE	PAGES	COST
SPPT-212	Ceramic Products (1993)	4	No Fee
SPPT-213	Drug Manufacturing and Processing (1994)	6	No Fee
SPPT-215	Jewelry Manufacturing Industry (1995)	6	No Fee
SPPT-216	Paint Manufacturers Can Save Money On Environmental Compliance Costs (1996)	4	No Fee
	Waste Audit Studies Full-scale assessments of specific industries that show where waste minimization methods can be most effective. ** LIMITED TO STOCK ON HAND.		
**SPPT-303	Commercial Printing Industry (1989)	137	*\$15.00
**SPPT-304	Drug Manufacturing and Processing Industry (1989)	224	*\$20.00
**SPPT-305	Fabricated Metal Products Industry (1989)	188	*\$18.00
SPPT-306	Fiberglass-Reinforced and Composite Plastic Products (1989)	164	*\$15.00
SPPT-307	General Medical and Surgical Hospitals (1988)	182	*\$18.00
SPPT-308	Gold, Silver, Platinum, and Other Precious Metals Product and Reclamation (1990)	198	*\$20.00
SPPT-310	Mechanical Equipment Repair Shops (1990)	87	*\$8.00
**SPPT-311	Metal Finishing Industry (Includes Addendum) (1988)	236	*\$20.00
SPPT-312	Non-Agricultural Pesticide Application Industry (1991)	116	*\$10.00
**SPPT-314	Pesticide Formulating Industry (1987)	160	*\$15.00
**SPPT-315	Photoprocessing Industry (1995)	267	*\$25.00
SPPT-316	Printed Circuit Board Manufacturers (1989)	234	*\$20.00
SPPT-317	Research and Educational Institutions (1988)	144	*\$15.00
**SPPT-318	Stone, Clay, Glass, and Concrete Products Industries (1991)	120	*\$12.00
SPPT-319	Thermal Metal Working Industry (1990)	195	*\$20.00
	Hazardous Waste Minimization Checklist and Assessment Manuals Manuals developed to aid manufacturers in evaluating their shops for waste minimization opportunities.		
SPPT-400	Automotive Repair Shops (1988)	47	*\$5.00
SPPT-402	Metal Finishing Industry (1993)	143	*\$15.00
SPPT-403	Paint Formulators (1991)	40	*\$5.00
SPPT-404	Pesticide Formulators (1990)	20	*\$2.00
SPPT-405	Electronics Industry (1996)	76	*\$7.00
SPPT-406	Auto Paint Shops (1992)	12	*\$1.00
SPPT-407	Building Construction (1992)	28	*\$3.00
SPPT-408	Ceramic Products (1993)	27	*\$3.00
SPPT-409	Marine Ship and Pleasure Vessel Boat Yards (1993)	30	*\$3.00

DOCUMENT #	TITLE	PAGES	COST
SPPT-410	Jewelry Manufacturers (1994)	43	*\$4.00
SPPT-411	Commercial Printing Industry (1994)	54	*\$5.00
SPPT-412	Photoprocessing Industry (1995)	66	*\$6.00
	Waste Minimization Assessments of Specific Facilities		
**SPPT-504	Pollution Prevention Technologies at General Dynamics - Pomona, California. A variety of waste minimization technologies were technically and economically evaluated at an aerospace facility. Technologies range from computerized printed circuit board plating to solvent distillation. (1991)	9	*\$1.00
**SPPT-522	Waste Reduction Strategies for the Printed Circuit Board Industry. An assessment of the feasibility of achieving significant reductions of hazardous waste generated by the printed circuit board industry. (1987)	115	*\$10.00
**SPPT-502	Disposal of Heavy Metal Waste Sludges in Ceramic Products A laboratory-scale test to determine the feasibility of incorporating heavy metal sludges into manufacturing ceramic products. The process can be economical and is technically sound. (1990)	103	*\$10.00
**SPPT-519	Pollution Prevention Assessment of the Office of the State Printer Provides the findings of a pollution prevention assessment of the State Printing Plant and can serve as a waste minimization guideline for printers in California. (1991)	42	*\$4.00
**SPPT-521	Waste Minimization: Small Quantity Generators at Los Angeles International Airport Summarizes the results of a study that involved visits to five representative small-quantity generators and targeted waste minimization of used oil and jet fuel, cleaning operations, and paint stripping. (1990)	49	*\$5.00
SPPT-528	Assessment of the Aerospace Industry Facility Planning Efforts Presents the results of the Department's assessment of the aerospace industry's source reduction review and planning effort as mandated under the Hazardous Waste Source Reduction and Management Review Act of 1989. The report discusses the review of about 90 facility summaries and 22 plans and reports. (1993)	100	*\$10.00
SPPT-529	Assessment of the Petroleum Industry Facility Planning Efforts Presents an update of the Department's assessment of the petroleum industry's source reduction review and planning effort mandated by the Hazardous Waste Source Reduction and Management Review Act of 1989. The report discusses the source reduction review of approximately 18 petroleum industry facilities. (1997)	93	*\$10.00
SPPT-530	Assessment of the Semiconductor Industry Source Reduction Planning Efforts Presents the results of the Department's assessment of the semiconductor industry's source reduction review and planning effort as mandated under the Hazardous Waste Source Reduction and Management Review Act of 1989. (1994)	85	*\$8.00
SPPT-531	Assessment of California 1,1,1-Trichloroethane Users Source Reduction Efforts More than forty different companies representing over thirty different industries submitted source reduction documents with 1,1,1-trichloroethane substitution information. Thirty-five abstracts explain how these companies are making the transition to other cleaners. Document call-in and review conducted under authority of SB 14. (1995)	125	*\$12.00

DOCUMENT #	TITLE	PAGES	COST
SPPT-532	<p>Assessment of Selected Paints and Allied Product Manufacturers Source Reduction Facility Planning Efforts</p> <p>Summarizes the results of the Department's assessment of the paint manufacturing industry's source reduction and facility planning efforts. The Department requested and reviewed Plans and Reports from 26 facilities within this SIC Code (2851). (1995)</p>	37	*\$4.00
SPPT-533	<p>Assessment of the Polymers and Resins Industry Hazardous Waste Source Reduction Planning Efforts</p> <p>Presents the results of the Department's assessment of the polymers and resins industry's source reduction review and planning effort as mandated under the Hazardous Waste Source Reduction And Management Review Act of 1989. The Department requested and reviewed plans and reports from 31 facilities. (1996)</p>	75	*\$7.00
SPPT-534	<p>Assessment of the Metal Finishing and Plating Industry Source Reduction Planning Efforts</p> <p>Summarizes the results of the Department's assessment of the metal finishing and plating industry's source reduction efforts as mandated by the Hazardous Waste Source Reduction and Management Review Act of 1989. Plans and reports from 75 facilities were reviewed.</p> <p>Waste Stream Specific Information</p>	62	*\$6.00
**SPPT-511	<p>Metal Waste Management Alternatives 1989 Symposium Proceedings</p> <p>Contains papers delivered at two symposia in September 1989. The papers discuss metal waste disposal restrictions and alternatives to disposal such as waste prevention and current recycling technologies. (1989)</p>	252	*\$25.00
**SPPT-513	<p>Reducing California's Metal-Bearing Waste Streams</p> <p>Analyzes alternatives to land disposal of California's hazardous metal waste streams and focuses on methods that prevent waste generation. Source reduction, recycling, and treatment strategies are examined. (1989)</p>	174	*\$17.00
SPPT-607	<p>Aqueous Alternatives to Solvent Cleaning</p> <p>A summary of general information on many of the aqueous alternatives available to replace solvent cleaners. (1994)</p>	6	*\$1.00
SPPT-608	<p>Alternatives to Chlorinated Solvents in Cleaning Applications</p> <p>Discusses the chemical and process alternatives to chlorinated solvents in vapor degreasing, cold cleaning, printed circuit board defluxing, and handwipe operations. The report also summarizes the air, water, and waste regulations that apply to alternatives. Detailed case studies demonstrate the issues that firms must consider when they are selecting an alternative. (1994)</p>	132	*\$13.00
SPPT-609	<p>Simplified Guide for Evaluating Alternatives to Chlorinated Solvents in Cleaning Applications</p> <p>Presents a simplified approach for evaluating alternatives to chlorinated solvents in various cleaning applications. This approach is based on a detailed cross-media analysis of the alternatives in vapor degreasing, cold cleaning, wipe cleaning, and printed circuit board defluxing described in Document Number 608. Written by Dr. Katy Wolf of the Institute of Research and Technical Assistance (IRTA). (1995)</p>	22	*\$2.00
SPPT-610	<p>Compliance Assistance PCB Self-Inspection Checklist for PCB Waste Generators</p> <p>A checklist designed to approximate one that an Inspector might use while examining a facility for PCB compliance. Also provides regulatory references to assist in locating further information or regulations concerning specific issues or sections of the checklist. Both federal and California state PCB regulations are discussed. (1995)</p>	8	*\$1.00

DOCUMENT #	TITLE	PAGES	COST
SPPT-611	Parts Cleaning Alternatives in Machine Shops A guide to assist shop operators in the evaluation and adoption of alternatives to the use of 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113) and 1,1,1-trichloroethane (TCA) for parts cleaning. These two chlorinated solvents have been banned as of 1/1/96. The report is also a primer for those interested in pollution prevention strategies for machine shops. (1995)	16	*\$2.00
SPPT-612	Waste Management for Painters Explains practical waste management methods to eliminate or reduce waste generation, and safely recycle or dispose of leftover paint waste, wash water, containers, and used equipment. (1997) Local Government	3	No Fee
SPPT-527	Marketing Pollution Prevention 101: A Simple Guide for Local Governments Provides ideas to assist local agencies in getting industry more actively involved in pollution prevention programs. The guide has been developed by using information and case studies from various local agencies and consulting basic marketing techniques. (9/93)	42	*\$4.00
SPPT-507	Hazardous Waste Reduction: A Step-By-Step Guidebook for California Cities Outlines the essential elements of a successful city run, multi-media waste minimization program. It is designed to walk the user through steps the city can take to implement and reduce hazardous materials use and hazardous waste typically generated by city operations. (1992) Further Waste Minimization Information	180	*\$18.00
**SPPT-505	Hazardous Waste Minimization Bibliography References are organized in four sections: (1) general hazardous waste minimization topics, (2) industry-specific, (3) material-specific, and (4) available abstracts from the previous three sections. All references are listed in alphabetical order by title. (1991)	76	*\$7.00
SPPT-506	Incinerable Hazardous Waste Minimization Project Fact Sheet Provides an interim update for the project using 1990 data taken from the manifest system. (1992)	8	*\$1.00
**SPPT-508	Incinerable Waste Minimization Workshops Proceedings A compilation of the papers presented at two workshops held in January 1991. Areas covered include: regulations, source reduction, recycling strategies and opportunities, alternative technologies for petroleum refineries, electronics industry, aerospace industry, and chemical and paint manufacturers. (1991)	251	*\$25.00
SPPT-510	No-Waste Lab Manual for Educational Institutions A laboratory manual for introductory chemistry courses incorporating procedures that produce little or no toxic waste. This is accomplished by the use of consecutive chemical reactions so that the production of one reaction is used as the starting material for the next. (1991)	115	*\$10.00
SPPT-517	Waste Minimization for Hazardous Materials Inspectors: Introductory Text with Self-Testing Exercises (Module I), Assessment Procedures (Module II, Unit 1), and Metal Finishing Industry (Module III) Module I is written for use by both experienced and novice hazardous materials inspectors who wish to learn more about hazardous waste minimization. Module II provides basic information in conducting a self-assessment, and Module III focuses on some of the viable waste minimization alternatives for certain metal finishing operations. (Videotape also available - See Order #1500) (1991)	182	*\$18.00

DOCUMENT #	TITLE	PAGES	COST
SPPT-518	Waste Minimization Assessment Procedures: For the Generator (Module II, Unit 2) Provides the hazardous waste generator with procedures for conducting a self-assessment and introduces the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989. (1991)	81	*\$8.00
SPPT-526	Pollution Prevention 1993 - A Year in Review Documents the significant accomplishments and activities that have been achieved by the DTSC in the area of pollution prevention during calendar year 1993. The report highlights several very important projects which are being looked upon as national models. (1994)	96	*\$9.00
	Biennial Reports to the California State Legislature		
**SPPT-1206	Alternative Technologies for Recycling and Treatment of Hazardous Wastes (Third Biennial) A guide for hazardous waste generators seeking alternative waste management techniques and serves as a resource for the public and policy makers in government and industry. The technologies and economics described are critical considerations for the formulation of California's hazardous waste management policy. (1986)	186	*\$18.00
**SPPT-1203	Economic Implications of Waste Reduction, Recycling, Treatment and Disposal of Hazardous Wastes (Fourth Biennial) Reports on the cost/benefit of reducing hazardous waste in industry. Cost comparisons of site mitigation activities, industry waste minimization, and future liabilities of hazardous waste disposal are discussed. (7/88)	126	*\$12.00
**SPPT-1202	Alternative Technologies for the Minimization of Hazardous Waste (Fifth Biennial) Reports on activities relating to innovative hazardous waste minimization, recycling, and treatment technologies. (1990)	140	*\$14.00
SPPT-501	Pollution Prevention in California - An Overview of California's Pollution Prevention Programs (Sixth Biennial) An overview of California's multi-media pollution prevention programs at the State and local government levels. Industry pollution prevention case studies show how businesses respond to the pressure to reduce wastes. (1992)	110	*\$10.00
	Alternative Technology New and innovative alternative technologies.		
**SPPT-1200	Application of the Polysilicate Technology to Heavy Metal Waste Streams The polysilicate treatment technology has been applied to a variety of waste streams containing heavy metals. It differs from conventional forms of solidification/fixation/stabilization by forming a metal metasilicate as a by-product. It is still semi-empirical in nature and requires further research. (1987)	33	*\$3.00
**SPPT-1201	Final Report on CCBA (Coordinate Chemical Bonding Project) Phase III The goal of this successful project was to demonstrate that when mixing industrial sludges containing metal ions with highly absorptive clay, in proper proportions and at elevated temperatures, the metal ions will fuse into the clay's silica structure and render the resulting material nonhazardous. (1988)	24	*\$2.00
**SPPT-1204	Laboratory Scale Tests of the Circulating Bed Combustion of Spent Potliners Final Report (Includes Project Summary) Spent potliner (SPL) is a solid waste by-product of aluminum smelters that contains soluble species of cyanides and fluorides. The circulating bed combustor process treats SPL reducing both cyanide and leachable fluoride levels by specialized thermal treatment processes. (1988)	76	*\$7.00

DOCUMENT #	TITLE	PAGES	COST
**SPPT-1207	UV/Hydrogen Peroxide Treatment for Destruction of Pesticide Laden Waste - Final Report (Includes Project Summary) This system has been reported to be effective in degrading organic contaminants in water by a chemical oxidation process. The study focuses on the destruction of low level, aqueous pesticide wastes. (1987)	30	*\$3.00
**SPPT-1208	UV/Ozone Treatment of Pesticides and Groundwaters A discussion of a demonstration project using the Ultrox Ultraviolet light enhanced oxidation technique for a variety of organic contaminants including pesticides, halogenated compounds, phenols, benzene, and other aromatics. (1988)	36	*\$3.00
**SPPT-1209	Composting for Treatment of Pesticide Rinsates Final Report (Includes Project Summary) This study tests the viability of aerobic composting as a treatment option for low level pesticide wastes previously stored in evaporation ponds or landfills. (1988)	63	*\$6.00
SPPT-1211	Reclamation of Waste Foundry Sands: Fresno Valves and Castings, Inc., Waste Sand Reclamation Project (Technology Brief) Describes a project involving the reconditioning and reuse of most of the waste sand. (1995)	2	No Fee
**SPPT-1212	Alternative Technology Demonstration Project Report - Use of Kerr McGhee Chemical Corporation Boiler Fly Ash as a Feedstock in the Manufacturing of Southwestern Portland Cement This project determined that the use of Kerr McGhee fly ash as an ingredient in the manufacture of Portland Cement resulted in a cement product that effectively stabilized hazardous levels of nickel and vanadium present in the ash ingredient. (1992)	9	*\$1.00
**SPPT-1213	Alternative Technology Demonstration Project Report - Separation of Phosphor Powder, Glass and Endcaps to Enable Recycling of Spent Fluorescent Lamp Tubes A full-scale demonstration of this effective system was conducted with Mercury Technologies, Incorporated. (1993)	12	*\$1.00
SPPT-1214	Water Based Ink Wastes: Biodegradation Technology (Technology Brief) Describes a biologically based electromechanical system that uses horse manure as a source of microbes to biodegrade water based ink wastes. (1995)	2	No Fee
SPPT-1215	The Construction and Assessment of a Biological System for Biodegradation and Recycling of Pesticide Waste Experimental results and data of a biologically based, electromechanical system that uses horse manure as a source of microbes to biodegrade pesticide waste. (1993)	57	*\$5.00
SPPT-1216	Pesticide Rinsates: Biodegradation Technology (Technology Brief) Describes a biologically based, electromechanical system that uses horse manure as a source of microbes to biodegrade pesticide rinsates. (1995)	2	No Fee
SPPT-1217	California Environmental Technologies and Services Directory An alphabetical listing of over 1,100 CA environmental companies and a series of technology matrices giving detailed information about the company's involvement in the environmental industry. The Directory is only available on disk. (1993)		\$50.00

DOCUMENT #	TITLE	PAGES	COST
	Remedial Technology Demonstration Reports Independent technical evaluations of new, innovative, hazardous waste remedial technologies. Reports include details of bench-, plot-, or full-scale demonstration projects. The findings result in a DTSC conclusion regarding the project feasibility and provide the technical basis for any future permits for commercial operation. Reports are grouped by type of treatment.		
	Biological		
**SPPT-1300	Above-Ground Bioremediation of Biphenyl and Diphenyl Oxide Contaminated Soil Two pilot-scale demonstrations were conducted to evaluate the effectiveness of above-ground bioremediation of soil contaminated with a mixture of biphenyl and diphenyl oxide. The tests demonstrated that the addition of water and nutrients, and the tilling of the soil reduced the concentrations of the contaminants by about 50-60% with or without the addition of exogenous bacteria. (1991)	8	*\$1.00
**SPPT-1303	Biological Remediation of a Fuel Contaminated Soil Site in Carson, California - Protek Environmental, Inc. Diesel fuel-contaminated soil was biologically treated above-ground in treatment cells. Total petroleum hydrocarbons were reduced from 1,084 mg/kg to 2.0 mg/kg in 90 days in the treatment cells. Similar removal occurred in the control cell. (1990)	7	*\$1.00
**SPPT-1304	Bioremediation of Used Oil-Contaminated Soil at Two Caltrans Maintenance Yards - Groundwater Technology Corporation Provides results for full-scale bioremediation at two sites. At one site, a single pile was treated with an aqueous nutrient solution and passive aeration. At the second site, one pile was treated with an aqueous nutrient solution and active aeration while a second pile was used as a control. All piles showed some removal of hydrocarbons. (1990)	10	*\$1.00
SPPT-1320	Field Tests for Trinitrotoluene (TNT) Contaminated Soil I - Hercules, California A pilot-scale study was conducted to determine whether aerobic biological treatment processes could reduce concentrations of trinitrotoluene (TNT), dinitro toluene (D.T.), and dinitrobenzene (DNB) in soil. Two processes were investigated. One uses cultured indigenous bacteria, and the other uses a proprietary mulching agent. The estimated time required to achieve the established cleanup levels is in excess of 1,518 days using cultured indigenous bacteria and in excess of 833 days using mulching agents. (1991)	31	*\$3.00
SPPT-1321	Biological Treatment - Field Tests for Pesticide Contaminated Soil - Harmon Field Bench-scale tests were conducted to determine and select the best bacterial additive or conditions for remediating the pesticide contaminated soils at the Harmon Field site in Tulare County, California. Results from the tests indicated that the removal of pesticides in the test containers after 192 days of treatment were not achieved, and it is not clear if organochlorine pesticide concentrations have decreased at all. (1991)	25	*\$2.00

DOCUMENT #	TITLE	PAGES	COST
Chemical			
**SPPT-1305	Chemical Reduction of Hexavalent Chromium Contaminated Soils for a Site in Bakersfield, California Full-scale tests were conducted to determine the effectiveness of a chemical reduction process to treat hexavalent chromium-contaminated soils. The process was successful at reducing the concentration levels of hexavalent chromium by an average of 95.8%. (1991)	6	*\$1.00
**SPPT-1306	Hydrogen Peroxide/Catalyst Oxidation Process from a Gasoline Contaminated Site in Fullerton, California - Ensotech, Inc. Full-scale field tests were conducted to evaluate the effectiveness of Ensotech's hydrogen peroxide/catalyst process to treat soil contaminated with gasoline from a leaking underground fuel tank. Test results show significant reductions in gasoline concentrations in soil but no significant difference between the Ensotech process and the control. (1990)	20	*\$2.00
Physical			
**SPPT-1313	Soil Washing Technology for Low Volatility Petroleum Hydrocarbons - Ver's Construction Company A full-scale field demonstration of a portable soil washing system owned and operated by Ver's Construction Company was conducted at the Peterson Tractor site in San Leandro, California. Removal efficiencies of oil and grease as high as 71% were measured during a single pass through the washer. (1990)	6	*\$1.00
Stabilization			
**SPPT-1302	Bench-Scale Demonstration of a Metal Stabilization Process for a Site in Commerce, California-Silicate Technology Corporation Bench-scale tests were conducted to evaluate the effectiveness of Silicate Technology Corporation's process to stabilize soluble metals in lead-contaminated soil from a hazardous waste site. The treated soils showed significant reductions in soluble lead concentrations. (1990)	8	*\$1.00
**SPPT-1307	Metal Stabilization Process for Municipal Waste-To-Energy Ash - Lassen College A three part demonstration was conducted to evaluate the effectiveness of a sodium silicate/cement-based process used to stabilize heavy metal contaminated fly and bottom ash generated by a municipal solid waste-to-energy cogeneration facility. Results show the process has the potential to reduce soluble heavy metal concentration to below the California regulatory limits. (1990)	15	*\$2.00
**SPPT-1308	Portland Cement Stabilization Process for Lead - Contaminated Soil Six cubic foot batches of lead-contaminated soil were treated with differing ratios of Portland Cement. Average soluble lead concentrations were significantly reduced. (1991)	7	*\$1.00
**SPPT-1310	Silicate Stabilization Process for Heavy Metal Contaminated Soil at the Tamco Steel Site - Solids Treatment Systems, Inc. A full-scale demonstration of a silicate stabilization process was conducted. Soil contaminated with lead, zinc, and cadmium were treated by the Trezek or Lopat process. All leachable metal concentrations were reduced to below their respective hazardous waste thresholds. (1990)	7	*\$1.00
**SPPT-1314	A Stabilization Process for Soils Contaminated with Metals and Petroleum Hydrocarbons - Benz/Gabbita Consulting Services Bench-scale demonstration tests evaluated the effectiveness of a stabilization process to treat lead and petroleum hydrocarbons in a soil matrix. The ability of the process to stabilize total petroleum hydrocarbons could not be confirmed. (1990)	10	*\$1.00

DOCUMENT #	TITLE	PAGES	COST
Stabilization			
**SPPT-1315	Sulfide Stabilization Technology for Copper- Contaminated Soil - Toxco Incorporated Copper-contaminated soil was treated with a sulfide precipitation process that created reactive sulfides at levels that classified the treated soil as a RCRA waste. The pH was above the hazardous waste threshold of 12.5. (1990)	7	*\$1.00
Thermal			
**SPPT-1311	Soil Cleanup System for a Diesel Contaminated Site in Kingvale, California - Earth Purification Engineering, Inc. Full-scale field tests were conducted to determine the effectiveness of Earth Purification Engineering, Inc.'s Soil Cleanup System to treat diesel fuel-contaminated soil and to estimate the level of stack air emissions from the treatment. The system was successful at removing the diesel contamination from the soil, but did not achieve good destruction of the diesel in the stack gases. (1990)	15	\$2.00
**SPPT-1312	Soil Detoxification Utilizing an Existing Aggregate Drier - South Coast Asphalt Products Company Simple feasibility tests using an existing rotary drier at an asphalt batch plant were coordinated in 1986. Results of the demonstration indicated high gasoline removal but poor combustion of the gasoline vaporized from the soil. (1990)	3	No Fee
**SPPT-1316	Thermal Treatment of Hydraulic Fluid Contaminated Soil Tests were conducted to determine the effectiveness of U.S. Waste Thermal Processing's Mobile Thermal Processor, Model 100, to treat hydraulic fluid-contaminated soil and to measure the level of stack air emissions from the treatment. The Model 100 successfully removed hydraulic fluid from the soil and achieved good destruction and removal of the contaminants from the stack gases. (1991)	12	*\$1.00
**SPPT-1318	Thermal Treatment Process for a Diesel Contaminated Site in San Diego, California A full-scale field test was conducted to determine the effectiveness of Earth Purification Engineering, Inc.'s Soil Cleanup System to treat diesel fuel-contaminated soil. The system successfully removed the diesel contamination from the soil to below the established cleanup level of 1,000 mg/kg. (1991)	14	*\$2.00
**SPPT-1319	Thermal Treatment Process for Fuel Contaminated Soil U.S. Waste Thermal Processing Tests were conducted to determine the effectiveness of a mobile thermal processing unit to treat petroleum fuel contaminated soil. The tests were successfully performed on synthetically prepared gasoline and diesel contaminated soil. (1990)	30	*\$3.00
Other Remedial Technology Information			
SPPT-1350	Remedial Technology Applications Matrix for Soils and Sludges The Remedial Technology Applications Matrix was developed to identify treatment technologies applicable to treating contaminated soils and sludges that should be considered for hazardous waste site cleanup. (1991)	16	*\$2.00
Pollution Prevention Case Studies			
SPPT-1600	Zero Water Discharge in the Metal Plating Industry Using an Improved Ion Exchange Process (1996)	6	*\$1.00

DOCUMENT #	TITLE	PAGES	COST
SPPT-1601	Monsanto: the Synergy Between Total Quality and Pollution Prevention Source reduction measures implemented at a catalyst manufacturing facility. (1996).	8	*\$1.00
	Videos Source Reduction		
SPPT-1400	Hazardous Waste Minimization: Planning for Success (3 hours, 2 tapes) An interactive video conference on SB 14: The Hazardous Waste Source Reduction and Management Act of 1989. (1991)		\$25.00
	Waste Minimization		
SPPT-1500	Waste Minimization for Inspectors (Videotape of a slide show) (44 minutes) A three-section videotape of a slide show that provides a basic introduction to waste minimization and assessment procedures, and an excellent overview of waste minimization processes involved in metal cleaning, metal finishing, and printed circuit board manufacturing. (1991)		\$15.00
SPPT-1501	Why Waste?: Waste Minimization for Today's Businesses (28 minutes) Defines waste minimization and illustrates waste minimization successes in several different types of businesses. Source reduction and recycling case studies illustrate the environmental and economic benefits of implementing waste minimization programs. Is useful for training sessions and seminars focusing on innovative ways for reducing hazardous waste. (1990)		\$15.00
SPPT-1502	The Surfer, the Garbageman, and the Lady in the Sky (15 minutes) A videotape written, directed, and produced by high school students chronicles, from a student's perspective, a whimsical discussion of personal responsibilities relating to hazardous waste generation, resource conservation, and pollution prevention. The accompanying workbook, "economics and the Environment: Teamed for Success," provides a guide to teachers for class discussions and assignments through a series of case studies, interviews, and research materials. This is accomplished through presentations on the economic and environmental pros/cons of certain personal and business decisions related to using hazardous materials, energy, and natural resources. (1993)		\$15.00
	Human and Ecological Risk Division (HER)		
**HER-001	Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities, July 1992, reprinted September 1993 ¹	308	\$50.00
**HER-002	Assessment of Health Risks from Inorganic Lead in Soil, an Excel spreadsheet (9/ 93) ¹	18 pp 1 disk	\$25.00
**HER-003	CalTOX™, Version 1.5, A Multimedia Total Exposure Model for Hazardous Waste Sites (400 pages), an Excel spreadsheet (6 pages) (9/94) ¹	406	No Fee
**HER-004	Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part A: Overview, (84 pages) Part B: Scoping Assessment (17 pages) (7/4/96) ¹	101	No Fee

¹ You can obtain a copy electronically from the Internet at the Human and Ecological Risk Division world wide web site at:
<http://www.cwo.com/~herd1/downset.htm>.

DOCUMENT #	TITLE	PAGES	COST
	The following software products, developed by the Human and Ecological Risk Division, are available from the National Technical Information Service (NTIS) (703) 487-4650:		
	CalTOX™, A Multimedia Total Exposure Model for Hazardous Waste Sites (400 pages) , an Excel spreadsheet (6 pages), September 1994	406	\$250.00
	Catalog Number: PB95-500153 Macintosh PB95-500146 Windows		
	WasteCat™, Automated Waste Classification Software September 1995		\$65.00
	Catalog Number: PB95-504205GEI		

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7540-958-1039-7	Guidelines for Hydrogeologic Characterization at Hazardous Substances Release Sites: Vol. I Field Investigation	19	\$10.00
7540-958-1041-5	Guidelines for Hydrogeologic Characterization at Hazardous Substances Release Sites: Vol. II Project Management Manual	102	\$10.00
7540-958-1031-2	Representative Sampling of Ground Water for Hazardous Substances Release Sites	38	\$10.00
7540-958-1032-4	Drilling, Coring, Sampling, and Logging at Hazardous Substances Release Sites	31	\$10.00
7540-958-1033-6	Application of Surface Geophysics at Hazardous Substances Release Sites	23	\$10.00
7540-958-1034-8	Application of Borehole Geophysics at Hazardous Substances Release Sites	27	\$10.00
7540-958-1035-0	Aquifer Testing for Hydrogeologic Characterization	33	\$10.00
7540-958-1036-1	Ground Water Modeling for Hydrogeologic Characterization	21	\$10.00
7540-958-1037-3	Monitoring Well Design and Construction for Geologic Characterization	48	\$10.00
7540-958-1038-5	Reporting Hydrogeologic Characterization Data from Hazardous Substances Release Sites	18	\$10.00
7540-958-1030-0	Guidance for Preparation of Transportation Plans for Hazardous Substances Release Sites	43	\$10.00
7540-958-1022-1	Preliminary Endangerment Assessment Guidance Manual	87	\$17.80

Waste Evaluation Regulation Guidance Documents

7540-958-1044-0	Waste Classification Regulation Guidance Manual Note: The Department now offers all of the guidance documents on-line through its modern accessible Bulletin Board System (BBS). Persons who want to download the guidance documents should connect to the BBS at (916) 323-3353 via modem (modem set at 14.4 kbaud or less, 8 data bits, 1 stop bit and no parity), and see the information on Waste Classification and Guidance.		\$25.00
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Those wishing to review the documents but who do not have modem access may purchase the document with the above referenced number.

DOCUMENT #	TITLE	PAGES	COST
7540-958-1045-2	Handbook for the Analysis and Classification of Wastes Has been prepared to aid generators who have a potential hazardous waste to analyze and classify their waste using a simple step-by-step process developed in accordance with the statutes and regulations of the California Health and Safety Code (CHSC), the California Code of Regulations (CCR), the United States Code (USC), and the Code of Federal Regulations (CFR).	137	\$35.00
7540-958-1046-4	Regulation of Ethylene Glycol Wastes in California: A Regulatory Interpretation This document provides the basis for the Department's classification of certain ethylene glycol wastes as hazardous.	35	\$15.00
7540-958-1047-6	Final Statement of Reasons for Proposed Regulations This document contains the basis for the adoption of the hazardous, extremely hazardous and special waste criteria in California.	140	\$130.00
7540-958-1016-6	Excerpts from Health and Safety Code, Division 20 (2/97)	32	\$29.80

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