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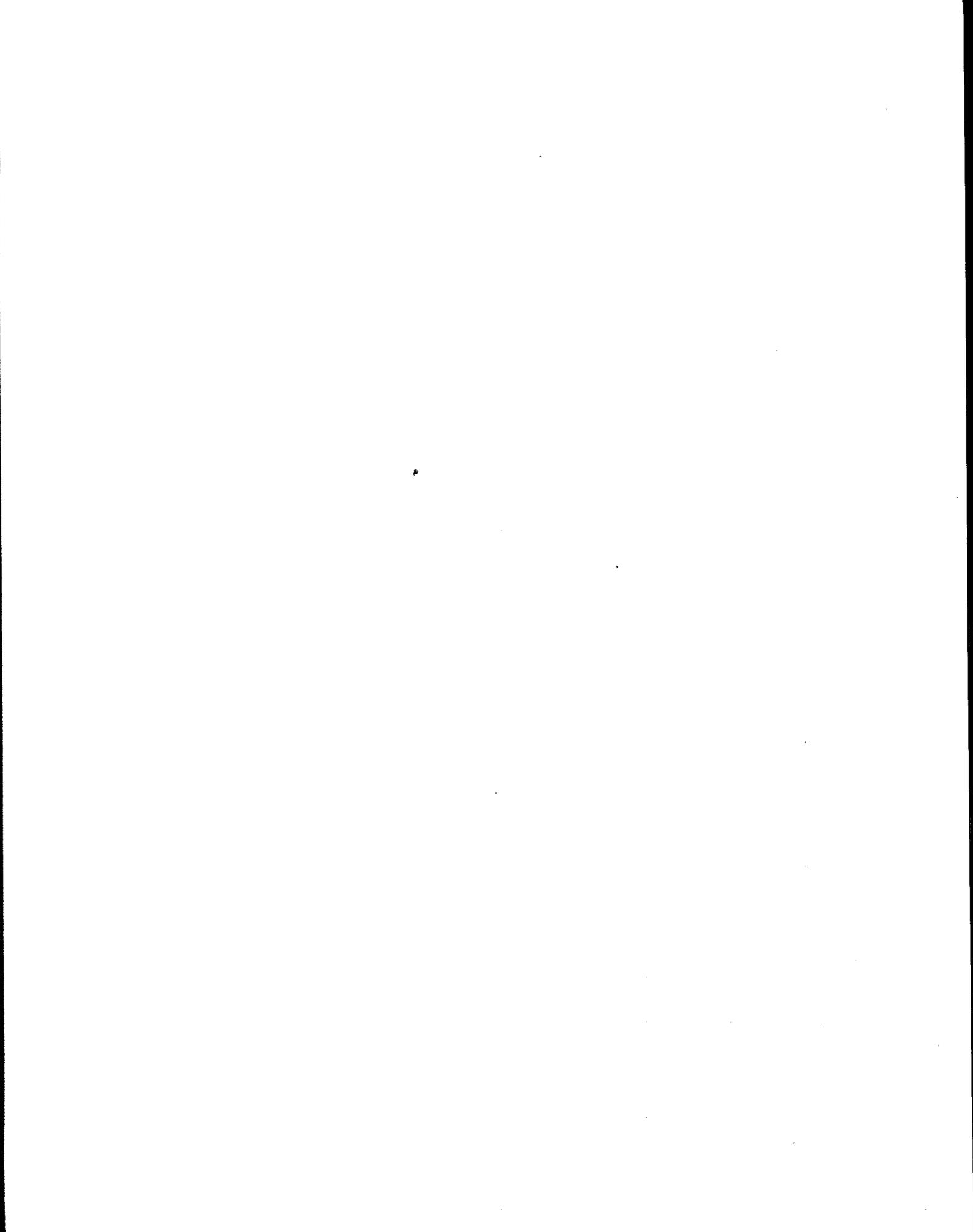
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Pollution Prevention at Industrial Laundries:

A Collaborative Approach in Southern California

A Demonstration Project of the Industrial Pollution Prevention Project (IP3)



POLLUTION PREVENTION AT INDUSTRIAL LAUNDRIES:

A Collaborative Approach in Southern California

INTRODUCTION

This was one of four regional demonstration projects of EPA's Industrial Pollution Prevention Project (IP3). It took place in Southern California. Its purpose was to demonstrate how enhanced communication and coordination among federal, state, and local regulatory agencies in a region of a state can be conducted to promote pollution prevention within a selected industrial sector.

BACKGROUND

The large number of federal, state, and local laws, regulations, policies, and enforcement practices regarding toxic pollutants is often overwhelming and sometimes conflicting, confusing, and frustrating to many businesses in Southern California (and undoubtedly elsewhere also). Recognizing the need for a pollution prevention (P2) program that is based on the unified efforts of all the regulators, the IP3 and EPA's Region 9 decided to conduct a demonstration project in Southern California which would demonstrate how such a unified, collaborative P2 program might work.

PHASES OF THE PROJECT

The first phase of the project was to collect and analyze in a cohesive way all of the existing statutory, regulatory, and planning requirements affecting multi-media pollution prevention in Southern California. Collecting, analyzing, and sorting out all these existing requirements resulted in a summary of the laws and regulations currently in place in California that create an incentive for industry and publicly owned treatment works (POTWs) to engage in pollution prevention activities. (See A Summary of the Regulatory Incentives for Pollution Prevention in the Appendices to this report).

The second phase was to establish the interagency multi-media P2 team that would be able to bring about the sought-for unified and collaborative effort. All agencies (federal, state, and local) with requirements affecting multi-media P2 in Southern California were formally invited to participate in this project. Twenty-four different agencies attended and participated in the project meetings. (For a list of the twenty-four agencies, see the Appendices to this report.)

The third phase was to implement the collaborative approach -- in partnership with a selected industry sector. This third phase is discussed in the remainder of this report.

IMPLEMENTING THE COLLABORATIVE APPROACH

Implementing the collaborative approach involved a process, findings, conclusions, project outputs, and lessons learned. Each is addressed in turn below:

Process

To control the scope of the project and keep it manageable, the interagency multi-media team decided to select one industry and limit the geographical area of the demonstration to the South Coast Basin in Southern California. The industry selected by the interagency team was industrial laundries. Industrial laundries were chosen for this demonstration project, for four primary reasons:

- (1) industrial laundries were experiencing some compliance problems.
- (2) the industrial laundries were willing to be active partners in the project.
- (3) U.S. EPA is in the process of developing effluent guidelines for industrial laundries. (The guidelines can include standards based on pollution prevention; therefore, it was important to all of the partners in the project to understand what pollution prevention practices are available to industrial laundries.)
- (4) industrial laundries are a service industry and are not so much generators of pollution as they are receptors of their customers' pollution problems; therefore, laundries represent a good opportunity for a program design that involves technical outreach (spreading P2 not just to the laundry sector but also to its customers, i.e., other industries) and a coordinated regulatory approach.

The project began with a general meeting to which all the project participants (EPA, state agencies, local agencies, and industrial laundries) were invited. Over 50 participants attended, representing 4 POTWs, 5 local agencies, 8 state agencies, 5 industrial laundries, and U.S. EPA. The project's aims were presented to the group, and the floor was opened for discussions on "What are the issues?" By the end of the day, the group reached a consensus about how the project should proceed. As a result of this general meeting, the project's strategy, milestones, and products were established. (See the Appendices to this report for the agenda, minutes, attendance list, and materials of this February 9, 1993 general meeting of the Multi-Agency Work Group.)

The multi-agency group's consensus was that the project should include (1) establishment of a core focus group comprised of POTWs, industrial laundries, state media agencies (air and solid waste), and local health agencies to meet regularly and more frequently than the larger Work Group; (2) preparation of discussion papers, meetings, and a final report; (3) workshops on P2 for industrial laundries and their customers; and (4) facility assessments at industrial laundries to identify opportunities for P2 -- with the findings to be presented at the workshops.

The core focus group was established. It met regularly and frequently and discussed various aspects of the industrial laundry business and areas where opportunities could be found for pollution prevention practices. (See the Appendices to this report for the core focus group meeting agendas and minutes, and see the "findings" section below for some of the results of the discussion meetings.)

Detailed facility assessments were conducted at industrial laundries throughout the region, and the findings and results of these assessments were presented at a big workshop held in June 1993. (For all of the findings and results of the industrial laundry assessments, see the IP3's EPA publication (EPA-820-R-95-0010), Pollution Prevention at Industrial Laundries: Assessment Observations and Waste Reduction Options, July 1995. For some of the findings, see the "findings" section below.)

The June 1993 workshop was developed as a blueprint for future workshops. The workshop took a multi-media approach and was conducted in partnership with the industrial laundries. Presenters at the workshop were from regulating agencies and industrial laundries. (See the Appendices to this report for the workshop agenda, attendance list, and materials.)

Findings

General -- Discussions with industrial laundry operators and management during facility site visits and during the project meetings revealed several key points:

- (1) Industrial laundries have coped with the problem of non-compliance with local toxic organics and oil and grease limits (notably in Orange County) by discontinuing the laundering of shop towels and shop uniforms at the facilities subject to stringent limits. Instead, the materials are taken to facilities not subject to stringent limits.
- (2) The major source of pollutants is from outside the industrial laundry facility, namely the customer's facility.
- (3) Industrial laundries, in general, are applying a few basic measures that promote internal pollution prevention, including waste heat recovery, automated detergent feed, and, in some cases, waste segregation.
- (4) Industrial laundries are subject to conflicting, single-media regulations and inconsistent requirements which result in overall reluctance to take the "risk" of pollution prevention innovations.

Regulatory -- Whereas, the first phase of this project looked at all the existing statutory, regulatory, and planning requirements affecting multi-media pollution prevention in California (see page 1 of this report and Summary of the Regulatory Incentives for Pollution Prevention in

the Appendices to this report), this third phase of the project identified those regulatory areas that have an impact specifically on industrial laundries and their customers and are in need of coordination for a multi-media pollution prevention program targeted to industrial laundries.

The Report on Areas in Need of Coordination (in the Appendices to this report) identifies and discusses specific air quality, water quality, solid/hazardous waste, and other regulatory programs that need coordination under any unified approach to pollution prevention in Southern California. These include the U.S. EPA air toxics regulations (MACT standards), several California air toxics regulations (e.g., T-BACT standards for TACs under AB 1807 and "Hot Spots" under AB 2588), several local air toxics regulations based on health risk assessments (e.g., SCAQMD rules 223 and 1401), regulations controlling Criteria Air Pollutants such as VOCs, NOx, SOx, and particulates (e.g., SCAQMD has one of the most stringent programs in the nation for the control of VOCs), U.S. EPA effluent guidelines (currently under development for industrial laundries), local effluent limits set by POTWs, U.S. EPA hazardous waste regulations under RCRA, U.S. EPA sludge regulations, California sludge regulations, U.S. OSHA regulations, California OSHA regulations, California Proposition 65, U.S. DOT hazardous materials transport regulations, and more.

Of greatest concern to industrial laundries is that they need resolution of the "shop towels as hazardous waste" issue. Serious problems and inconsistencies are faced by industrial laundries when shop towels are considered to be a regulated hazardous waste under RCRA. (For details of this issue and how two states have resolved it, see the minutes of the February 9, 1993 meeting of the Multi-Agency Work Group in the Appendices to this report.)

The EPA Region 9 position is that towels with listed solvents on them are, by virtue of the "mixture rule," hazardous waste under RCRA. Region 9 cites lack of national guidance on this issue, the problem of setting legal precedent, and the fact that the matter is being treated as a low enforcement priority. The response from laundries is that just saying it's a "low enforcement priority" does not help; they are still open to possible NOV's, liability concerns, and suits by public interest groups. Laundries cannot go on with that uncertainty. One of the largest laundry chains in California has made a corporate decision no longer to accept inkers from printers, in part due to the atmosphere of uncertainty as to whether or not these towels could be considered hazardous waste.

The California state RCRA program must be at least as stringent as the federal RCRA program. So everyone in California must look to U.S. EPA for interpretation of this "shop towels as hazardous waste" issue.

Although it was understood that this project was not the appropriate forum for ultimately resolving that issue, there was definite shared benefit from allowing the issue to be put on the table as a problem of primary concern to the regulated community. Furthermore, the discussion which took place may serve as a catalyst leading to a solution.

Pollutants of concern -- Some of the specific pollutants of concern for industrial laundries and probable sources of those pollutants are:

- lindane (agriculture, pest control companies)
- tri methyl benzene (not clear)
- bis (2 ethylhexyl) phthalate (cutting oils, furniture manufacturing, machine shops, maintenance of machinery)
- methylene chloride (maintenance of machinery, auto repair, printers, graphics, furniture manufacturing)
- copper (printers, metal finishers)
- silver (printers, metal finishers, photo processors)
- zinc (agriculture, pest control, laundry chemicals, auto repair)
- chromium (metal finishers)
- TCE (printers, automotive, metal finishers, aerospace)
- TCA (printers, automotive, metal finishers, aerospace)
- nickel (auto repair)
- benzene (auto repair, printers, refineries)
- chloroform (health services)
- MEK (auto repair, printers, labs)
- xylenes (auto repair, printers, labs)
- cadmium (printers, graphics)

For a more detailed "cross-walk" of principal waste management problems encountered by laundries and the probable major sources of those problems, see Industrial Sector Customers and Probable Problems/Pollutants for Laundries in the Appendices to this report.

The usual discharges to the environment from industrial laundries are washwater draining to sewers, solvents from fabrics evaporating to the air, filter cakes taken to landfills, and oil from water/oil separators taken to recyclers. The facility assessments confirmed that, while there are sources of pollutants internal to the laundry (e.g., detergent residues, truck cleaning, etc.), the bulk of pollutants found in the laundries' discharges originate in the material received from customers. Toxic organic compounds and oil and grease were the two pollutants most causing the industrial laundries to be in non-compliance with environmental regulations. The greatest contributor of those two pollutants were shop towels (and rags and uniforms) impregnated with solvents and oil. (Restaurant linen was also a considerable source of grease and oil (of animal and vegetable origin).)

Water reuse issues --The issues surrounding water conservation and reuse in laundries focused, in general, on cost effectiveness, potential for cross-media transfer, and limitations on how far one can go with conservation measures before pretreatment limits that are concentration-based become problematic. Points included:

- What can Sanitation Districts tolerate in effluent to allow for reuse? (e.g., the Chino/San Bernardino/Riverside area POTWs cannot take effluent with high TDS because of need to reuse treated water for agricultural purposes in those basins.)
- While not all water efficiency measures require large inputs of energy, many do and this can become a limiting factor. Right now, energy costs limit water reuse. If cost of water goes up, however, then water reuse may become more cost-effective.
- Cross-media impacts exist and cannot be overlooked when thinking about water reuse (especially if energy usage is involved).
- Laundries are already quite efficient now, in terms of water use. Price increases for water (from \$638/acre-foot to \$1692/ acre-foot) have already created an incentive to be water-efficient. Many laundries already reuse water. Segregation of wastewaters within the laundry can make water reuse easier.

Pretreatment issues -- The key issues surrounding pretreatment limits for laundries were focused on the problem of concentration-based versus mass-based standards and the problem associated with total toxic organic (TTO) limits that may be technically infeasible to reach with pretreatment. (While low TTO limits might be seen as a motivator for pollution prevention, laundries have another way to address such limits and that is to ship the shop towels to another plant in a less restrictive district. Many are doing that. Some are shipping them even to Mexico.) Points on pretreatment issues included:

- Concentration-based limits may impair further improvements in water reuse. However, mass-based limits can be difficult to implement by the Sanitation Districts. One needs to be able to meter the flow of effluent.
- TTO limits and safety are a concern for industrial laundries accepting solvent-laden towels. One major Southern California laundry has decided to no longer accept inkers from printers.
- Need realistic limits. (The general feeling among launderers is that Orange County's TTO limit of 0.58 ppm is unrealistically low.)
- TTO limits -- may be addressable by pollution prevention.
- There is a problem with POTW limits differing in different districts. Hard to provide a consistent message to customers. Customers and/or the laundries can shift business to less restrictive districts; or, smaller laundries with no pretreatment requirements can end up getting the dirtiest accounts.
- Some POTWs simply ban shop towels in their districts. San Bernardino said "no shop towels" and effluent at one laundry facility went from 17 ppm (xylenes) to non-detectable (all organics); but it was not really an environmental benefit because the laundry sends the shop towels to its Los Angeles facility instead.

P2 options --The project showed that there are pollution prevention opportunities available for both laundries and their customers. For both, the establishment of and adherence to a set of best management practices (BMPs), followed by continuous improvement in searching for ways to minimize the generation of pollutants, is the key. (See the project document, Pollution Prevention at Industrial Laundries: Assessment Observations and Waste Reduction Options, referred to on page 3 above.)

There is a range of laundry processes and activities which could be candidates for an in-house look at pollution prevention opportunities at industrial laundries. (See the flowcharts in the Appendices to this report.) For example, the use of laundering chemicals in the prespotting, washing, bleaching, or other textile treatment steps should be looked at because they could contribute toxics such as phenolic compounds, chloroform, and zinc, as well as cause problems with conventional pollutants such as high pH and BOD.

The Multi-Agency Work Group agreed, however, that one of the biggest problems for laundries and the area of most concern for regulatory agencies is dealing with shop towels. The pollution prevention options for laundries that process shop towels could include:

- 1) education of their customers on P2 opportunities to prevent shop towel contamination;

- 2) use of BMPs at the customer's site prior to transportation to minimize the amount of solvent in the material accepted by the laundry for washing; and
- 3) use of BMPs for the safe handling of solvent-laden shop towels, which might include:
 - Requirement of no free liquids
 - Use of the paint filter test (used by some states)
 - Use of a wring test (hard to standardize)
 - Collection containers with mesh bag (to allow free liquids to settle)
 - Weigh towels and reject those above certain weight
 - Centrifuges mounted on trucks

A more complete and detailed list of BMPs for shop towels, both for the laundries and for the customer, was produced by the project -- along with two pages of points on why BMPs are important and how they are beneficial for the laundries. (See the Appendices to this report for these project outputs.) They were developed for the workshops and were disseminated to the laundries and their customers.

In certain states, the use of BMPs has provided regulatory relief to industrial launderers:

- In Minnesota, the Minnesota Pollution Control Agency policy since 1989 has been that if generators of reusable textiles containing hazardous waste solvents wring them out, either by hand or with a mechanical wringer, to remove the maximum amount of liquid, the wrung-out reusables may be transported without manifesting. (If that generator elects not to wring out towels, they must be managed as a RCRA hazardous waste and cannot be laundered.) If a launderer elects to install and operate a centrifuge or some other method of extracting liquids prior to laundering, no hazardous waste facility permit is needed.
- In Washington, the Washington Department of Ecology since 1992 has provided that used shop towels contaminated with hazardous substances which may be designated as "dangerous" under state law, may nevertheless be exempted from compliance with dangerous waste requirements -- if both generator and launderer follow specific BMPs. If soiled textiles are handled according to BMPs, facilities are not subject to generator, transporter, or permitted TSD requirements, and the textiles are not "counted" as hazardous or dangerous waste.

Besides the importance to the Southern California industrial laundries of resolving the national "shop towels as hazardous waste" issue, there also needs to be ongoing interaction between the local POTWs and the laundries. Laundries want to know what causes problems for POTWs (e.g., What are their contaminants of concern? What's hard for them to treat?)

There needs to be a dialogue and a cooperative effort between POTWs and laundries to help identify whether or how the laundries' customers are contributing to POTW problems and what can be done about it. Laundries and POTWs need to focus on ways of transferring information, making sure that information gets to small laundries too.

Finally, it is important that laundries and regulatory agencies work cooperatively together in providing to customers training and periodic retraining in P2 and the use of BMPs.

Conclusions

General -- The project concluded the following:

- (1) Any effective P2 program for industrial laundries needs to extend into the customer's shop. The customer is an integral part of the industrial laundries' environmental compliance program. (This reality was a major reason industrial laundries were selected as the industry for this demonstration -- because involving the one industry (industrial laundries) in a P2 emphasis naturally leads to involving many other industries as well.)
- (2) Customer education and outreach must be done in such a way so as not to endanger the laundry's business with that customer.
- (3) The transfer of solvents, oils, and other pollutants to towels, rags, and uniforms by the customer should be considered emissions to the environment and should be accounted for in the customer's overall emissions.
- (4) A P2 program for customers needs to be applied universally and consistently to retain competitiveness of individual laundering facilities.
- (5) Industrial laundries' control of emissions from customers to the laundering facility needs to be done in partnership with the customer -- and with the support of regulators.

The challenge for regulators and industry is to find a mechanism, both regulatory and administrative, to extend P2 beyond the industrial laundry facility into the customer's shop and incorporate the customer (i.e., the generator of the pollutants) into the P2 program. The basis for developing such a mechanism should be a partnership among laundry, customer, and regulator, supported by a mix of regulatory mandates and incentives.

A P2 strategy -- The interagency multi-media team, in cooperation with management and personnel representatives of industrial laundries, developed a strategy which an industrial laundry could adopt for the P2 program:

- (1) Make everyone a part of the same P2 team -- internal team members would include laundry operating personnel, staff and management, distributors and route drivers; external team members would be the laundry's customers.
- (2) Develop best management practices (BMPs) for internal and external handling of laundry -- at the laundry and at the customer's shop.
- (3) Train and periodically retrain internal staff and customers.
- (4) Use route representatives and salesmen to disseminate BMPs and ensure that these practices are consistently applied in the customer's shop at pick-up, transfer, and delivery.
- (5) Develop an awards program.

The workshop held in June 1993 put forth ideas and materials industrial laundries and regulatory agencies can use to implement this strategy (see the Appendices to this report).

Project Outputs

As a result of this project, five major products were developed for the use of industrial laundries and regulators. (See the Appendices to this report for the first four of the following.)

- (1) A Summary of the Regulatory Incentives for Pollution Prevention in California and a Report on Areas in Need of Coordination in regulating industrial laundries.
- (2) Best management practices for industrial laundries and their customers.
- (3) A strategy for the dissemination of best management practices to customers.
- (4) A workshop and materials for industrial laundries to inform and educate industrial laundries and regulators in P2 practices and issues for laundries.
- (5) Pollution Prevention at Industrial Laundries: Assessment Observations and Waste Reduction Options, July 1995 (EPA-820-R-95-0010).

In addition, the project brought together in Southern California all the different regulatory agencies and industry for the first time -- as a team. It institutionalized a new ongoing dialogue

among all the regulatory players. It can serve as a model for how this collaborative, team approach can be done in other regions.

Some Broad Lessons Learned from this Demonstration Project

Lesson 1 -- When regulators regulate industry they must acquire a thorough understanding of individual industries and tailor regulatory mandates based on the requirements, issues, and constraints of the industry. One stakeholder who has such a complete understanding is industry. Industry needs to be at the table with regulators. There should be an understanding on both sides that pollution prevention is both environmentally and economically beneficial. Industry and regulators each must be able to answer, in a way that is satisfactory to each other, the question, "What's in it for me?" This stakeholder partnership should include trade associations and labor representation, such as trade unions.

Lesson 2 -- Years of command-and-control adversary relationships between environmental regulators and industry have created a high level of mistrust between these two stakeholders. Industries, especially medium-sized and small, are reluctant to deal with regulators and feel ill-equipped to "fight" what has been known as a battle. Large industries may be easier to involve in a partnership. Their help as leaders and "mentors" for the smaller companies can be tapped to attract smaller businesses into partnerships. Any partnership project with industry will require lengthy negotiations and discussions. Awareness and sensitivity to the competitive forces between companies is an important element of such partnerships.

Lesson 3 -- Regulatory uncertainty and the patchwork of local regulations and limits are a barrier to P2. Industrial laundries deal with a variety of regional and local requirements, often unrelated to one another. Because of this, laundries face different competitive and market forces from region to region that create a condition of inequity among laundries that operate in different regions. There is no uniform incentive to apply P2 with the customer. There is reluctance to become strict with a customer, while another laundry, in another region, does not have to be strict because the discharge limits allow that laundry to be more lax.

Lesson 4 -- Industrial laundries are a unique industry and require unique, innovative regulatory approaches. (This is probably true of any service industry.) An industrial laundry's (or any other service industry's) approach to attaining compliance should include a customer "source control." Laundries and similar service industries, in order to attain compliance, need to have a program that combines treatment of waste with source control or pollution prevention in their customer's shop. Service industries, however, need equitable regulatory support to integrate pollution prevention and source control into their environmental compliance program. The requirements placed on laundries and their customers need to be equitable and universally applied, not only to avoid geographic transfers of pollutants to a less regulated area, but also so that each laundry can retain its market and competitive edge.

EPILOGUE

The valuable lessons learned from this demonstration project have been disseminated in a number of ways. The findings from the project were presented at the Water Environment Federation Conference in October 1993, at the annual conference of the Institute of Industrial Launderers in November 1993, at the California Local Government Pollution Prevention Conference in October 1994, and at other conferences. The Institute of Industrial Launderers has disseminated information from the project to its members by including project findings and materials in its publications. The materials from the project have been given to U.S. EPA Headquarters for consideration, as EPA works on new effluent guidelines for industrial laundries. There have undoubtedly been many other ways word has been spread about the results of this collaborative partnership.

It was and continues to be the intent of EPA's Industrial Pollution Prevention Project (IP3), which spawned this demonstration project, that the collaboration and cooperation that was instituted by this project will continue on into the future. Especially with EPA continuing to work on developing effluent guidelines for industrial laundries, it is important to maintain the partnerships established in this project.

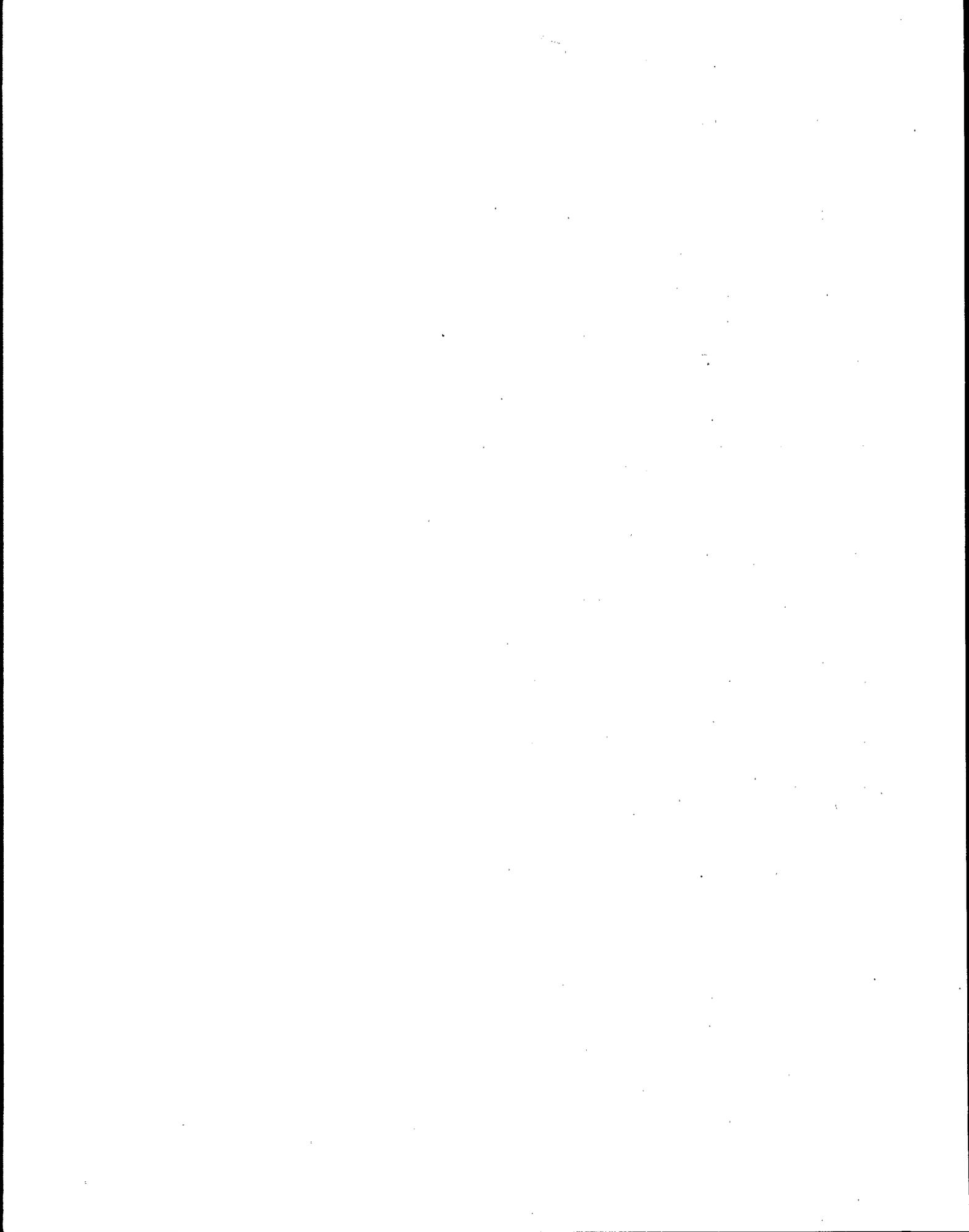
For example, it is important to: (1) continue with the core focus group meetings with industrial laundries and local agencies to assess progress in implementing BMPs, to serve as a sounding board for the U.S. EPA's effluent guidelines work group, to work on other existing and emerging issues, and to conduct any issue-specific meetings of value to participants; (2) have local agencies, with the laundries, jointly coordinate P2 outreach (e.g., a joint letter from different regulatory agencies emphasizing BMPs) to the laundries' customers; and (3) continue -- as a team -- to publicize and disseminate the findings and materials from the project.

Also, as a follow up to the IP3's demonstration project, U.S. EPA Region 9 has initiated an industrial laundry showcase project under its Merit Pollution Prevention Partnership program. The showcase project brings together representatives of U.S. EPA, Los Angeles County, and a Southern California industrial laundry. The project seeks to measure the effectiveness of three P2 approaches: (1) BMPs at the laundry, (2) in-process recycling and treatment at the laundry, and (3) a customer outreach program. Results of this project will be disseminated throughout the regulating community and to industrial laundries across the country.

In summary, the overall message of the IP3's "collaborative approach in Southern California" is that the best way to get good things done is through partnerships. In order to be most effective in promoting the implementation of pollution prevention, we need a sense of partnership among the various regulators, among the regulators and the regulated, between POTWs and their users, and between industrial laundries and their customers. This project has demonstrated that these parties can work successfully together in a spirit of collaboration and cooperation. It is important that this spirit that has been established in Southern California continue there and be fostered in other places as well.

APPENDICES

- O A Summary of the Regulatory Incentives for Pollution Prevention
- O Regulatory and Pollution Prevention Contacts at Key Governmental Agencies
- O Report on Areas in Need of Coordination
- O The 24 members of the interagency multi-media team
- O The February 9, 1993 general meeting of the multi-agency work group
- O The core focus group meetings
- O Industrial Sector Customers and Probable Problems/Pollutants for Laundries
- O Laundry process flowcharts
- O Best Management Practices (BMPs) for industrial laundries and their customers
(and why BMPs are important and beneficial)
- O Strategy for the dissemination of BMPs to customers
- O Industrial laundries P2 workshop and selected workshop materials
(Note: Workshop materials included or cited elsewhere in this report or in the appendices
to this report are not included here in this appendix.)



A Summary of the Regulatory Incentives for Pollution Prevention

AIR QUALITY

U.S. Environmental Protection Agency (USEPA)

Clean Air Act Amendments

Air pollution control agencies have not historically regulated toxic chemicals released into the air except for their ability to create smog. The Clean Air Act Amendments of 1990 will dramatically increase the scope and number of chemicals regulated as air toxics. The USEPA will soon be promulgating a series of regulations requiring the implementation of the maximum achievable control technology for 189 hazardous air pollutants. As emitters of some of these compounds, Publicly Owned Treatment Works (POTWs) may face new regulation as a result of the 1990 amendments. Like other air quality regulations, it is probable that local and regional air quality agencies will actually enforce the regulations developed by the USEPA.

As emissions control at the POTW itself is difficult, POTWs may choose to minimize the inflow of the hazardous constituents via a pollution prevention effort in order to avoid the regulations.

State, Regional and Local Air Quality Control Agencies

The State Air Resources Board (ARB) regulates the production and emission of air pollutants. The bulk of air regulations are implemented by local agencies called Air Pollution Control Districts (APCDs). In an attempt to manage air quality on a regional or air basin-wide scale, Air Quality Management Districts (AQMDs) operate as APCDs on a multicounty basis. APCDs promulgate rules and limits relevant to maintaining air quality in their particular jurisdiction and issue permits. They are responsible for enforcing rules established by the USEPA and ARB and operate semi-autonomously in their pursuit of air protection.

APCDs regulate each of the three main phases of Publicly Owned Treatment Works (POTW) wastewater treatment. When wastewater first enters the facility, and throughout the treatment processes, it has the potential to constitute a public nuisance by virtue of its annoying odors. Residual solids extracted from wastewater are also odorous. Most APCDs have established rules which mandate odor control.

In addition, organics in the wastestream are often volatilized when they go through turbulent treatment processes. Sludges may also contain organics which volatilize. Because some organics are toxic, and therefore constitute a health risk, the levels of Volatile Organic Chemicals (VOCs) emitted are also regulated.

If the POTW uses an anaerobic digester to treat sludge, as many do, methane and other gases produced may be burned in a boiler and used for on-site energy

cogeneration, or flared. These processes are regulated by APCDs for health risk, as well as for their smog contributing constituents. If there is a visible plume from oxidation, the facility is also subject to air opacity limits.

Beyond setting limits and granting permits, some APCDs require POTWs to inventory all of the VOCs and odors resulting from their processes. Additionally, in some severely impacted districts, any new source of emission in the basin is required to offset its contribution by some means. POTWs, as public service facilities, qualify for exemptions to some rules on a case by case basis.

Air Toxics and "Hot Spots"

The ARB has a program in place to identify and control toxic air contaminants (TACs). As of September 1992, eighteen substances have been identified as TACs. Air control measures have been adopted for five of the identified TACs. Over 2,000 stationary sources statewide will be impacted by the control measures. The control measures advocate the use of pollution prevention whenever possible to help reduce emissions of TACs.

The ARB also implements the Air Toxics "Hot Spots" Information and Assessment Act, passed in 1987. Under the Air Toxics "Hot Spots" Act, stationary sources are required to report the type and quantity of certain air contaminants their facilities routinely release. Air releases of interest are those that result from the routine operation of a facility or that are predictable, including but not limited to continuous and intermittent releases and process upsets or leaks. The Act requires owners or operators of facilities to prepare and submit a variety of documents to APCDs. These documents include an air toxics emission inventory plan, a subsequent emission inventory, and for high priority facilities, a health risk assessment. If, when reviewing inventories, the APCD judges that significant health risks are posed by a facility's emissions, the operator must notify all persons exposed.

The ARB has also developed a program to make the emission data collected under the "Hot Spots" Program available to the public. A list of substances posing a chronic or acute health threat when present in the air is compiled and maintained. Facilities meeting criteria to prepare air toxics emission inventory plans and subsequently, emission inventory reports must submit emission data to their APCD.

Facilities are categorized into high, intermediate, and low priority. Facilities designated high priority must submit a health risk assessment to the district for approval. Facilities which are subject to inventory reporting requirements are also charged a fee by their APCD to recover the costs of operating the "Hot Spots" program.

Pollution Prevention & Air Quality Regulation

Although neither the ARB or the APCDs usually mandate pollution prevention activities, it is strongly advocated as a measure to reduce emission of controlled TACs. In addition, as with regulations for most environmental media, businesses have the opportunity to get out of the "regulatory loop" by reducing wastestreams through the use of pollution prevention. In many instances, the desire to avoid the regulations altogether by removing regulated constituents from their wastestream is one of the most powerful motivations for pollution prevention. Additionally, APCDs may include pollution prevention or source control techniques as part of "Best Management Practices" that facilities are required to implement.

From the POTW perspective, pollution prevention can play a role in addressing air quality regulations. If an air pollutant is found in high concentrations at a POTW, agency staff can attempt to determine where the pollutant is entering the system and work with the discharger to reduce the inflow to the system. Moreover, if a class of compounds, like VOCs, are creating an air quality problem for the POTW, a pollution prevention effort can be focussed on the whole universe of dischargers of VOCs.

Given the huge quantities of air emissions resulting from wastewater treatment, however, hazardous constituents may often be present only in small undetectable quantities. When a pollutant is not detected in a facility's emissions, APCDs sometimes choose to assume that the pollutant is present at a concentration of one-half of the detectable limit. This one-half concentration, when multiplied by the large volumes of air emitted by a POTW, can result in fairly high numbers when conducting an assessment under the "Hot Spots" Act. It may be difficult for pollution prevention to address this particular problem.

The public disclosure provisions under the "Hot Spots" Act also provide an incentive for both industrial facilities and POTWs to minimize their emissions. Having to notify your neighbors that your facility is creating a health risk that air quality agencies have determined is significant is a task that few facilities are likely to cherish. Avoiding the need to do so by reducing air emissions is an option many facilities will pursue.

WATER QUALITY

United States Environmental Protection Agency

The Federal Clean Water Act established much of the laws and subsequent regulations limiting the discharge of pollutants into the nation's waterways. A series of guidelines have been established that limit discharges based on available technology and type of business. In California, the State Water Resources Control Board and local POTWs implement most of the law.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) of the California Environmental Protection Agency regulates the use and protection of surface and groundwater in the State of California. The Water Resources Control Board implements most of its water pollution control laws through subsets called Regional Water Quality Control Boards (RWQCB).

POTWs regularly discharge water resulting from the treatment process to surface water bodies. As dischargers to surface waters they are regulated under the federal National Pollutant Discharge Elimination System (NPDES). The State Water Resources Control Board has been authorized by the U.S. EPA to implement the NPDES program in California. The NPDES Program requires the State to monitor the volume and constituents of wastewaters that are discharged. Using information gained from the monitoring, RWQCBs grant permits to direct dischargers, either large industrial entities, or POTWs, based on the pollutant load that bodies of water can withstand. Permits usually specify the volume and concentration of pollutants allowable in the discharge of each permit recipient.

Large industrial facilities may discharge to surface waters, and therefore be regulated under the NPDES program as well. However, most businesses do not qualify to discharge directly to bodies of water, and instead simply discharge to sanitary sewers. As will be discussed in the Publicly Owned Treatment Works section, those that discharge to sanitary sewers are regulated by the operator of the sewer system.

RWQCBs have the power to mandate the use of best management practices for selected dischargers. These practices may include the use of pollution prevention or waste minimization techniques to achieve lower discharges. In the San Francisco Bay, the RWQCB has required POTWs to implement pollution prevention programs as a condition of their permit.

Publicly Owned Treatment Works and Sanitation Districts

Under the NPDES Program implemented by SWRCB, RWQCBs set limits to a POTW's discharge. In order to meet their requirements, POTWs have implemented permit systems for industrial facilities which discharge into the POTW's sanitary sewer systems. Therefore, businesses are limited in the amount and concentration of constituents of their discharge to the system.

Pollution Prevention & Water Quality Regulation

In order to meet discharge limits, business and POTWs may implement pollution prevention programs to reduce discharges. Unlike wastewater treatment, businesses may find that pollution prevention technologies will allow them to reduce their

discharges without creating sludges that are difficult to dispose of. From the POTWs' perspective, pollution prevention may be the only way to deal with some problems in a cost-effective way.

SLUDGE REGULATION

POTWs generate vast quantities of sludge through their treatment processes. Sludge programs may be implemented by states through existing NPDES programs, through solid waste programs that manage land disposal or through air programs that manage sewage sludge incinerators. When standards are finalized for the beneficial use and disposal of sludge in mid-1993, the State will again have the opportunity to delegate the sludge program to either a water, solid waste or air department. Currently, the SWRCB implements a U.S. EPA sludge regulation program for California under 40 CFR Part 123 Rules.

The federal sludge regulatory program, established pursuant to amendments to the Clean Water Act, requires the imposition of specific permitting requirements for the beneficial use and disposal of sludge. Section 405 of the Clean Water Act requires EPA to promulgate technical standards, referred to as Part 503 Rules, for the use and disposal of sewage sludge that protect public health and the environment. The SWRCB permits sludge generators, users and disposers.

To maintain compliance with sludge specifications, POTWs may implement pollution prevention programs to augment their pretreatment programs. In doing so, the POTW may be able to reduce the level of hazardous compound found in their sludge without passing additional regulations.

SWRCB implemented sludge regulations may affect businesses that create sludge through the use of onsite wastewater treatment systems. As mentioned, unlike POTWs, most industrial facilities discharge to sanitary sewer systems, operated by POTWs or municipalities. To achieve acceptable levels of toxics in wastewater for discharge to the sanitary sewer system, many facilities must apply some sort of treatment to their wastewater. Depending upon what types of residuals are present in the wastewater, it is common to create sludge when purifying discharges. Unlike POTW sludge, industrial sludge often has high levels of hazardous constituents which make it difficult and expensive to dispose of. Pollution prevention technologies that eliminate the need to treat wastewater will eliminate the need for businesses to dispose of sludge.

SUPERFUND

Title III of the Superfund Amendments and Reauthorization Act (SARA), known as the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, establishes requirements for federal, state and local governments and facilities regarding emergency planning and community "right-to-know" reporting on a

number of chemicals. Chemicals subject to this law include Occupational Safety and Health Acts chemicals; hazardous substances under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); extremely hazardous substances under EPCRA Section 302; and the chemicals listed as toxic under EPCRA Section 313.

The community right-to-know provisions build upon EPA's Chemical Emergency and Preparedness Program (CEPP) and are aimed at increasing the public availability of information about the presence and environmental releases of chemicals in the community. SARA Title III contains four major sections, including emergency planning, emergency release information, community right-to-know reporting requirements, and toxic and chemical release inventory reporting.

Section 313, addressing toxic and chemical release inventory reporting, requires EPA to establish an inventory of the toxic chemical releases and transfers of certain facilities. Facilities subject to TRI (Toxics Release Inventory) reporting requirements must complete report information on their releases for each year to states and the EPA. Then, the EPA is required to compile an inventory of reported releases. Within the TRI Report, the EPA lists the top fifty facilities that reported emission to air, land, surface water and underground injection wells, public sewage and off-site transfers.

The TRI Report and community right-to-know reports of SARA Title III provide valuable information to public health and advocacy groups. This information has been used in the past to tarnish corporate images and retard public relations. Hence, companies participate in pollution prevention and waste minimization in an attempt to avoid being one of the listed top fifty emitters.

WORKER SAFETY RULES

U.S. Occupational Safety and Hazard Agency

Businesses which use materials classified as hazardous by the Occupational Safety and Hazard Agency (OSHA) must meet certain requirements for worker safety. These requirements include providing workers with proper protection against harmful substances, providing workers with information regarding materials to which they are exposed, and performing a variety of other worker safety oriented activities. As the activity and reporting requirements for OSHA can be burdensome, businesses can avoid OSHA regulation altogether by using pollution prevention technologies to replace hazardous materials, which many times result in hazardous wastes, with nonhazardous materials. Pollution prevention is the result of replacing hazardous items with more benign substitutes.

HAZARDOUS WASTE MANAGEMENT REGULATION

State Department of Toxic Substances Control

The Department of Toxic Substances Control (DTSC) is a department of the State of California's Environmental Protection Agency. The Department regulates hazardous waste generation, treatment, and disposal as well as controls on the land disposal of certain hazardous wastes.

The problems and costs associated with the disposal of hazardous waste are the most frequently cited reason for implementing source reduction activities by TRI companies. The disposal of hazardous waste requires extensive effort on the part of the generating facility's operator. It is necessary for them to find a qualified hauler and meet regulations on storage, handling, and tracking. In addition to the amount of time it demands of an operator, it is expensive to dispose of hazardous waste. Relatively, it is much more expensive for small and medium sized firms. In order to escape the "regulatory loop" (and associated time demands and uncertainty) as well as to avoid exorbitant disposal costs, many facilities are turning toward pollution prevention.

Limits on the land disposal of certain wastes create problems for businesses generating these wastes. These businesses are left with the option of paying for expensive waste treatment or incineration technologies. Producing less waste through the implementation of a pollution prevention program is another option that can save businesses money. In California, the waste generation fee charged by DTSC is another economic incentive for pollution prevention.

DTSC also implements SB 14, the Hazardous Waste Reduction and Management Review Act of 1989. The Act requires facilities which generate 12,000 kilograms or more of hazardous waste annually to review their operations for potential waste reduction measures and to prepare plans showing an implementation schedule for feasible measures. These Hazardous Waste Management Plans are called in by DTSC by industry type. Companies are made aware of economically feasible pollution prevention activities by the process of preparing the Report. Conceivably, when feasible alternatives are recognized, they will be implemented.

SB 1726, passed in 1992, extends the prohibition date of hazardous waste land disposal for specific hazardous wastes. In addition, SB 1726 expands the application of SB 14 to include any generator that routinely produces more than 5,000 kilograms of hazardous waste per year, lowering the threshold substantially from 12,000 kilograms per year. All generators of 5,000 kilograms or more are required to file a new document which shows the progress of a facility's source reduction measures.

HAZARDOUS MATERIALS

Hazardous materials (as classified by federal, state and local governments) used by industrial facilities are subject to storage requirements in order to minimize fire and public health hazards. In California, hazardous materials are regularly controlled through a program implemented by local agencies. Processes which use hazardous materials often create hazardous waste as a by-product. By reducing the use of hazardous materials, operators minimize hazardous material regulation requirements. Therefore, it is possible to use pollution prevention product substitution techniques to reduce hazardous materials use as well as hazardous waste generation.

OTHER INFLUENCES

Fear of Long Term Superfund Liability

Businesses face a number of uncertainties and hidden costs in the operation of a facility. One of these uncertainties regards long term liabilities resulting from business operations. Businesses which use hazardous materials and create hazardous wastes may be liable for the contamination of land and water resulting from the mismanagement of wastes. Settlements could potentially be very costly, possibly resulting in the operation's closure. By avoiding the production of hazardous waste, potentially through the use of pollution prevention, facilities nearly guarantee freedom from environmental contamination liabilities. This reasoning is most often cited by large firms as small firms are more concerned with meeting their current payroll than long-term liability.

Uncertainties in Regulation

Hidden or unexpected costs are one of the greatest fears of business operators. Because legislation, and therefore regulations, change annually, there is a great deal of uncertainty regarding meeting requirements. A business may spend a large amount of money to alter a process so that they can come into compliance with a new regulation. However, changes in the following year may make those alterations unnecessary. Therefore, money has been wasted on an ever-changing regulatory framework. The uncertainty can be avoided if a facility moves out of the "regulatory loop," by avoiding regulated substances or by-products in its processes. Pollution prevention is an effective means by which to avoid regulated hazardous materials and wastes.

Regulatory and Pollution Prevention Contacts at Key Governmental Agencies

Federal Agencies

United States Environmental Protection Agency (US EPA)

Air, Hazardous Waste, Water

The United States Environmental Protection Agency implements federal environmental protection laws, including the Clean Water Act, the Clean Air Act, and the Resource, Conservation, and Recovery Act (RCRA). In California, the authority to implement many of these programs has been delegated to state agencies.

- For questions concerning RCRA and Superfund, contact the Superfund Hotline at 800-424-9346.
- For questions regarding upcoming pollution prevention events and resources available through the EPA, contact the Pollution Prevention Information Center (PPIC) Reference and Referral Line at 202-260-1023.
- With pollution prevention, technical and regulatory compliance questions, contact the Small Business Ombudsman Hotline at 800-368-5888.

State Agencies

California Air Resources Board

Air

The California Air Resources Board regulates the emission of air pollutants. The bulk of air regulations are implemented by subsets of the statewide organization, known as Air Pollution Control Districts (APCDs). APCDs promulgate rules and limits relevant to maintaining air quality in their particular jurisdiction. They assure that these thresholds are not surpassed by issuing permits limiting each emitter's contribution. They are responsible for enforcing rules established by the ARB and operate semi-autonomously in their pursuit of air protection. Some businesses are required to assess and report the health risks associated with their emissions to the ARB.

- For questions regarding regulations which you may apply to your business, contact the information hotline at 800-242-4450.

Please see the South Coast Air Quality Management District section (Page 3) for regional air regulations applying to businesses in Southern California.

California Department of Toxic Substances Control
Hazardous Waste

The Department of Toxic Substances Control regulates hazardous waste generation, treatment, and disposal. The Department has been granted the authority by the US EPA to implement certain federal hazardous waste regulations. It also implements a variety of other state laws. Through the Department you may obtain a US EPA generator identification number and the proper forms for documenting hazardous waste.

- For information regarding hazardous waste generation, disposal, or pollution prevention assistance, contact the duty officer of your regional Department office. Contact the Glendale Office, serving the counties of Los Angeles, Ventura and Santa Barbara at 818-551-2830. Contact the Long Beach Office, serving the counties of Riverside, San Diego, San Bernardino, and Imperial as well as Torrance, Carson, Long Beach, Harbor City and Cerritos at 310-590-4968.
- The Department also operates an exchange program through which businesses can exchange hazardous materials among one another as a disposal cost savings mechanism. Contact the California Waste Exchange (CWE) at 916-324-1807.

California Integrated Waste Management Board
Nonhazardous Solid Waste

The California Integrated Waste Management Board regulates the siting and operation of California landfills, as well as local governments' waste reduction and recycling efforts among others. Although they do not regulate businesses directly (except those in industries related to waste management), they offer recycling and materials reuse assistance.

- For recycling information, contact the Recycling Hotline at 800-553-2962.
- To participate in a statewide materials reuse and recycling program, contact the California Materials Exchange (CALMAX) at 916-255-2369.

California Occupational Safety and Health and Administration
Worker Safety

The State of California has been granted the authority to implement federal worker safety program through the California Occupational Safety and Health Administration. Businesses are required to meet specifications for worker safety, which they report to Cal/OSHA.

- For information regarding Cal/OSHA requirements or worker safety consultations services, contact the Los Angeles office Consultation Service at 310-944-9366.

California State Water Resources Control Board Water, Stormwater, Nonpoint Source

The State Water Resources Control Board protects the State's water resources. Water Board laws are implemented through semi-autonomous regional governing bodies known as Regional Water Quality Control Boards. Regional Boards permit large industrial facilities and Publicly Owned Treatment Works (POTWs) to discharge into the State's surface waters in accordance with water quality goals. Most small and medium-sized businesses discharge to POTWs, not directly to surface waters, and are therefore not directly regulated by the State or Regional Boards, but rather by their POTW. See the POTW discussion under the regional and local governing agencies section for POTW requirements.

- If you believe your business may be regulated by the State or Regional Board, contact the Los Angeles Regional Water Quality Control Board office at 213-266-7594 or the Santa Ana office at 909-782-3234 for assistance. As well, you should contact the Regional Boards with questions regarding nonpoint and stormwater requirements.

California Department of Water Resources Water Conservation

The Department of Water Resources regulates the use of California's water resources. They do not, in most instances, regulate industry directly. However, they do provide water conservation assistance to commercial and industrial facilities.

- For water conservation information, contact Charlie Pike, Industrial and Commercial Water Conservation, at 916-327-1649.

Regional Agencies (Southern California)

South Coast Air Quality Management District Air

The South Coast Air Quality Management District regulates air pollution in the South Coast region. For regulatory and pollution prevention information, contact the Small Business Assistance Center at 800-388-2121.

Local Agencies

Hazardous Waste Control

Your County Environmental Health Department may be authorized to implement the State's Hazardous Waste Control Law and may perform hazardous waste generation inspections annually.

- If you have concerns about your status as a hazardous waste generator, desire permit or disposal information, or are interested in receiving pollution prevention assistance, contact your County Environmental Health Department.

Imperial County Environmental Health Department
619-339-4203

Orange County Department Environmental Health
714-667-3629

Riverside County Department of Environmental Health
909-358-5055

San Bernardino Department of Environmental Health Services
714-387-3080

Santa Barbara County Environmental Health Services
805-346-8484

Ventura County Environmental Health
805-654-5040

In Los Angeles County, hazardous wastes are regulated by:
Los Angeles County Fire Department, Health and Hazardous Materials
213-890-4045

In addition, some cities have agencies that regulate hazardous waste or provide pollution prevention assistance.

Hazardous Waste/Pollution Prevention Programs of Cities

City of Anaheim Public Utilities Department Waste Minimization Program
714-533-5768

City of Long Beach Environmental Health Department
310-427-7421

City of Los Angeles, HTM Office
213-237-1209

City of Pasadena Environmental Health Department
818-405-4390

City of Vernon Environmental Health Program
213-583-8811

Hazardous Materials Storage

Many hazardous materials storage programs are operated through emergency response programs of fire departments. For information regarding hazardous materials storage requirements which may apply to your business, contact your local fire department.

Your Publicly Owned Treatment Works (POTW) Water

Many POTWs are city owned and operated. Depending upon the volume and constituents of your wastewater, your business may be permitted to discharge by your local POTW. POTWs permit dischargers in order to assure that the POTWs comply with their own discharge permit. Beyond permits, most POTWs have specifications of what can and cannot be discharged to the sewer system. Most POTWs have pretreatment programs in order to reduce the quantity or toxicity of waste they receive, operated in conjunction with a waste minimization program.

- If you are concerned about your discharges and desire compliance information or are interested in finding out about your POTW's waste minimization/pollution prevention assistance program, contact your local facility.
- The regulatory, business, or pollution prevention assistance telephone numbers of water treatment agencies serving the Southern California region are:

City of Burbank
(818)953-9515

Camarillo Sanitation District
(805)388-5332

Chino Basin Municipal Water District
(909)987-1712

City of Corona
(714)782-4130

Eastern Municipal Water District
(909)725-7676

Irvine Ranch Water District
(714)453-5300

Las Virgenes Municipal Water District
(818)591-1207

City of Los Angeles, Department of Public Works
(213)485-7580

Los Angeles County Sanitation Districts
(310)699-7411 ext. 2900

Orange County Sanitation Districts
(714)962-2411

City of Oxnard, Department of Public Works
(805)488-3517

City of Redlands
(714)798-7506

City of Rialto
(714)877-4215

City Of Riverside
(714)351-6140

City of San Bernardino
(714)384-5383

City of San Buenaventura
(805)642-4739

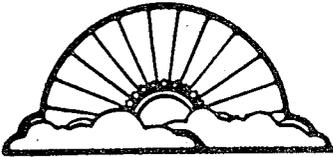
Simi Valley County Sanitation District
(805)583-0393

Thousand Oaks Utility Department
(805)497-8611 ext 312

Your Utility Provider

Energy Conservation, Water Conservation

- If you are a Southern California Edison customer, contact the Action Line at 800-952-5062 for energy conservation information and assistance.
- If you are a customer of the Los Angeles Department of Water and Power, contact the Customer Assistance Line at 800-342-5397 for water and energy conservation information.



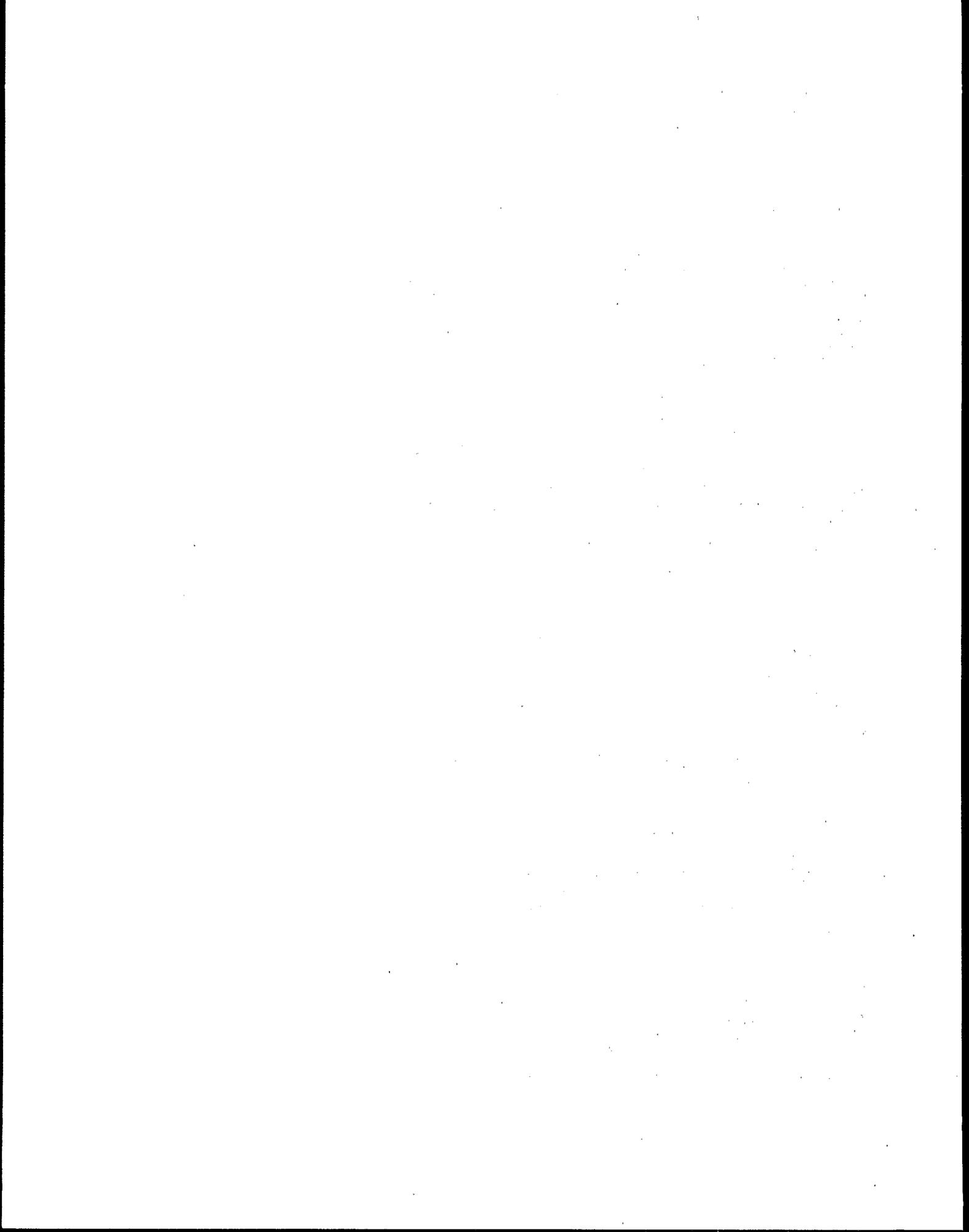
KERR & ASSOCIATES, INC.

2634 Wild Cherry Place • Reston, Virginia 22091 • (703) 476-0710

January 4, 1993

To: Jim Lund, Office of Water (WH-551)
From: Bob Kerr, Kerr & Associates, Inc.
Subject: Key Areas in Need of Coordination
Region 9 Pilot Project (IP3)
Ref.: EPA Contract #68-W0-0025, Work Assignment #230
Task 2.1

The attached report summarizes the key environmental issues which either currently impact, or could prospectively impact, industrial laundries, as well as listing other regulatory/statutory areas which, in some cases, could be of importance. Because of the decentralization of implementation of environmental authority in California among a range of state and local agencies, all agencies with significant responsibilities will need to be involved in the workgroup process to make it meaningful.



Report on Areas in Need of Coordination

BACKGROUND

This task focused on analysis of regulatory, voluntary, and statutory programs that might need to be coordinated in order to promote multi-media approaches to pollution prevention. The Local Government Commission (LGC), in a report prepared under Task 1-1, summarized information on existing requirements relevant to multi-media pollution prevention programs and activities in California. Titled "Summary of Regulatory Incentives for Pollution Prevention," it looked at pollution prevention opportunities within the context of major federal, state, and local environmental regulations that affect both POTWs and their service industries. This report looks at a single industrial sector -- industrial laundries -- in order to raise issues for discussion, with the goal of identifying regulatory areas in need of coordination for a multi-media pollution prevention program targeted to industrial laundries.

In California, industry is finding it increasingly challenging, and often confusing, to keep track of the numerous -- and often complexly related -- federal, state, and local laws, regulations, policies, and enforcement practices with which they must comply. Pollution prevention activities in California, including those activities carried out by more progressive POTWs, have been both useful and successful within the scope of industries or pollutants of concern for the individual projects. Where most successful, they provide a way for many companies to deal with a wide range of environmental problems in a cost-effective manner.

But more remains to be done to meet future environmental demands. There is a need for a unified effort, one involving both regulators and industry, one that looks at media-specific program concerns but does so within a multi-media context. Laundries were chosen in this pilot project as a target industry because, like POTWs, they are a service industry and are not so much generators of pollution as they are receptors of their customers' pollution problems. Therefore, laundries present a good opportunity for a program design that involves technical outreach and a coordinated regulatory approach.

The objectives of the pilot project are to: 1) promote coordination among regulatory agencies and POTWs in southern California; and 2) develop a model pollution prevention program for industrial laundries that would address solid waste, hazardous waste, wastewater, and air emissions in a unified and coordinated manner. In order to better define the areas in need of coordination in such a project, it makes sense to look at the array of current and near-future regulatory programs that might

have an impact on industrial laundries and their customers. The following discussion briefly outlines some of the regulatory intersection areas that need to be considered for coordination in a model program targeted to industrial laundries.

AIR QUALITY

Air Toxics

The U.S. EPA has recently published a list of about 180 industrial toxic emission source categories, pursuant to section 112(c)(1) of the Clean Air Act Amendments (CAAA) of 1990. For each industrial source on the list, EPA must develop "maximum achievable control technology" (MACT) emission standards and promulgate these over the next 10 years. While only major sources¹ in any given listed category will be subject to these new MACT standards, area sources for which a finding is made of a threat of adverse effects on human health and the environment would also be subject to MACT regulation. The following are some of the listed source categories with upcoming MACT standards which may be relevant for POTWs, industrial laundries, and their clients:

- o POTW Emissions
- o Industrial Dry Cleaning (Perc)
- o Halogenated Solvent Cleaners
- o Paint Stripper Users
- o Printing, Coating, Dying of Fabrics
- o Printing/Publishing
- o Wood Furniture (Surface Coating)

In addition to the MACT technology-based standards, EPA may have to promulgate health-based standards after the year 2000 if risk is not adequately lowered through national MACTs.

At the state level, California already has in place several programs addressing air toxics. With the enactment of AB 1807, the California Air Resources Board (CARB) was given the authority to identify and control toxic air contaminants on a compound by compound basis. Eighteen substances have been identified as Toxic Air Contaminants (TACs) for control under this program. Estimates are that over 2,000 stationary sources statewide will be subject to Toxics Best Applicable Control Technology (T-BACT) standards. Another state toxics program, the air toxics "Hot

¹ Major source emits 10 tons per year (tpy) or more of any single hazardous air pollutant (HAP) or 25 tpy or more of any combination of HAPs.

"Spots" program (AB 2588), calls for air quality districts to collect data on over 550 different air toxics and, in some cases, notify the public of potential adverse health effects from a facility. While larger facilities, including POTWs, must prepare detailed inventories (called "Air Toxics Plans"), many small businesses, such as dry cleaners, laundries, auto-body paint shops, furniture refinishes, etc., will participate in generic industrywide surveys, and need not complete site specific inventories.

In addition, several local air districts within the state control toxics on the basis of health risk assessments, such as in the South Coast area (SCAQMD rules 223 and 1401). The health risk to be prevented in these rules is based on protecting the maximally exposed individual for a lifetime exposure of 70 years. The rules provide that permits will be issued for new and modified sources with a risk of less than one-in-one million. Public notice requirements are also part of this rule.

Preliminary data indicates that some California POTWs may emit air toxics in amounts that exceed this level. Because air toxics enter POTWs from a variety of sources, including industrial laundries and their customers, industrial pretreatment programs provide one avenue open to POTWs to help control their industrial sources of air toxics. The Region 9 project should provide a model useful to POTWs looking to integrate a multi-media pollution prevention approach into an air toxics source control effort for their plants.

Criteria Air Pollutants

These include VOCs (to control ground-level ozone), NOx, SOx, and PM-10 (particulates). Of these, changes in VOC and NOx standards would be most relevant to industrial laundries and their customers. SCAQMD, facing the most severe air quality problems in the country, has one of the most stringent programs for the control of VOCs in the nation, including product bans and work place standards to promote the use of low-VOC chemicals. Many VOCs are also air toxics and subject to control under the above described toxics programs as well. Industrial laundries utilize on-site boilers to heat water necessary for cleaning; these generate NOx emissions. In districts such as South Coast, all boilers (even residential boilers) are subject to permits. As NOx standards tighten, there is incentive for energy and water use efficiency in high water use industries such as laundries.

WATER QUALITY

Federal Effluent Guidelines

On January 31, 1992, the U.S. EPA and the National Resource Defense Council (NRDC) entered into a Consent Decree that will guide EPA effluent guideline rulemaking activities over the next decade. Industrial laundries are one of the four additional industries that were specifically designated in the Decree as being subject to new effluent guidelines. EPA has already begun the rulemaking process and intends to complete an industry survey within the next two years. According to the Decree, the guidelines must be proposed by 1996 and in place by 1998.

Although EPA is still in the early stages of the rulemaking process, focusing mainly on information collection activities, laundries need to be made aware that if categorical standards that set minimum pretreatment requirements are forthcoming, they would affect almost all industrial laundries in one way or another. In its May 1992, Proposed Effluent Guidelines Biennial Plan (55 FR 19748), EPA estimated "the priority and nonconventional loadings from this category [industrial laundries] to be approximately 34 million pounds annually, [and that] the discharge of these pollutants into sewage systems, especially solvents from shop towels, potentially affects POTW operations and discharges to receiving waters." Furthermore, EPA states that "the economic impacts of some regulatory options on this category may be relatively high, because many facilities are small businesses."

A central goal of this pilot project is to explore alternatives, such as Best Management Practices (BMPs) for both laundries and their client facilities, along with other pollution prevention focused activities such as waste minimization audits that, if in place, might alleviate the need for some of the more stringent categorical regulatory options (e.g., high-tech pretreatment systems such as ultrafiltration). In any case, reducing the incoming pollutant load to laundries, especially solvents and oil and grease carried in on shop towels and rags, could only improve a laundry's position with respect to any upcoming categoricals. And since it takes time to get such culture-changing options in place, now is the time to start.

Local Limits

Of course, all POTWs have the ability to impose local limits in the absence of any federal effluent guidelines (in many cases, local limits are much more stringent than categoricals anyway). For industrial laundries, one of the most problematic local limits is Total Toxic Organics (TTO). Laundries that accept shop towels and printers' wipes are the ones that find the TTO limit

most difficult to meet. Also, there is often a big difference in the limit's numerical value among different sanitation districts. For example, Orange County has a TTO limit of 0.58 ppm, while nearby L.A. County's is much higher, 5.0 ppm. This can lead to geographical shifting of the problem: customers and/or the laundries can either shift their business to less restrictive districts, or smaller laundries with no local limit requirement can take the dirtiest customer accounts.

In San Bernardino, where one laundry had continued high levels of exceedances of the TTO limit (in spite of installing a centrifuge/extractor which, however, frequently did not work) the POTW threatened to disconnect the plant from the sewer unless it solved its compliance problems. The plant began trans-shipping its towels to another plant without the same compliance problems. Thereafter, the San Bernardino POTW found that the TTOs at the facility dropped to non-detectable. But it is questionable if this is an overall environmental benefit since the shop towels are now being laundered elsewhere, with additional transportation impacts and no reduction in any air releases from the towels.

The challenge of this pilot project then is to identify ways of working cooperatively to prevent such shifting from getting out of hand. Some laundries actually ship their dirtiest textiles to Mexico. If BMPs and other source reduction activities can reduce the incoming solvent load, laundries may not have to avoid "low limit" jurisdictions.

SOLID/HAZARDOUS WASTE

Hazardous Waste

Since the passage of RCRA in 1976, there has been regulatory uncertainty over the issue of whether shop towels contaminated with listed RCRA solvents should be considered hazardous waste. No definitive regulatory determination has been forthcoming from EPA Headquarters, and most EPA Regions have more or less had to "fend for themselves." Some, like Regions 4, 7 & 8, take the regulatory position that towels which are destined for laundering are not solid waste (destined for disposal or discard), and therefore not within the realm of hazardous waste regulation under RCRA.

A few states (Minnesota and Washington state, in Regions 5 & 10, respectively) have taken a pragmatic approach. They have formulated policies by which, if both laundries and their customers follow certain Best Management Practices (BMPs) to minimize the free-liquid solvents carried in on shop towels, the towels may be managed without worrying about complying with full RCRA hazardous waste manifesting and TSDF permitting requirements.

For California laundries, the target industry in this Pilot Project, the Region 9 position remains that towels with listed solvents on them are, by virtue of the "mixture rule," hazardous waste under RCRA. That stated, however, Region 9 continues to use enforcement discretion to consider this determination a low priority. In principle, strict enforcement combined with the Region 9 interpretation of the hazardous status of such towels would force manifesting of the towels, and permitting of the laundries as TSDFs. A possible result would be that laundries would no longer accept such towels (many have already eliminated the towel portion of their business to avoid regulatory risk), and customers would switch to disposable wipes (increasing the burden of solid and hazardous waste requiring management and disposal). Clearly, this is a key area to be fully explored and coordinated in the course of designing this multi-media pollution prevention Pilot Project.

Sludge Rules

EPA recently finalized its sludge use and disposal standards, covering sludge which is applied to the land, disposed in landfills, or incinerated. The final rule will affect more than 35,000 entities, mostly POTWs. The rule includes specific sludge limits for heavy metals, such as arsenic, chromium, copper, lead, mercury, nickel, and zinc. For sludge that is to be incinerated, there is also a total hydrocarbon limit. These limits will all be incorporated into new NPDES permits for affected facilities.

While POTWs have a range of options open to them to decrease the metals and hydrocarbon loadings in the sludge they generate from wastewater treatment activities, one may include looking at upstream source reduction for targeted industrial users, such as printers, vehicle repair shops, or industrial laundries. The laundries themselves may be affected by the new sludge rules if they generate sludge from their own pretreatment equipment. If the sludge does not meet the required metals and hydrocarbon limits, local septage haulers may not be able to take it.

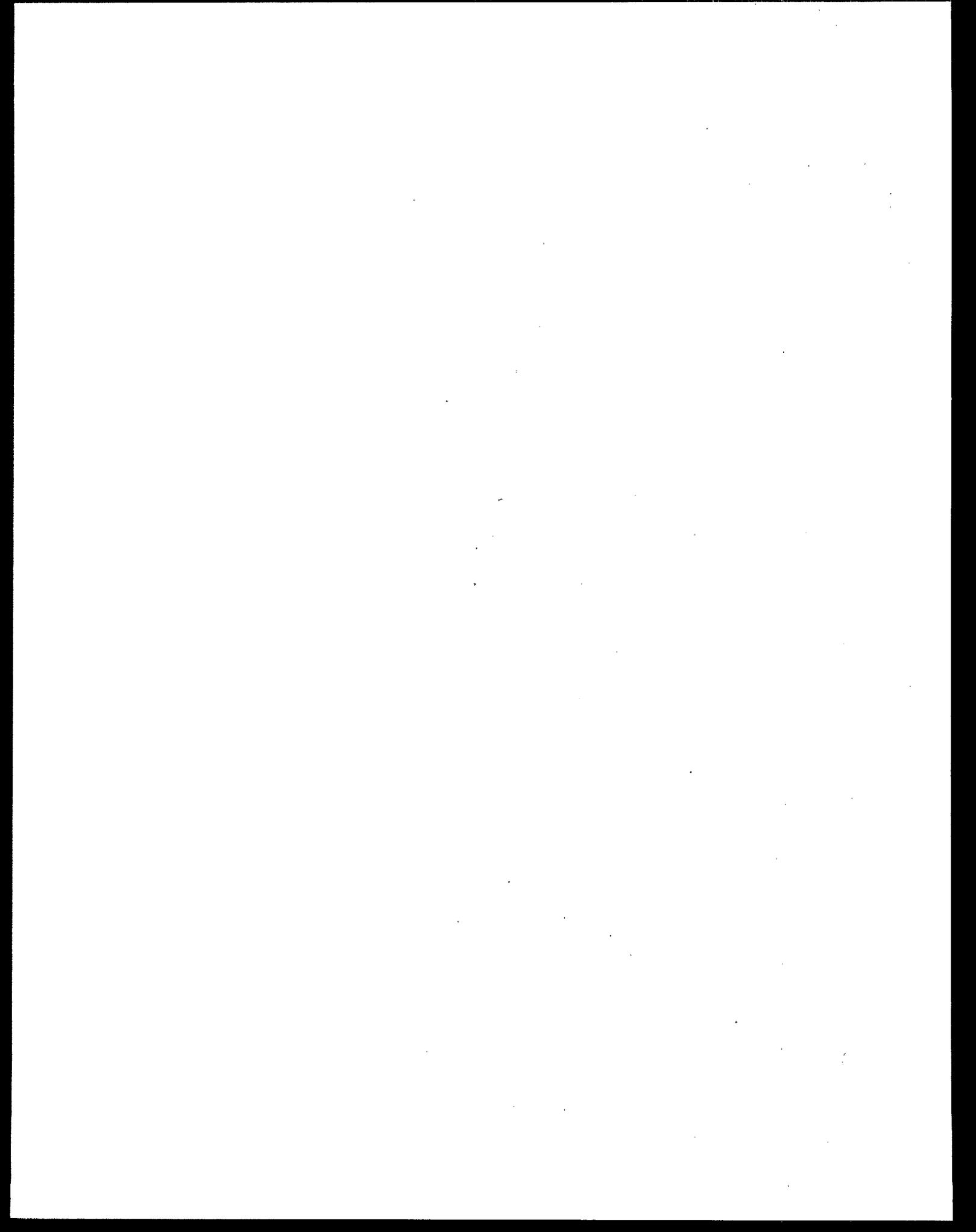
Currently, California sludge rules require TCLP and bioassay testing. The new federal sludge testing may not be much more stringent than that. Nevertheless, reducing metals coming into laundries on shop towels, especially printers' wipes, is one way of making sludge more acceptable to haulers. Also, lower metals may mean less costly disposal options become available, such as landfarming.

OTHER REGULATORY PROGRAMS

The following is a list of other federal, state, and local

programs that might need to be considered for coordination in this industrial laundry pilot project. We suggest that these areas be further explored during the course of the project's design to determine the extent to which there are any key coordinating concerns.

- o WORKER SAFETY/RIGHT-TO-KNOW
 - Federal OSHA
 - CalOSHA
 - Calif. Prop. 65
- o U.S. DOT/HAZARDOUS MATERIALS TRANSPORT
- o SUPERFUND
- o RCRA LUST Program
- o CWA Stormwater Program
- o FIFRA



The 24 Members of the Interagency Multi-media Team

Federal

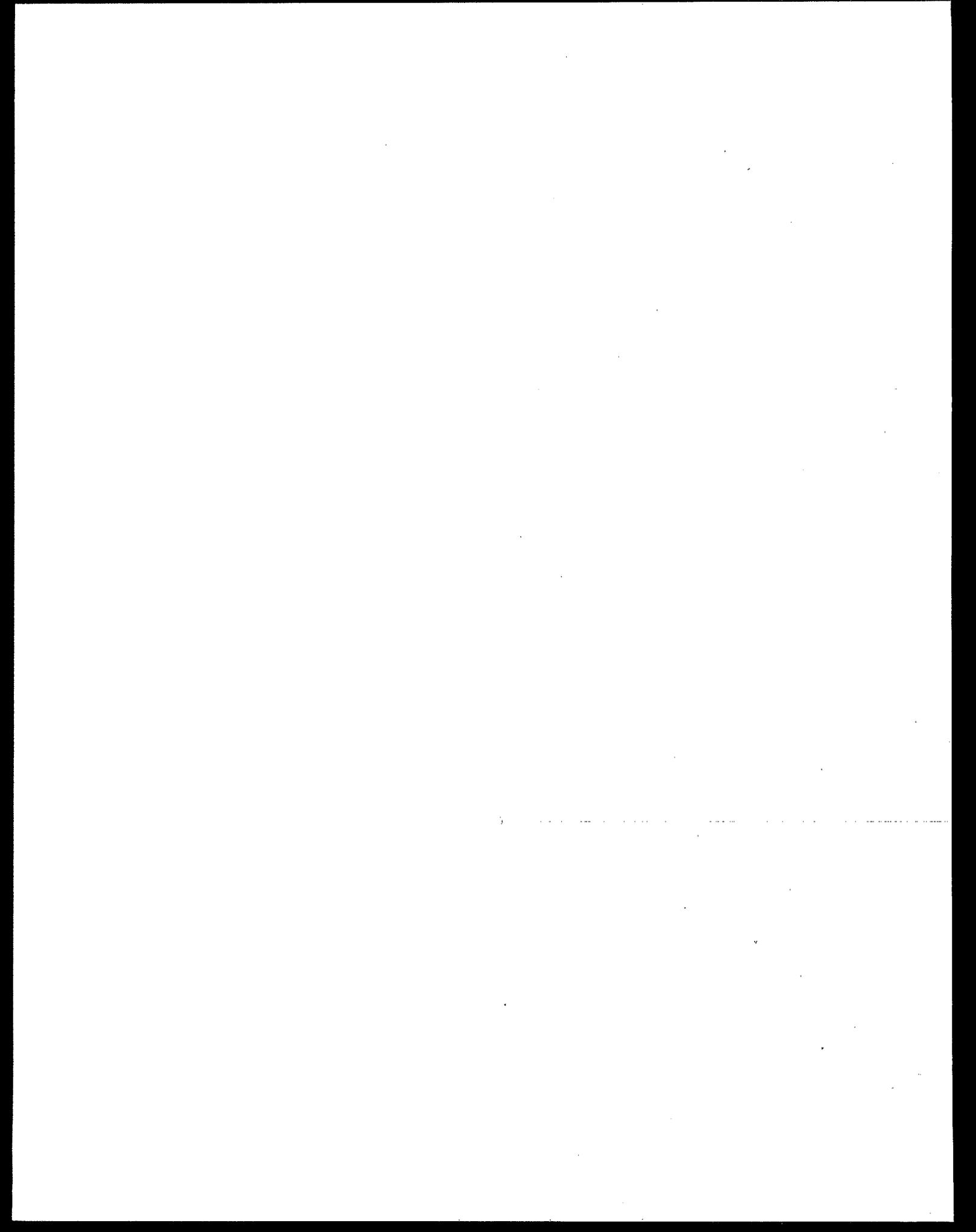
U.S. EPA, Headquarters
Office of Water
U.S. EPA, Region 9
Air and Toxics Division
Hazardous Waste Management Division
Water Management Division

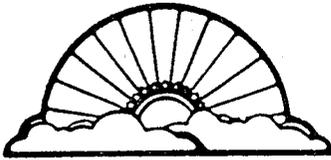
State

California Department of Toxic Substances Control
California Department of Water Resources
California Environmental Protection Agency
California State Water Resources Control Board
Los Angeles Regional Water Quality Control Board
San Francisco Bay Regional Water Quality Control Board
Santa Ana Regional Water Quality Control Board
South Coast Air Quality Management District

Local

City of Chino
City of Los Angeles
City of Riverside
City of San Bernardino, Water Reclamation
Eastern Municipal Water District
Los Angeles County Sanitation Districts
Orange County Sanitation Districts
City of Los Angeles Hazardous and Toxic Materials Program
City of Los Angeles, Office of Water Reclamation
Metropolitan Water District of Southern California
Orange County Environmental Health Department
Orange County Water District





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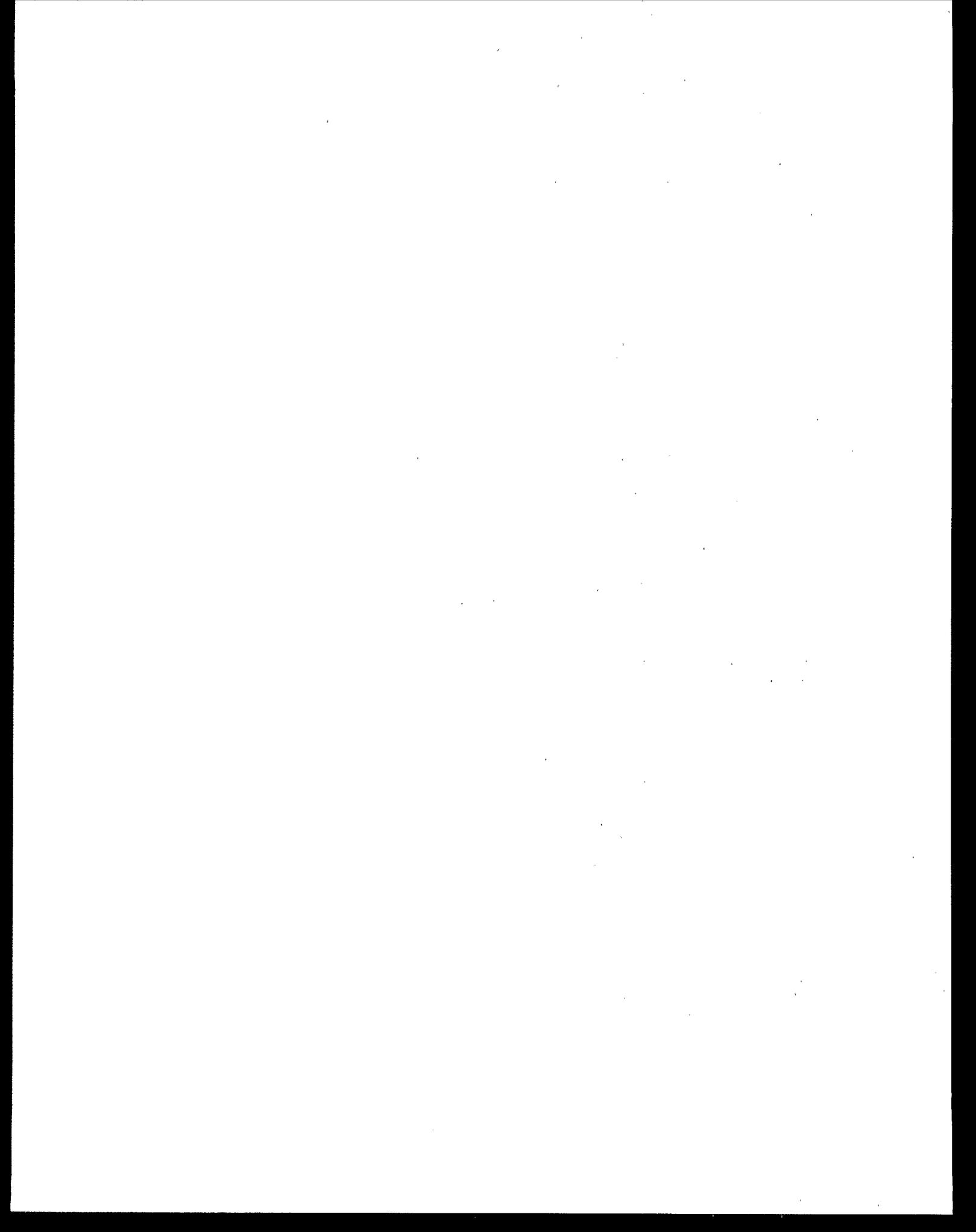
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February 23, 1993

To: Jim Lund, Office of Water (WH-551)
From: Bob Kerr, Kerr & Associates, Inc.
Subject: Minutes of Multi-Agency Work Group Meeting
Region 9 Pilot Project (IP3)
Ref.: EPA Contract #68-W0-0025, Work Assignment #230
Task 2.3

Enclosed are the draft minutes for the first meeting of multi-agency work group for the IP3 Region 9 pilot project, held February 9, 1993, at the Orange County Sanitation Districts headquarters in Fountain Valley, California. As you know, the purpose of the meeting was to bring together representatives of various federal, state, and local regulatory agencies and industrial laundries to discuss multi-media approaches to pollution prevention for laundries and their customers. Over 50 people attended the one day meeting, with representatives from EPA Headquarters (Office of Water), Region 9 EPA, state and local agencies, sanitation districts, and industrial laundries. The group's consensus was that the next phase of the project should include:

- o Establishment of a smaller focus group of POTWs, industrial laundries, state media agencies (solid waste and air), and local health agencies.
- o Two workshops on pollution prevention and best management practices (BMPs) for industrial laundries and their customers;
- o Facility assessments at industrial laundries to identify opportunities for pollution prevention, findings to be presented at the workshops; and
- o Discussion papers and final report.



**"COLLABORATIVE APPROACHES TO POLLUTION PREVENTION"
MULTI-AGENCY WORK GROUP MEETING**

February 9, 1993

Orange County Sanitation Districts Office
10844 Ellis Avenue
Fountain Valley, CA 92708

-- DRAFT MINUTES --

I. Welcome, Introductions, Overview of Project

Virginia Cummings
U.S. EPA Region IX

Introductory remarks were given by Ginny Cummings, the project's coordinator from Region IX. Ms. Cummings said that the purpose of today's meeting was to bring together various south coast POTWs, environmental agencies, and industrial laundries in a cooperative effort to: (1) understand the different waste minimization and pollution prevention opportunities available to industrial laundries; and (2) develop a multimedia pollution prevention pilot project that would explore these opportunities in a more specific way. Pollution prevention was defined as "the use of processes, practices, or products that reduce or eliminate the generation of pollutants," and may include such activities as improved housekeeping and best management practices, process modifications, and product reformulation (e.g., chemical substitutes). Where elimination of the source of pollution is not possible, some forms of recycling--in-house, closed-loop measures which return pollutants for reuse within a production process--may be considered pollution prevention. For laundries that may mean water reuse, as well as other reuse and energy efficiency measures.

Bob Kerr
Kerr & Associates, Inc.

As moderator of the work group meeting, Mr. Kerr led the introductions, requesting that each participant give their name, affiliation, and brief perspective on his or her interest in this project. After the introductions, Mr. Kerr talked briefly about the background of the Regional Project, its relationship to EPA headquarters Industrial Pollution Prevention Project (IP3), and its context within some of EPA's other pollution prevention activities. He also outlined the scope of today's meeting and reviewed the agenda.

II. Presentation on POTW Perspective

Adriana Renescu
Orange County Sanitation Districts

Ms. Renescu gave an overview of pollution prevention from the point of view of the POTWs and talked about the unique opportunities and challenges industrial laundries present in pollution prevention. Industrial laundries were selected as the "example" industry in this project

because they are a service industry and are not so much generators of pollution as they are a receptor of others industries' pollution. In this respect, laundries are similar to POTWs. As such, the sphere of pollution prevention must extend beyond the laundry (as it must extend beyond the POTW) and into the customer's facilities. The need, therefore, is to build a model program--a sort of "blueprint" for future cooperative projects with industry--that would involve not only the POTWs and industrial laundries, but other media agencies, in outreach and training directed at printers, machine shops, and other facilities which use laundries to clean uniforms, shop towels, mats, wipers, etc., and which are therefore indirect contributors of pollution.

Overall, the message is that we need to build partnerships with our customers. For POTWs, that means their users, including laundries and contributors to laundries; for laundries, that means their clients. We need to work cooperatively with all appropriate regulatory agencies to design optimum pollution prevention approaches, which do not merely shift pollution around; and to build a national, state, and regional consensus and spirit of cooperation in order to ensure a primary role for pollution prevention in all our environmental activities.

III. Presentation on Industrial Laundries

Cam Metcalf
University of Tennessee, Center for Industrial Services

Mr. Metcalf, Manager of Training at the Center for Industrial Services, helped develop a large, on-site pollution prevention technical assistance auditing program based heavily on the support of retired engineers trained in pollution prevention. The Center is based within the University of Tennessee. In addition to conducting site audits, Mr. Metcalf has held three national video conferences (at least one day each) on specific types of industrial pollution prevention opportunities, and has designed numerous training workshops for different industrial sectors focusing on pollution prevention. Mr. Metcalf's presentation today gave an overview of industrial laundries and their typical clients and customers. Industrial laundries receive most of their toxic and volatile organic loadings from shop towels (also known as "rags" by non-industry speakers). Auto/vehicle maintenance facilities (those in SIC 75 and other dealers/service stations) account for 42% of industrial laundry business. Shop towels from printers, while perhaps the most contaminated items laundries accept in terms of organics and heavy metals from inks, represent only 5% of industrial laundry business.

Mr. Metcalf outlined some of the pollution prevention opportunities available to both laundries and their customers. For both, the establishment of and adherence to a set of best management practices (BMPs), followed by continuous improvement in searching for ways to minimize the generation of pollutants, is the key. He presented the results of a case study which was done for EPA as part of its Design for the Environment initiative. The salient feature of that case study was the development of partnerships: 1) chemical supplier partnerships for solvent re-evaluation and substitution; 2) laundry service partnerships for material recovery and reuse by centrifuge and other BMPs; and 3) multimedia regulatory partnerships.

On the regulatory issues side, Mr. Metcalf outlined some of the problems and inconsistencies faced by industry when shop towels are considered to be a regulated hazardous

waste. He briefly outlined the statutory and regulatory history of the issue, and talked about other state and EPA Regional perspectives. Specifically, he told the work group about two efforts, one in Minnesota and the other in Washington state, where regulatory agencies and industrial laundries developed memoranda of understanding whereby as long as the laundries adhere to certain best management practices, the shop towels would not be considered solid waste for the purposes of RCRA regulation and control.

Finally, Mr. Metcalf presented a number of flowcharts showing the range of laundry processes and activities which could be candidates for an in-house look at pollution prevention opportunities. For example, laundering chemicals used in the prespotting, washing, bleaching, or other textile treatment steps, could contribute toxics such as phenolic compounds, chloroform, and zinc, as well as cause problems with conventional pollutants such as high pH and BOD.

IV. Short Discussion of Issues/Concerns

Following Mr. Metcalf's presentation, Mr. Kerr conducted a brief discussion of the issues raised so far in the morning session. There was a general feeling that while most of the large issues, such as the shop towels as hazardous waste and the laundries' concern that increased regulatory pressure will only lead to shifting the problem elsewhere (e.g., to less restrictive districts or even to Mexico), had been touched upon, they needed to be explored more in depth. It was recognized that no final answer would be forthcoming from this meeting, but that a process of shared dialogue had been started and that it needed to continue to evolve. Issues and concerns raised during this brief discussion are summarized under the writeup of the afternoon's more complete discussion.

V. Lunch

The work group broke for lunch at 12:30 and re-convened at 1:30 P.M.

VI. Afternoon Discussion

The afternoon session was devoted to a wide-ranging discussion that explored many of the areas of concern brought out in the morning session. The key issue areas the work group discussed fell into the following general categories:

- o Best Management Practices (BMPs)
- o Shop towels as hazardous waste
- o Water conservation/reuse
- o Pretreatment limits
 - mass v. concentration-based limits
 - Total Toxic Organics (TTO) limits

A. Best Management Practices

The group concurred that one of the biggest problems for laundries and the area of most concern for regulatory agencies is dealing with shop towels. Pollution prevention options for laundries that process shop towels could include: 1) education of their customers on P2 opportunities to prevent shop towel contamination; and 2) use of BMPs at the customer's site prior to transportation to minimize the amount of solvent in the material accepted by the laundry for washing. The group discussed a range of BMPs for the safe handling of solvent-laden shop towels which might include:

- Requirement of no free liquids
- Use of the paint filter test (used by some states)
- Use of a wring test (hard to standardize)
- Collection containers with mesh bag (to allow free liquids to settle)
- Weigh towels and reject those above certain weight
- Centrifuges mounted on trucks

Other discussion points with respect to BMPs:

- * Some contamination is unavoidable -- gasoline, motor oil, beauty shops.
- * Towels are sometimes used to pickup spills. Customers also use towels instead of brushes (e.g., furniture refinishers). Need to educate operators to minimize use of solvents/paints/varnishes.
- * Problem used to be worse. AQMD regulations on VOCs have reduced the inflow of pollutants to the laundries (e.g., they are already seeing switchovers to soy based inks).
- * Additional improvement may be necessary. A first step would be to segregate saturated towels. Laundries do segregate materials as they come in. However, it must be recognized that they have a broad mix of customers.
- * While much discussion has focused on ink wipers used by printers, not all solvents getting to laundries come from printers. For example, TCA comes mostly from auto repair shops and body shops.
- * Need to recognize that printers are not a majority of everyone's business. Also, that toxics are not everything. Laundries have to deal with conventional pollutants too, like TSS. This too can be a problem.
- * Need ongoing interaction between POTWs and laundries. Laundries want to know what causes POTW's problems. What are their contaminants of concern? What's hard for them

to treat? Want to work cooperatively to help identify if their customers are contributing to the problem. Need to start a dialogue.

- * Training -- many agencies are providing it -- everyone should. But who should be responsible for training customers? Laundries? Agencies? Need to work cooperatively.
- * Public image can be an incentive for some laundries (want to "do the right thing" environmentally). May not be important for smaller laundries, however.

B. Shop Towels as Hazardous Waste

The general perspective from industrial laundries is that they need resolution of the hazardous waste issue. Although it was understood that this work group was not the appropriate forum for dealing with that issue, there was some shared benefit from allowing the issue to be put on the table as a problem of primary concern to the regulated community.

Background of the classification of shop towels as hazardous waste:

- * Regions 4,7 & 8 regulatory position is that towels which are laundered are not solid waste, therefore not within realm of hazardous waste regulation under RCRA
- * Region 9 position is that towels with listed solvents on them are, by virtue of the "mixture rule," hazardous waste under RCRA
 - They cite problem of setting legal precedent
 - Lack of national guidance on the issue
 - Region 9 will continue to use their discretion to consider this a low priority (i.e., not enforcing to letter of the law)
 - Need to push EPA Headquarters for interpretation/guidance
- * EPA Headquarters has established a Solid Waste Task Force (met for the first time Feb. 1, 1993) which may consider this issue. Most likely will say that it is a Regional/State decision. There may be a letter forthcoming from Headquarters clarifying this.
- * The California state RCRA program must be at least as stringent as the federal RCRA program. So must look to EPA for consistency in interpretation of regulatory issues surrounding rags.

In general, the response from laundries was that just saying it's a "low priority" doesn't help. At least in Region 9, they are still open to possible NOV's, liability concerns, and suits by public interest groups. Can't go on living with that uncertainty. For example, Mission Industries, one of the largest chains operating on the west coast, has made a corporate decision to no longer accept inkers from printers, in part due to the atmosphere of uncertainty as to whether or not these towels could be considered hazardous waste.

C. Water Conservation/Reuse

In general, the issues surrounding water conservation and reuse in laundries focused on cost effectiveness, potential for cross-media transfer, and limitations on how far one can go with conservation measures before pretreatment limits that are concentration-based become problematic.

Discussion points included:

- * What can Sanitation Districts tolerate in effluent to allow for reuse? (e.g., the Chino/San Bernadino/Riverside area POTWs cannot take effluent with high TDS because of need to reuse treated water for agricultural purposes in those basins.)
- * While not all water efficiency measures require large inputs of energy, many do and this can become a limiting factor.
- * Right now, energy costs limit water reuse. If cost of water goes up, then water reuse may become more cost-effective.
- * Cost of water will continue to increase. The Metropolitan Water District says they are considering a 20% increase in water rates. POTWs say the cost of wastewater discharge is going up as well.
- * Cross-media impacts exist and cannot be overlooked when thinking about water reuse (especially those involving energy usage).
- * Laundries are already efficient now, in terms of water use. Water used to cost \$638/acre-foot, now up to \$1692/acre-foot. Price increases have created incentive to be water-efficient. Many laundries have water reuse already. Segregation of wastewaters within the laundry may make water reuse easier.
- * Some state and local agencies are working with their water users, providing money for water efficiency measures, and educating them about conservation. Water utilities and electric utilities are a good model for outreach as a service industry for dissemination of information on conservation and pollution prevention.

D. Pretreatment Limits

The key issues surrounding pretreatment limits for laundries were focused on the problem of concentration-based v. mass-based standards, and the problem associated with total toxic organic (TTO) limits that may be technically infeasible to reach with pretreatment. While low TTO limits might be seen as a motivator for pollution prevention, laundries have other ways to address such limits and that is to ship shop towels to another plant in a less restrictive district. Many are doing just that. Some are shipping them as far as Mexico.

Discussion points included:

- * Concentration-based limits may impair further improvements in water reuse. However,

mass-based limits can be difficult to implement by the sanitation districts. Need to be able to meter the flow of effluent.

- * Total Toxic Organics (TTO) limits and safety are a concern for industrial laundries accepting solvent-laden towels. Mission Industries has decided to no longer accept inkers from printers.
- * TTO limits -- pollution prevention may be able to address.
- * Need realistic limits. (General feeling among launderers is that Orange County's TTO limit of 0.58 ppm is unrealistically low).
- * Problem with POTW limits differing in different districts. Hard to provide a consistent message to customers. Problem with shifting of problem: 1) customers and/or the laundries can shift business to less restrictive districts; 2) smaller laundries with no pretreatment requirements can end up getting the dirtiest accounts.
- * Some POTWs simply ban shop towels in their districts. San Bernadino said "no shop towels" and effluent at one facility went from 17 ppm (xylenes) to non-detectable (all organics); but not really an environmental benefit because the laundry just ships the shop towels to its L.A. facility.

VII. Summary of Action Items

The following were some of the suggestions for next steps the group might want to consider:

- Agencies sponsor workshops for laundries to help them in working with their customers.
- Focus on ways of transferring information; need to get information out to small laundries too. Find ways of working with your regulatory agencies.
- Develop BMPs and communicate to Washington about problem with hazardous waste definition of shop towels.
- Issue papers dealing with: 1) Areas that need resolution; and 2) Ways to work cooperatively towards improvements
- Do facility assessments, work with laundries to identify their problematic waste streams. Could feed into workshop process.

Group's Consensus on Action Items:

- 1) Issue paper to examine regulatory issues and changes that are needed, from federal down to the local level. Document problem with definition of shop towels as hazardous waste.

- 2) **Workshop to help laundries develop outreach to their customers on pollution prevention and BMPs.**
- 3) **Workshop to help laundries do in-house pollution prevention and BMPs for the shop floor.**

VIII. Adjournment

The meeting was adjourned at 4:00 P.M.

IX. List of Attendees

See attached.

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February 2, 1993

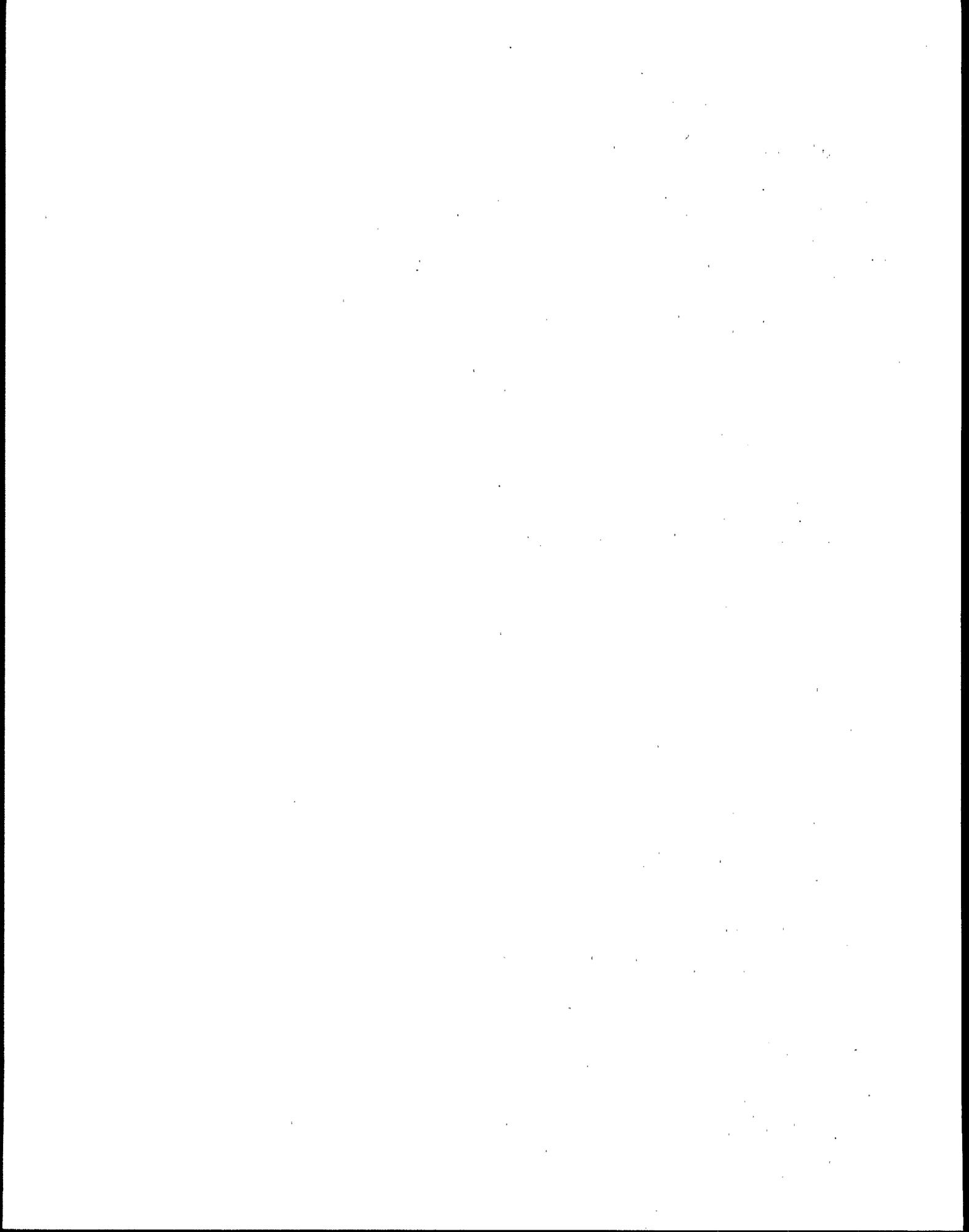
To: Jim Lund, Office of Water (WH-551)

From: Bob Kerr, Kerr & Associates, Inc.

Subject: Overheads for Presentation of Industrial Laundry Pollution Prevention Options
Region 9 Pilot Project (IP3)

Ref.: EPA Contract #68-W0-0025, Work Assignment #230
Task 2.2

The attached overheads summarize waste generation and pollution prevention options for industrial laundries. They will be used at the February 8th meeting.



Solvents Reduction & Reuse

- Customer
 - ◆ Alternative cleaners
 - ◆ Wring, centrifuge or strip for reuse
 - Industrial laundry
 - ◆ Dry cleaning processes
 - ◆ Semi-aqueous cleaners in wash cycle (terpenes/d-limonene, etc.)
 - ◆ Centrifuge & recover for reuse or fuel
 - ◆ Strip & recover for reuse or fuel
 - Reuse by WHOM and HOW legally?
 - ◆ Generator/Customer
 - ◆ Industrial Laundry/Generator
 - ◆ Associations
 - ◆ Local/state/federal staff
 - ◆ Waste Exchanges
-

Regulatory Barriers to P2

- End-of-Pipe Focus
 - Media-Specific Focus
 - Regulatory Program Evaluation Criteria
 - Regulatory Inflexibility
 - Regulatory Uncertainty
 - Pollution Fees
 - Data Gathering and Management
-

Resource Conservation Programs

- Using the latest technology may require less energy, water and chemicals and cycle times are reduced.
 - Monitoring water, gas and electric costs is necessary.
 - ◆ Identify peaks and valleys and what measures might reduce usage.
 - ◆ Determine if activities could be reduced during non-production hours.
 - Is there a heat reclamation system in use and where is it located?
 - Where is the reclaimed heat used?
 - Can the efficiency of the existing system be improved?
-

Resource Conservation

Water

- What percentage of small & large laundries are reusing wash water?
 - Does one washer or method of washing use more water than others?
 - How is the liquid removed when the cycle is complete?
 - Can the various cycle discharges be separated?
-

Resource Conservation

Water

- Is there a water reclamation/reuse system in operation?
 - On what laundry process stream is the reclamation associated?
 - What water reuse systems can be benchmarked as the best-of-best?
-

Hazardous Wastes Generated

- Filter Cake
 - Waste Oil
 - Still bottoms from the distillation of Perc
 - Recovered Solvent
 - Lint
 - Vehicle Maintenance Wastes
-

Solid Wastes Generated

- Shipping and packaging materials
 - ◆ Cardboard boxes
 - ◆ Plastic and Paper bags
 - ◆ Fiber, Plastic and Steel Drums
 - ◆ Pallets
 - Lint
 - Nonhazardous Sludges
 - Textiles taken out-of-service
 - Hangers
-

Waste Reduction Options

- Separate and maintain control of waste streams
 - Establish a Waste Reduction Program
 - Implement BMPs for laundries & customers
 - Implement better Standard Operating Procedures
 - ◆ Purchasing (substitutue) raw materials
 - ◆ Inventory control
 - ◆ Good housekeeping
 - ◆ Maintenance and Preventative Maintenance
 - Reduce shipping and packaging wastes
 - Implement paper and paper products recycling
 - Utilize Waste Exchanges
 - Recover and Reuse Solvents
-

Incentives for Waste Reduction Program

- Conserve resources
 - Substantial economic return
 - Reduced liability
 - Regulatory compliance
 - Protect the environment
 - Good public image
 - Good marketing tool
-

Best Management Practices (BMPs)

- Policy deployment on BMPs & Monitoring
 - Guide for serving heavy soil customers
 - Checklist for identifying soil types and pollutants of concern
 - Improve marketing
 - ◆ Use water & energy conservation programs
 - ◆ Identify positive benefits for the customers
-

Better Standard Operating Procedures

- Toxics use reduction
 - Proper handling and storage to avoid leaks and spills
 - Inventory control (Shelf-life)
 - Avoid inefficient production start-up or shut-down
 - Identify scheduling problems
 - Emergency procedures which minimize waste
 - Preventative maintenance to reduce downtime and wastes
 - Maintain calibrated devices on laundry and treatment processes
 - Select adsorbents that can be reused
-

Major Maintenance Operations

- Laundry equipment
 - Dry cleaning equipment
 - Treatment systems
 - Boilers
 - Fleet vehicles
 - Facility and property
-

Maintenance & Preventative Maintenance

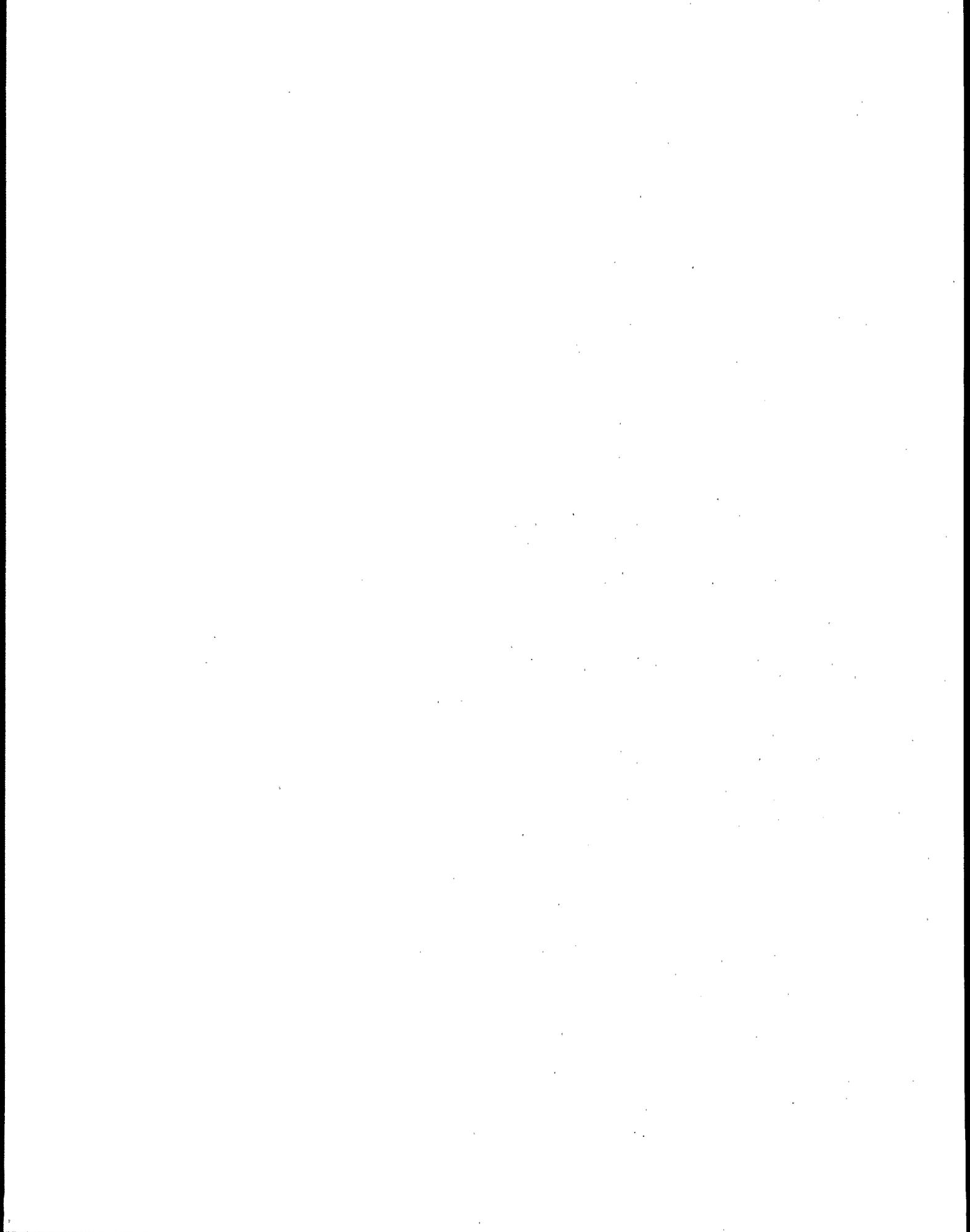
- Reduce incidents of equipment breakdowns
 - Reduce inefficiency and downtime by implementing corrective actions
 - Reduce process fluids and chemicals leakage
 - ◆ Periodically replace seals
 - ◆ Check hose connections & couplings
 - ◆ Cleaning lint screens to avoid clogging and handling the lint properly
 - Corrective Maintenance to prevent raw material & energy loss
 - ◆ Resetting control valves
 - ◆ Adjusting process temperatures
-

Supplier Partnerships and Involvement

- Negotiate for returnable drums & bulk containers
 - Negotiate for reuse or elimination of pallets
 - Recondition drums for reuse
 - Sending drums to scrap metal vendors
-

Paper Products Recycling Programs

- High grade office paper
 - Cardboard and Bags
 - ◆ "Super Saks"
 - ◆ Reuse of boxes & gaylords
 - ◆ Bale & Sell
 - ◆ Recycle with vendors & charities
 - Utilize Waste Exchanges
-



SUMMARY

Focus Group Meeting
March 11, 1993
Los Angeles County Sanitation Districts

Welcome and Introductions

In attendance were Theresa Dodge & Mischelle Mische of the Los Angeles Sanitation Districts, Adriana Renescu of the Orange County Sanitation Districts, Dave MacKenzie of the Western Textile Services Association, Joe Zapalac of Welch's Uniform Rental, Tara Lusk and Bill Warren of the City of Los Angeles, Larry Snow of Reliable Textile, Ginny Cummings of the U.S. EPA, and Tony Eulo of the Local Government Commission. Attachment A is the agenda from the meeting.

Background on the Project

Ginny Cummings gave a brief overview of the history of the project that included both a summary of the February 9 meeting and an analysis of how the project fits into the "big picture"

Solving Common Problems in the Present and Future

Representatives from sanitation agencies listed some of the pollutants that were either presently creating regulatory or operational problems for their facilities or were anticipated to create problems in the future. With the knowledge and insight of the laundry representatives, participants identified the likely prime sources for nearly all of the pollutants. The results of this discussion are listed in Attachment B.

Pollution Prevention Opportunities

Several members of the group described how existing pollution prevention efforts in governmental agencies have worked to reduce the generation and release of pollutants into the environment. Discussion ensued on how the laundries could participate in this effort to reduce the pollutant loading they receive at their facilities. Several key areas of agreement were reached. These include:

- Laundries Publicize Agency Pollution Prevention Programs and other programs, e.g., HTM Office in LA, and the Business Environmental Assistance Center
- Agencies Develop a Package of Outreach Materials and List of Resources that Laundries Could Distribute to Their Customers
- Use Trade Association Newsletters to Publicize How Laundries Can Work With Their Customers to Prevent Pollution

- Agencies Coordinate Their Pollution Prevention and Enforcement Efforts With Those of the Laundries, e.g., talk about their use of towels, spill prevention, alternatives to using disposable paper rags, pollution prevention plans)

Planning the Workshop Agenda

It was proposed that the morning sessions of the workshops focus on ways the laundries can work with their customers and that the afternoon sessions focus on ways the laundries can prevent pollution within their own operations. There was some question as to the value of the afternoon session and concern that participants may be uninterested in the afternoon session. It was decided that we would wait until after Cam Metcalf completes his assessments to determine the anticipated value in the afternoon sessions. If there is little value anticipated, the workshops could end at noon. Attachment C is the workshop agenda developed at the meeting.

Planning a Workshop Outreach Strategy

Several key outreach activities were outlined. These include:

- Dave MacKenzie will mail out the workshop flyer to the laundries and mention the workshops at upcoming meetings
- The LGC will notify the Institute of Industrial Laundries and ask them to publicize the workshops
- The Sanitation Agencies will mail out workshop announcements to the laundries discharging to their systems

Scheduling Future Focus Group Activities

The workshop planning focus group will meet again on March 31 to discuss the afternoon session, monitor planning progress, and review the outreach strategy.

Attachment A

**Focus Group Meeting
March 11, 1993
Los Angeles County Sanitation Districts**

- 9:00 - 9:15** **Welcome and Introductions**
- 9:15 - 9:20** **Background on the Project**
- 9:20 - 10:00** **Solving Common Problems in the Present and Future**
- What are the pollutants of concern?
 - What are the sources of these pollutants?
- 10:00 - 10:30** **Pollution Prevention Opportunities**
- What pollution prevention approaches have worked in the past?
 - How can governmental agencies and laundries work together to reduce the pollutants of concern at the source?
- 10:30 - 10:40** **Break**
- 10:40 - 10:50** **Introduction to the Laundry Workshops**
- 10:50 - 11:20** **Planning the Workshop Agenda**
- What are the issues that need to be discussed?
 - Identifying content, materials, and potential speakers for the workshops
- 11:20 - 11:50** **Planning a Workshop Outreach Strategy**
- 11:50 - 12:00** **Scheduling Future Focus Group Activities**

Attachment B

POLLUTANTS OF CONCERN & PROBABLE SOURCES

- lindane (*agriculture, pest control companies*)
- tri methyl benzene (?)
- bis (2 ethylhexyl) phthalate (*cutting oils, furniture manufacturing, machine shops, maintenance of machinery*)
- methylene chloride (*maintenance of machinery, auto repair, printers, graphics, furniture manufacturing*)
- copper (*printers, metal finishers*)
- silver (*printers, metal finishers, photo processors*)
- zinc (*agriculture, pest control, laundry chemicals, automotive repair*)
- chromium (*metal finishers*)
- TCE (*printers, automotive, metal finishers, aerospace*)
- TCA (*printers, automotive, metal finishers, aerospace*)
- nickel (*automotive repair*)
- benzene (*automotive repair, printers, refineries*)
- chloroform (*health services*)
- MEK (*automotive repair, printers, labs*)
- xylenes (*automotive repair, printers, labs*)
- cadmium (*printers, graphics*)

Attachment C

Draft Workshop Agenda

WHY ARE WE HERE?

Regulatory mandates (Broad spectrum of current and future) *Dave MacKenzie*

Pollution Prevention Introduction (It's not the treatment or transfer of pollutants) *Adriana Renescu*

Pollution Prevention is Good for Business (Getting Back Customers, Staying in Business, Increasing Business, Increasing Profits) *Joe and Dave will find a laundry person*

POLLUTANTS OF CONCERN AND SOURCES

Present our findings

Solicit additional information

Theresa Dodge

OPPORTUNITIES TO WORK TOGETHER WITH CUSTOMERS ON POLLUTION PREVENTION ACTIVITIES

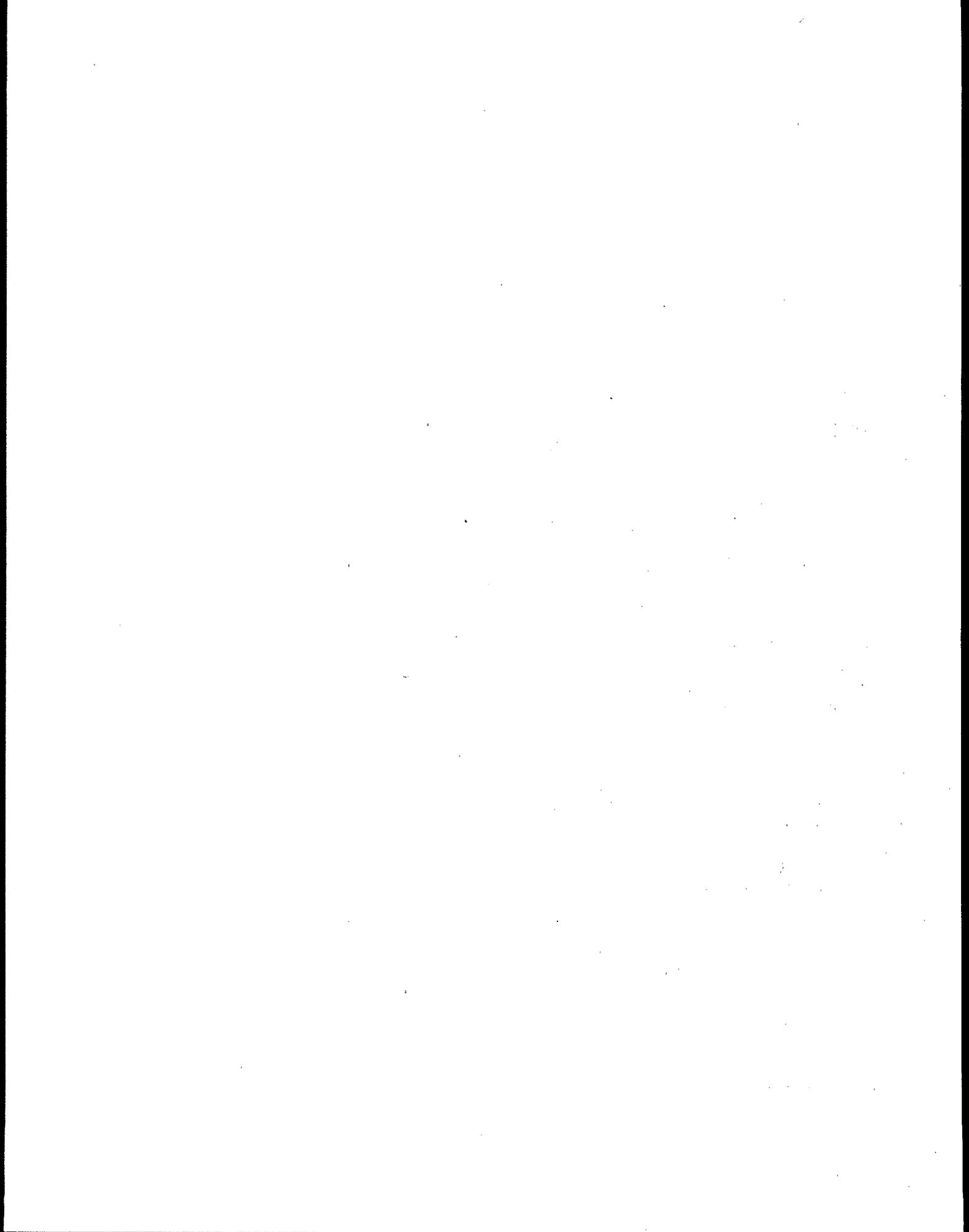
Providing information to customers, publicizing assistance programs, use as a facet of marketing efforts *Joe and Dave will find a laundry person*

RESOURCES AVAILABLE TO SUPPORT POLLUTION PREVENTION EFFORTS

Donna Chen, Kathy Barwick, BEAC, Edison Representative

LUNCH BREAK

The afternoon sessions will be established after Cam conducts his assessments with the laundries



SUMMARY

Focus Group Meeting
March 31, 1993
Los Angeles County Sanitation Districts

Welcome and Introductions

In attendance were Theresa Dodge of the Los Angeles Sanitation Districts, Adriana Renescu of the Orange County Sanitation Districts, Lalo Bakhoum of the South Coast Air Quality Management District, Dave MacKenzie of the Western Textile Services Association, Joe Zapalac of Welch's Uniform Rental, Tara Lusk and Donna Chen of the City of Los Angeles, Larry Snow of Reliable Textile, Eileen Sheehan of the U.S. EPA, and Tony Eulo of the Local Government Commission. Attachment A is the agenda from the meeting.

Update on Program Activities: Report on the Laundry Assessments

Representatives of the laundries and sanitation agencies discussed their experiences during the laundry assessments performed by Cam Metcalf. The laundries visited had a fairly wide variety of operations with different customers and different environmental regulatory agencies to deal with.

Eileen reported that, based on what he saw, Cam felt that the three areas that could be addressed were energy conservation, water conservation, and process chemicals. Laundry representatives felt that most laundry owners knew about the potential improvements available from these ideas but were either already implementing them or unable to implement them for financial reasons. Old facilities can be very difficult to retrofit and an 18 month payback period or less is needed to make a project viable for this industry.

Another point that Cam asked Eileen to raise was the importance of the laundry drivers in communicating the pollution prevention message. Laundry representatives brought up two important issues:

- They are not called drivers but are instead called route salespeople. They are the only field representatives the laundries have. Their territories are exclusive and any time not spent actually servicing customers is spent finding new customers;
- The route salespeople work on pure commission and, therefore, have a very limited interest in monitoring the "cleanliness" of the soiled towels and uniforms. They are most interested in making their service calls as quickly as possible. In addition, being on commission, they cannot be made to attend trainings unless the laundry owner is going to pay them for doing so. Some laundries have had success in getting route salespeople to a training if a dinner is included and it doesn't

limit their field time.

These two points led the group to conclude that:

- The route salespeople are still very important to this effort - especially if they are the only field representatives that the laundries have;
- The workshops need to address how to develop better training programs for route salespeople; and
- Route salespeople should be brought into the effort at some point to get their feedback.

Two other ideas mentioned for presenting pollution prevention ideas in a manner that is likely to generate the interest of route salespeople is to present these ideas as "Tips for better serving customers" and to potentially develop a bonus program for preventing pollution and protecting the laundry facility.

Finalizing the Workshop Agenda: Reevaluation of the Afternoon Session

The group wanted to wait until Cam has submitted his report to determine whether or not a session on laundry operations would be useful. The report is due April 17.

Other afternoon agenda items are:

- The Importance of Route Salespeople and
- Technical Resources and Training / Marketing Training To & For Route Salespeople

Ending the workshops at 2 pm was suggested to minimize the time spent in the afternoon.

To develop these agenda items, it was brought up that the laundries have people who are responsible for training and motivating laundry staff. These people will be experts in developing approaches that will garner the interest of the target audience. Project staff will contact these people to introduce them to the workshops and obtain their input.

Some specific strategies were identified for working with route salespeople. These included:

- Having checking systems at the laundries;
- Providing route salespeople with incentives;
- Providing route salespeople with brochures;
- Mandating that the route salespeople do a better job of working with their customers; and

- Designing a "Reference Checklist" that the route salespeople could keep in their trucks. The checklist would clearly describe what the salespeople should be doing at each stop to appropriately screen the materials that they're picking up.

Dave is going to speak to the Teamsters and get them involved in this effort in order to brief them on the issues that the laundries are facing in this area and gain their cooperation in working with the route salespeople.

Finalizing the Workshop Agenda: Update on Speaker Solicitation

Tony informed the group that Kathy Barwick and Donna Chen had already agreed to speak. Other speakers had not yet been contacted.

Dave and Joe were going to find speakers for the two items they agreed to find speakers for before the next planning meeting. Attachment B is the updated workshop agenda.

Outreach Strategy Update

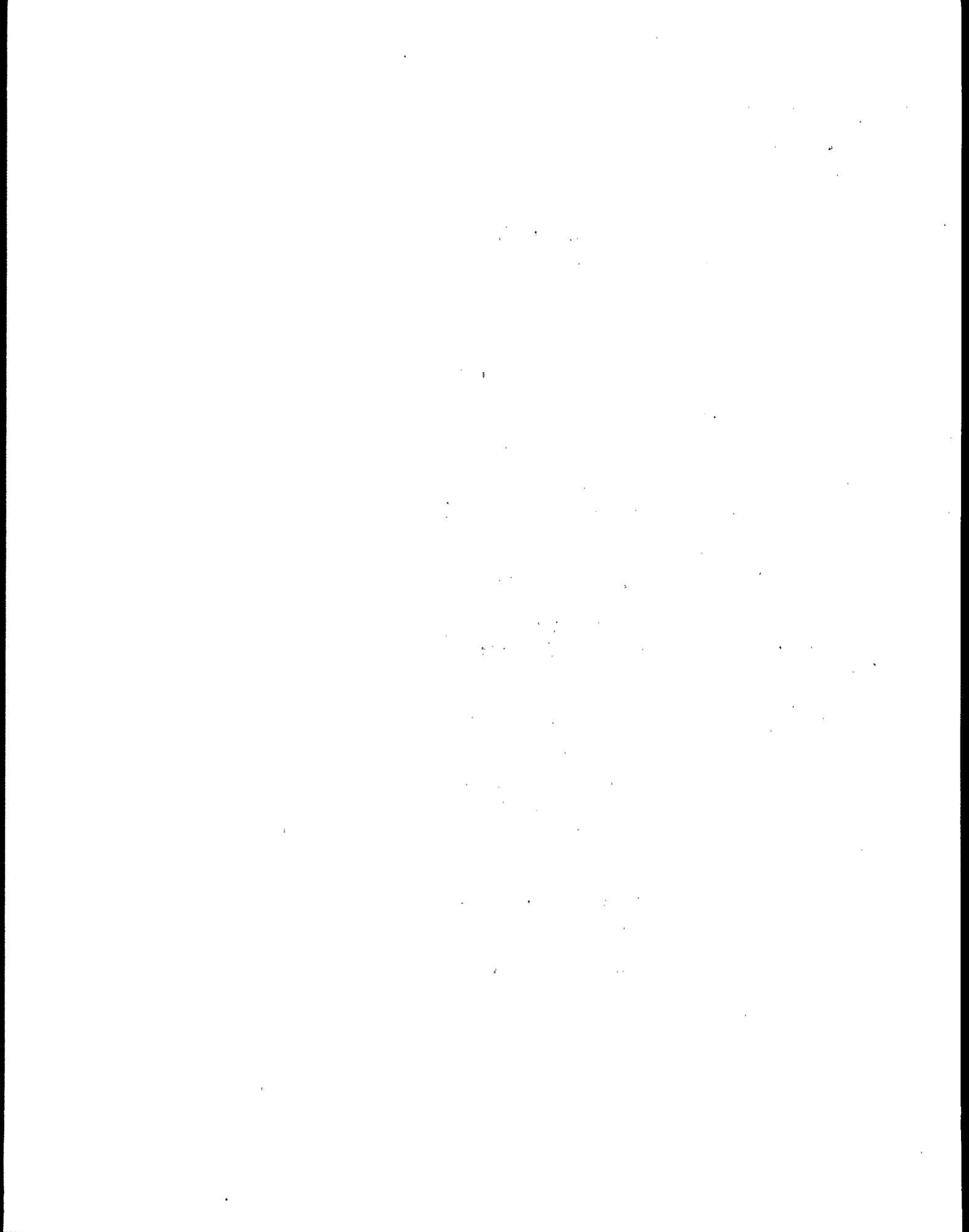
Project staff had not yet done the workshop flyer because the workshops have been postponed. The flyer will be completed in the coming weeks.

Developing Resources to Facilitate the Exchange of Pollution Prevention Information Between Laundries and Their Customers

Ideas for developing these resources were discussed. Participants indicated that it would be best if the project staff developed these resources. UC Riverside, the LA HTM Office, and the EPA were all mentioned as sources for model bibliographies. Orange County and Los Angeles County Sanitation Districts were mentioned as potential sources for identifying model checklists. A reference list of governmental employees (who, where, what they do) will be developed for the workshop as well.

Scheduling Future Focus Group Activities

The workshop planning focus group will meet again on April 27 to discuss the afternoon session, monitor planning progress, and review the outreach strategy. We will plan on doing a "dry run" of the workshop at this session.



Attachment A

**Focus Group Meeting
March 31, 1993
Los Angeles County Sanitation Districts**

- | | |
|--------------------|---|
| 2:00 - 2:10 | Welcome and Introductions |
| 2:10 - 2:25 | Update on Program Activities <ul style="list-style-type: none">• Update on General Programmatic Activities• Report on the Laundry Assessments |
| 2:25 - 3:00 | Finalizing the Workshop Agenda <ul style="list-style-type: none">• Reevaluation of the Afternoon Session• Update on Speaker Solicitation |
| 3:00 - 3:10 | Outreach Strategy Update |
| 3:10 - 3:40 | Developing Resources To Facilitate The Exchange of Pollution Prevention Information Between Laundries and Their Customers |
| 3:40 - 3:55 | Scheduling Future Focus Group Activities |
| 3:55 - 4:00 | Meeting Evaluation and Adjournment |

Attachment B

Draft Workshop Agenda

WHY ARE WE HERE?

Regulatory mandates (Broad spectrum of current and future) *Dave Mackenzie*

Pollution Prevention Introduction (It's not the treatment or transfer of pollutants) *Adriana Renescu*

Pollution Prevention is Good for Business (Getting Back Customers, Staying in Business, Increasing Business, Increasing Profits) *Joe and Dave will find a laundry person*

POLLUTANTS OF CONCERN AND SOURCES

Present our findings
Solicit additional information
Theresa Dodge

OPPORTUNITIES TO WORK TOGETHER WITH CUSTOMERS ON POLLUTION PREVENTION ACTIVITIES

Providing information to customers, publicizing assistance programs, use as a facet of marketing efforts *Joe and Dave will find a laundry person*

RESOURCES AVAILABLE TO SUPPORT POLLUTION PREVENTION EFFORTS

Donna Chen, Kathy Barwick, BEAC, Edison, Ecosa Representatives

LUNCH BREAK

THE IMPORTANCE OF ROUTE SALESPEOPLE

MARKETING TRAINING TO AND FOR ROUTE SALESPEOPLE

Both of these items should be covered by a laundry representative
The need for additional afternoon sessions will be established after Cam completes his report on the laundry assessments

SUMMARY

Focus Group Meeting
April 27, 1993
Los Angeles County Sanitation Districts

Welcome and Introductions

In attendance were Theresa Dodge of the Los Angeles Sanitation Districts, Gracie Tucker of the South Coast Air Quality Management District, Dave MacKenzie of the Western Textile Services Association, Lee Terry of Prudential, Tara Lusk of the City of Los Angeles Bureau of Sanitation, Bill Warren of the City of Los Angeles HTM Office, Bob Kerr of Kerr and Associates, and Tony Eulo of the Local Government Commission. Attachment A is the agenda from the meeting.

Update on Workshop Planning Activities

Eulo summarized the planning activities to date. Facilities at the City of Commerce and City of Anaheim have been obtained. Most of the speakers have been solicited and have agreed to speak.

Finalizing the Workshop Agenda

Kerr distributed copies of Cam's preliminary report. The group did not have time to fully review them before this discussion. The group wanted to wait until they had reviewed the report to determine whether or not a session on laundry operations would be useful.

It was decided that it would be more appropriate if Lee Terry gave the discussion on regulatory mandates since he is already more familiar with them than Dave MacKenzie and that Dave would be the perfect speaker for the Pollution Prevention is Good for Business item.

Other speakers were mentioned for the Providing Information to Customers item. MacKenzie will solicit them or forward their names to Eulo.

With regards to the afternoon session on strategies for involving route salespeople and professional salespeople, it was decided to convene a meeting on May 10 with trainers and sales managers from the laundries to ask them for their ideas and guidance.

Attachment B is the updated workshop agenda.

Outreach Strategy Update

A draft flyer was reviewed and commented upon by the group. Staff will redo the flyer and send photo-ready originals to MacKenzie and the representatives from the three POTWs for mailing.

Developing Resources to Facilitate the Exchange of Pollution Prevention Information Between Laundries and Their Customers

Warren shared a listing that the HTM Office has developed that listed many of the fact sheets that are available and instructions on how to obtain them. It was decided that the fact sheets of the three POTWs would be added to this list and that the list would be slightly reorganized. This finished product would be the resource bibliography.

Given differences among POTW fact sheets that are based on local concerns, it was decided that a package of fact sheets from the California Department of Toxic Substances control would be the resource package given to participants.

Workshop Handouts

Staff distributed a list of handouts proposed to be distributed at the workshops. The BMP summary prepared by Susan April was reviewed and accepted as an excellent handout. The amended list of handouts is Attachment C to this summary.

Scheduling Future Focus Group Activities

The workshop planning focus group will meet again on May 10 to discuss the afternoon session. All other communications will occur via phone, mail, and fax.

Attachment A

**Focus Group Meeting
April 27, 1993
Los Angeles County Sanitation Districts**

- 8:00 - 8:10 Welcome and Introductions
- 8:10 - 8:25 Update on Workshop Planning Activities
- Logistical Arrangements
 - Speaker Solicitation
 - Other
- 8:25 - 9:00 Finalizing the Workshop Agenda
- Reevaluation of the Afternoon Session
 - Identifying Additional Speakers
- 9:00 - 9:15 Outreach Strategy
- Review of Promotional Flyer
 - Analysis of Overall Outreach Strategy
- 9:15 - 9:30 Update on Developing Resources To Facilitate
The Exchange of Pollution Prevention
Information Between Laundries and Their
Customers
- 9:30 - 9:45 Review of Workshop Handouts
- 9:45 - 9:50 Future Planning Tasks
- 9:50 - 9:55 Scheduling Future Focus Group Activities
- 9:55 - 10:00 Meeting Evaluation and Adjournment

Draft Workshop Agenda

- 9:00 WELCOME AND INTRODUCTIONS
- 9:15 WHY ARE WE HERE?
- Regulatory mandates (Broad spectrum of current and future) *Lee Terry*
Pollution Prevention Introduction (It's not the treatment or transfer of
pollutants) *Adriana Renescu*
Pollution Prevention is Good for Business (Getting Back Customers,
Staying in Business, Increasing Business, Increasing Profits) *Dave
MacKenzie*
- 10:00 POLLUTANTS OF CONCERN AND SOURCES
- Present our findings
Solicit additional information
Theresa Dodge
- 10:30 BREAK
- 10:45 OPPORTUNITIES TO WORK TOGETHER WITH CUSTOMERS ON
POLLUTION PREVENTION ACTIVITIES
- Providing information to customers, publicizing assistance programs, use as a
facet of marketing efforts *Joe and Dave will find a laundry person*
- 11:15 RESOURCES AVAILABLE TO SUPPORT POLLUTION
PREVENTION EFFORTS
- Donna Chen, Kathy Barwick, BEAC, Edison, Ecosa Representatives,
SCAQMD
- 12:00 LUNCH BREAK (Lunch Provided)
- 1:00 THE IMPORTANCE OF ROUTE SALESPEOPLE AND
PROFESSIONAL SALESPEOPLE and DESIGNING TRAINING FOR
SALESPEOPLE
- Both of these items should be covered by a laundry representative*
- 2:00 POLLUTION PREVENTION OPPORTUNITIES IN LAUNDRY
OPERATIONS
- Cam Metcalf*
- 3:00 ADJOURNMENT

Attachment C

Draft List of Workshop Handouts

Meeting Agenda	The agenda for the workshop.
Participants List	A listing of all workshop attendees.
Evaluation Form	A form to assess the quality of the workshop and the participant's interest in future pollution prevention activities.
Government Resource List	A 1-2 page listing describing what local, state and federal government agencies do and who are the key contacts for each program. Addresses and phone numbers will be provided.
Resource Document Listing	A brief bibliography identifying 3-10 key written resources for each type of business. It will be organized by business type.
Sample Resource Packet	A package of DTSC Fact Sheets that are available for immediate handout by laundry staff.
BMP Brief	A brief summary of BMP's developed by other states.
Pollutants of Concern	A summary of the pollutants that are causing problems for POTWs and the industries that are most likely to be generating them.
Summary of Key Points	Summaries provided by the speakers that outline the key points in their presentation.
The Hazardous Waste Issue: A Summary of Key Points	A paper describing the major points related to hazardous waste hauling and treatment issues affecting industrial laundries.
IIL Manual	The manual prepared by the IIL for their members.
Assessment Summary	The summary of the site assessments performed by Cam Metcalf

SUMMARY

Focus Group Meeting May 10, 1993 Los Angeles County Sanitation Districts

Welcome and Introductions

In attendance were Theresa Dodge of the Los Angeles Sanitation Districts, Adriana Renescu of the Orange County Sanitation Districts, Tara Lusk of the City of Los Angeles Bureau of Sanitation, Butch Wuth of Reliable Textile, Joe Zapalac and Tom Robison of Welch's Uniform Rental, Bob Rohrbough of Mission Industries, Rick Dumas of L & N Uniform, and Tony Eulo of the Local Government Commission.

Description of the Project

Eulo gave a brief overview of the project for the new attendees. He explained that the explicit purpose of this meeting was to gain the insights of those employed by laundries to motivate salespeople. The purpose of the project and planned activities were included in this summary.

Rather than just focussing on the Route Salespeople, it was brought up that the project should address the Professional Salespeople as well because they typically have more time to spend with the customers.

Description of Strategies

The group brainstormed about the different strategies laundries have employed to motivate salespeople. These included:

Providing Information at Meetings: The route salespeople usually have weekly meetings and the professional salespeople meet nearly daily with their supervisors. These meetings are opportunities to provide information on pollution prevention.

Videos: Some laundries have produced videos on pertinent topics, e.g., safety, OSHA, etc.. A pollution prevention video could be developed as well. Welch's developed an excellent video for approximately \$400 due to the fact that they have an employee with professional video equipment. Having a test after the video promotes a more attentive audience.

Train by Example: On-the-job training is commonly used to show new employees how to do their job. Hands-on pollution prevention assistance training could be provided.

Incentive Programs: Many laundries have incentive programs for safety. Cash prizes are commonly used as the incentive. While it is easy to see how incentives can be used for safety, they may be difficult to use for pollution prevention.

One incentive would be to incorporate providing pollution prevention assistance into the employee's evaluation. This could be done via random field checks of customers or through customer service surveys done through the mail.

War Stories/Positive Case Studies: Examples of how a particular employee has helped a customer could be shared with other employees as a means of encouraging them. The employee with the success story could receive some type of reward as well.

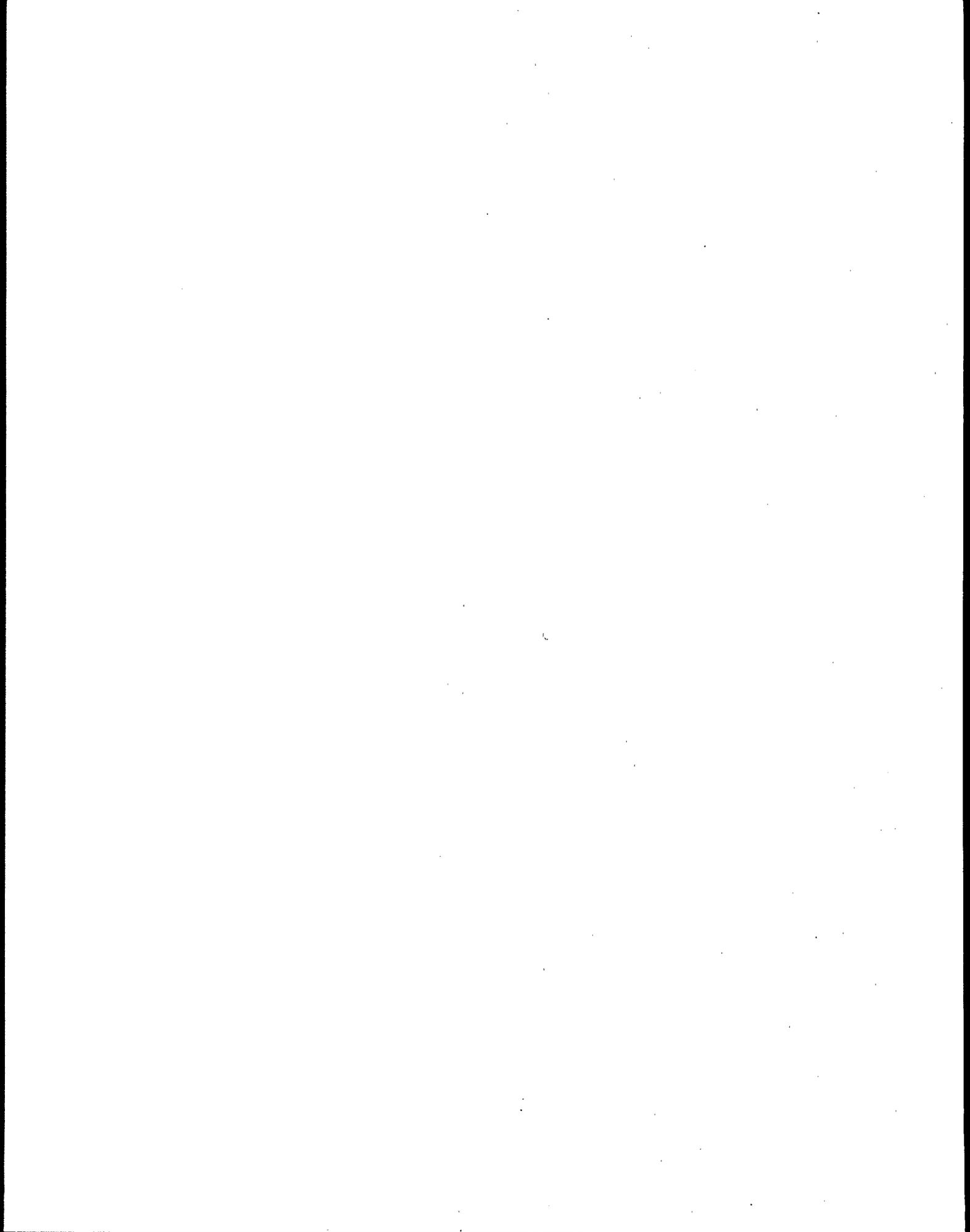
Reinforcing The Message: It was brought up that the pollution prevention message must be reinforced over time. Having cards in the trucks that change periodically would be one way to do this. The message on the cards could rotate between pollution prevention, safety, and sales motivation. The card could be changed on a set schedule.

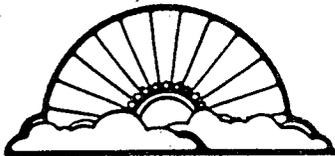
It was decided that all of these ideas have merit and should be presented at the workshops.

Additional Points

Other points made were

- 1) Route salespeople could refer customers with complex pollution prevention issues to facility engineers or professional salespeople who have more time; and
- 2) Materials handed to customers should be available in several languages.





KERR & ASSOCIATES, INC.

2634 Wild Cherry Place • Reston, Virginia 22091 • (703) 476-0710

April 15, 1993

To: Jim Lund, Office of Water (WH-551)

From: Bob Kerr, Kerr & Associates, Inc.

Subject: Principal Sources of Waste Management Problems for Industrial Laundries
Region 9 Pilot Project (IP3)

Ref.: EPA Contract #68-W0-0025, Work Assignment #230
Task 1.3

Attached is a cross-walk of principal waste management problems encountered by laundries and the probable major sources of those problems. These would potentially be the primary focus for the kind of BMP pollution prevention approach supported by both the original workgroup and the focus group meetings.

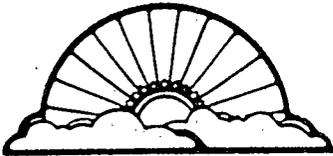
MEMO

To: Eileen Sheehan
From: Susan April

4/14/93

I looked at both the list developed at the first focus group meeting (3/11) and the IIL lists in the customer profile analysis (1992) and came up with the following top industrial SICs that most often cause problems for laundries:

<u>SIC</u>	<u>Name of Industrial Sector</u>	<u>Problem/Pollutants</u>
75	Auto Repair, Services, Parking	shop towels/rags with chlorinated solvents; heavy metals (nickel, zinc); other VOCs (MEK, benzene, xylenes)
55	Auto Dealers & Service Stations	same as above
27	Printing & Publishing (includes graphic arts)	inkers/wipes with chlorinated solvents; heavy metals (silver, cadmium, copper, lead); other VOCs (MEK, benzene, xylenes)
35	Industrial Machinery & Equipment (machine shops)	bis-2-ethylhexyl-phthalate; some chlorinated solvents
34	Fabricated Metal Products (metal finishers)	heavy metals (copper, silver, chromium); some chlorinated solvents (TCA/TCE)
25	Furniture & Fixtures	bis-2-ethylhexyl-phthalate; methylene chloride
37	Transportation Equipment (aerospace)	TCA/TCE
80	Health Services (hospitals, etc.)	chloroform
07	Agricultural Services	lindane, other pesticides
01	Agricultural Production (crops)	same as above
29	Petroleum & Coal Products (refineries)	benzene
73	Business Services (photo processors)	silver
73	Business Services (pest control)	zinc, lindane



KERR & ASSOCIATES, INC.

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January 29, 1993

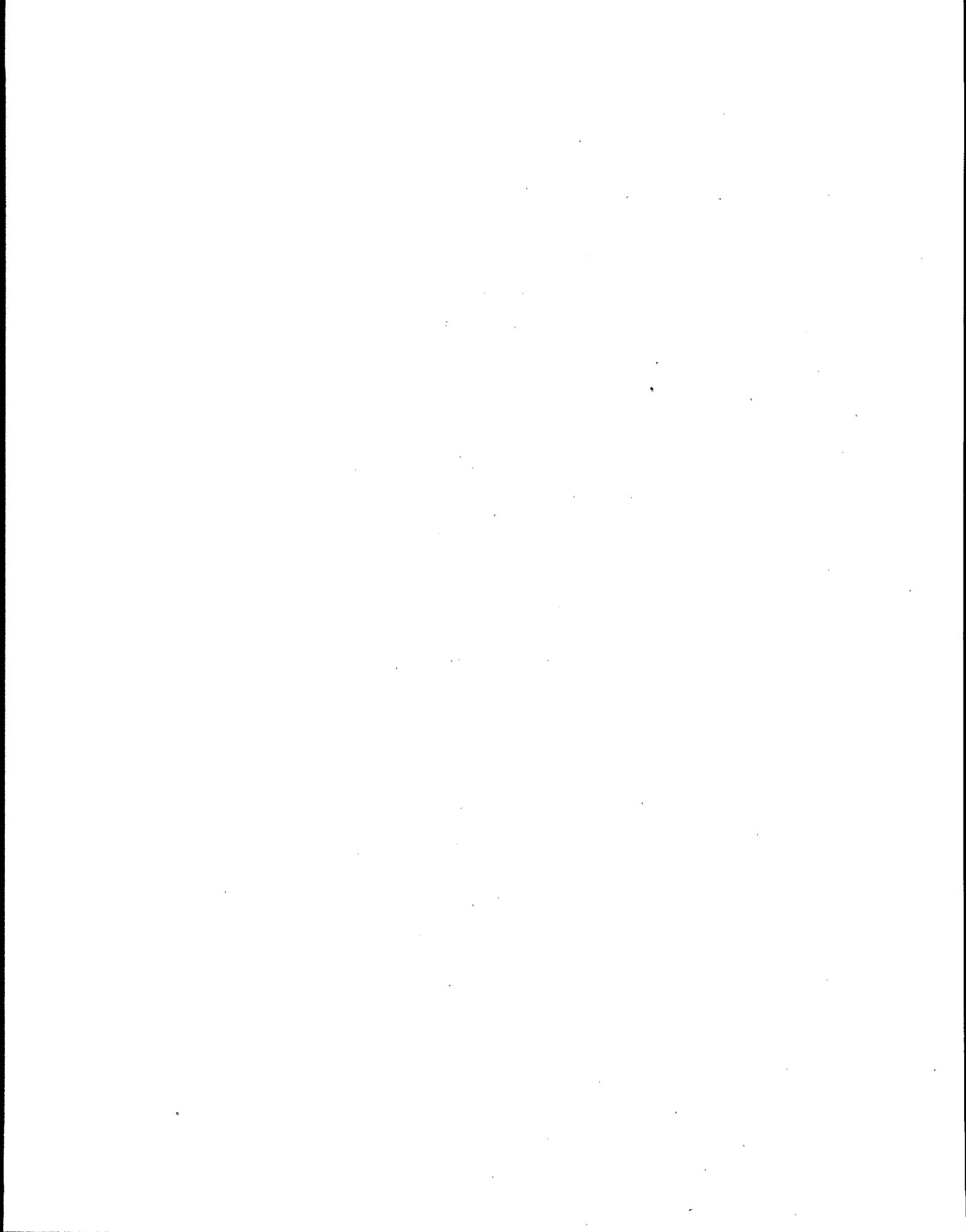
To: Jim Lund, Office of Water (WH-551)

From: Bob Kerr, Kerr & Associates, Inc.

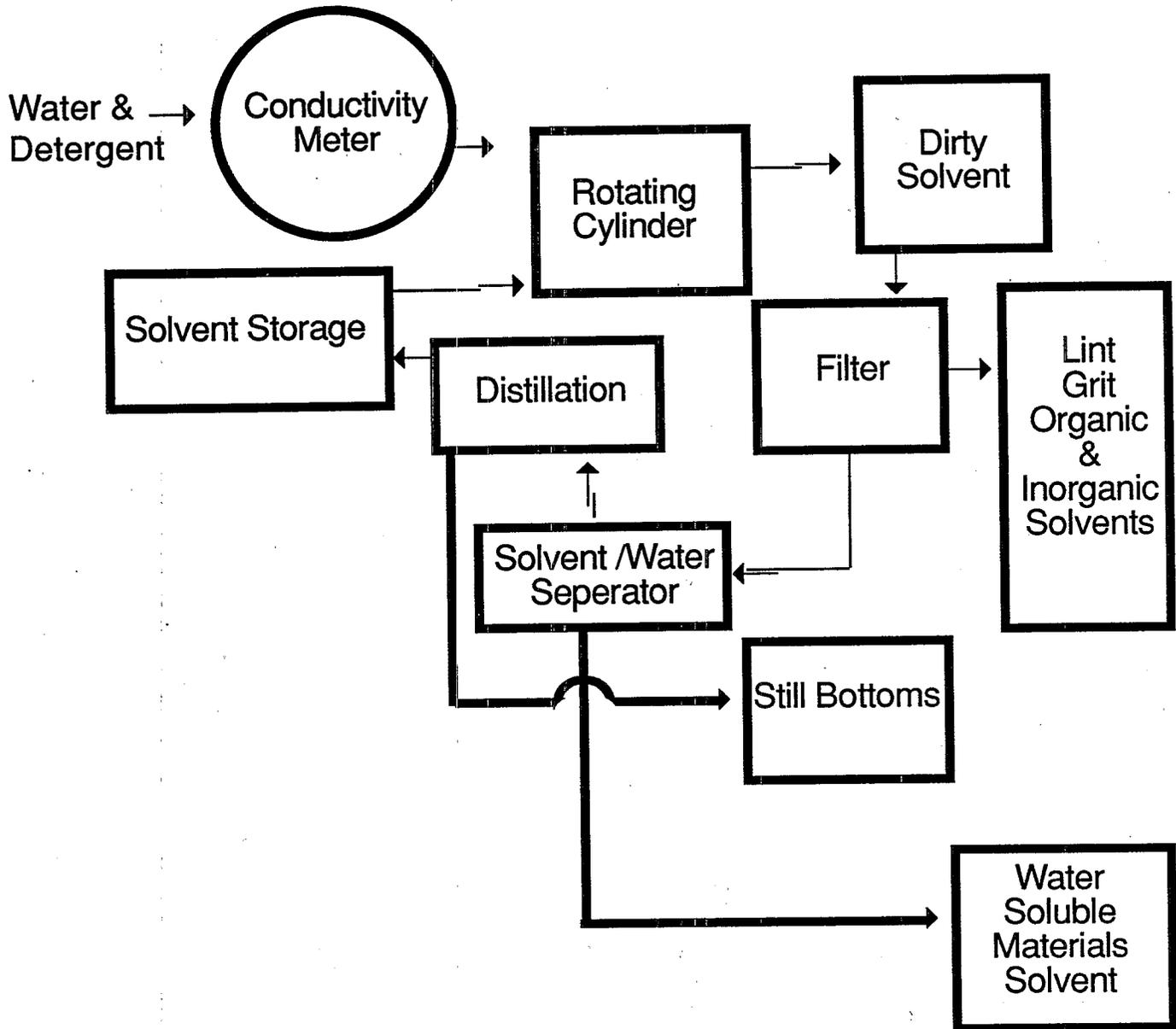
Subject: Process Diagrams for Industrial Laundry Operations/Waste Management Practices
Region 9 Pilot Project (IP3)

Ref.: EPA Contract #68-W0-0025, Work Assignment #230
Task 1.2

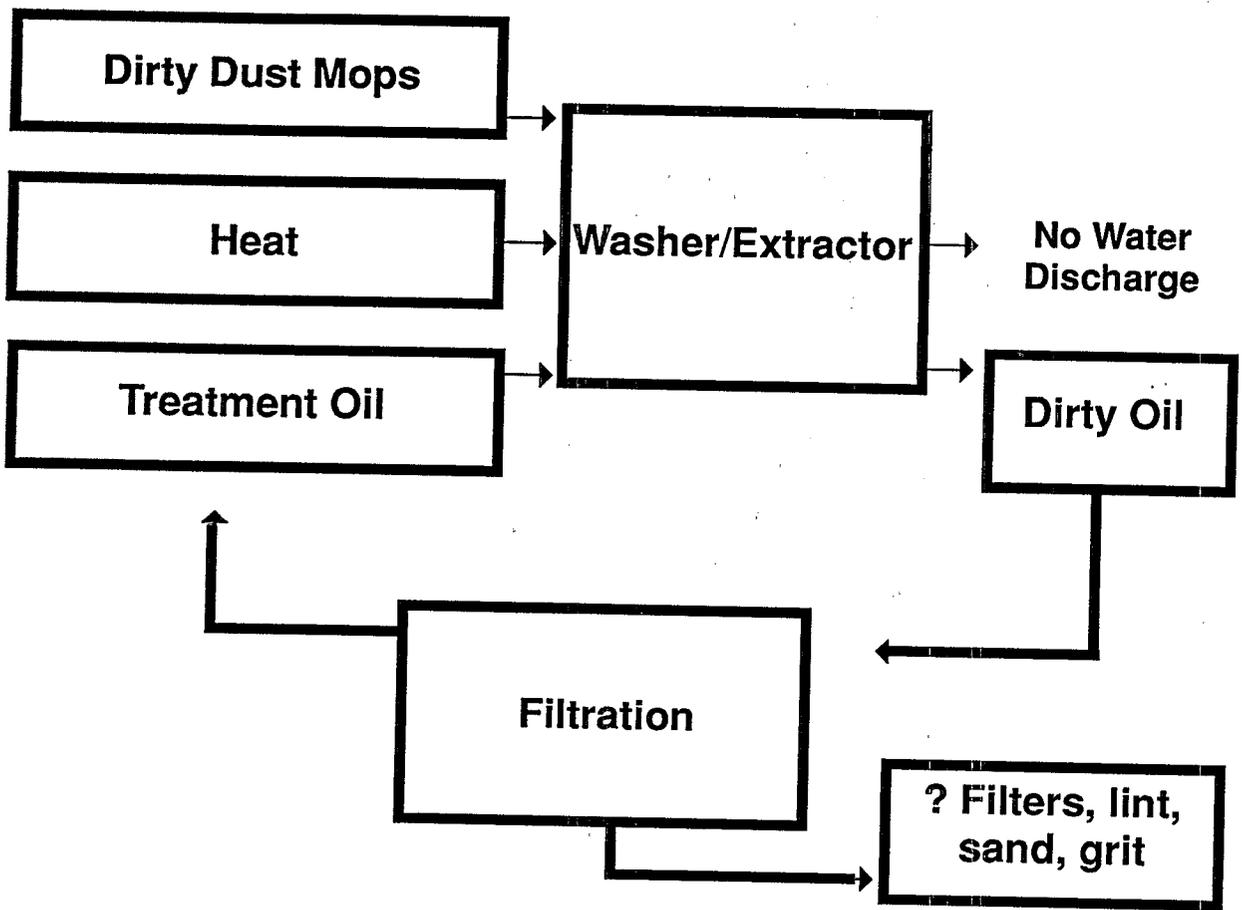
Attached are process diagrams on industrial laundry operations and waste management practices which have been prepared for the workgroup meeting of state and local agency, Region 9, POTW and industrial laundry representatives on February 8th at the offices of the Orange County Sanitation Districts. These will be used during a discussion of current practices and available source reduction alternatives.



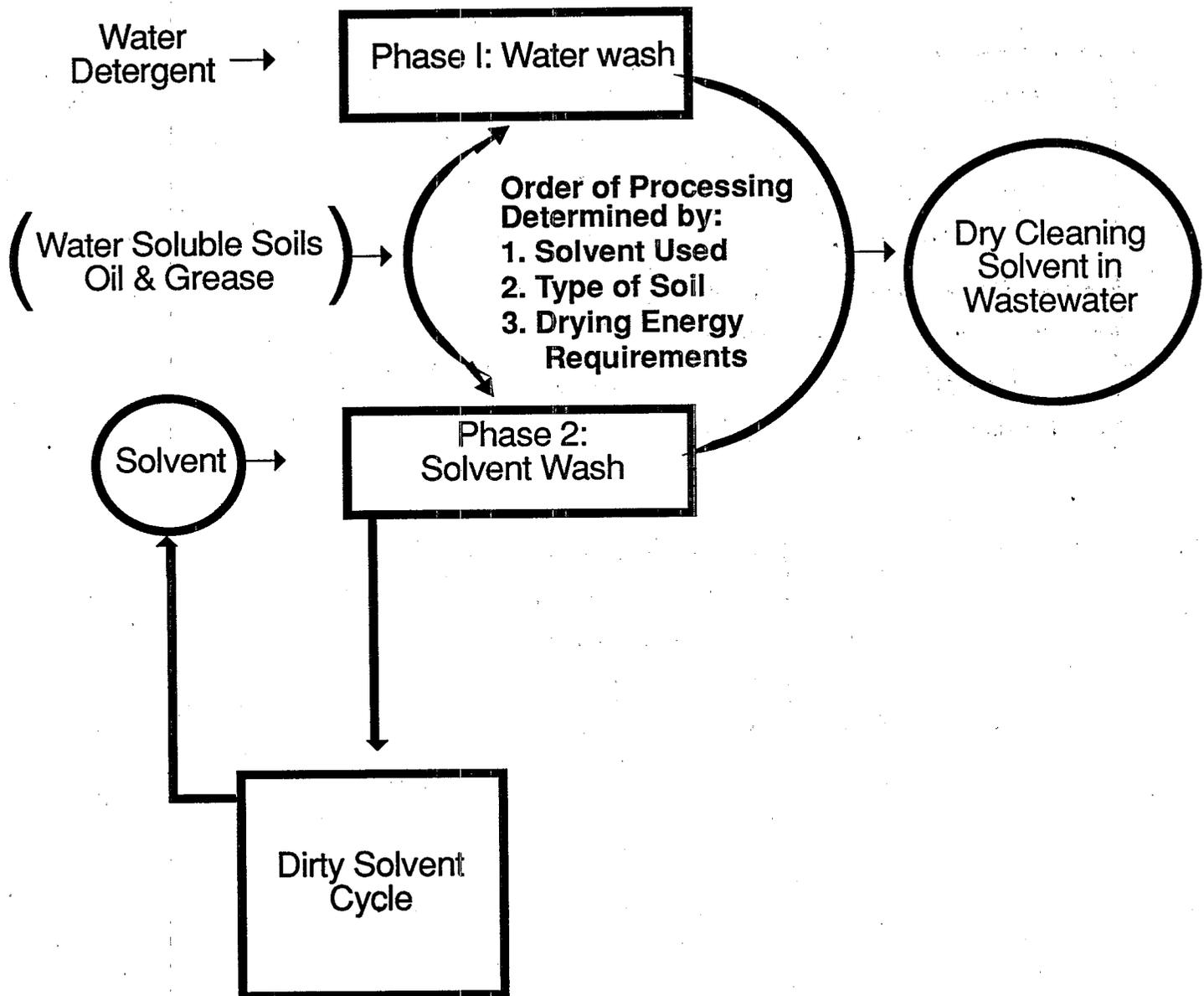
Dry Cleaning Processes



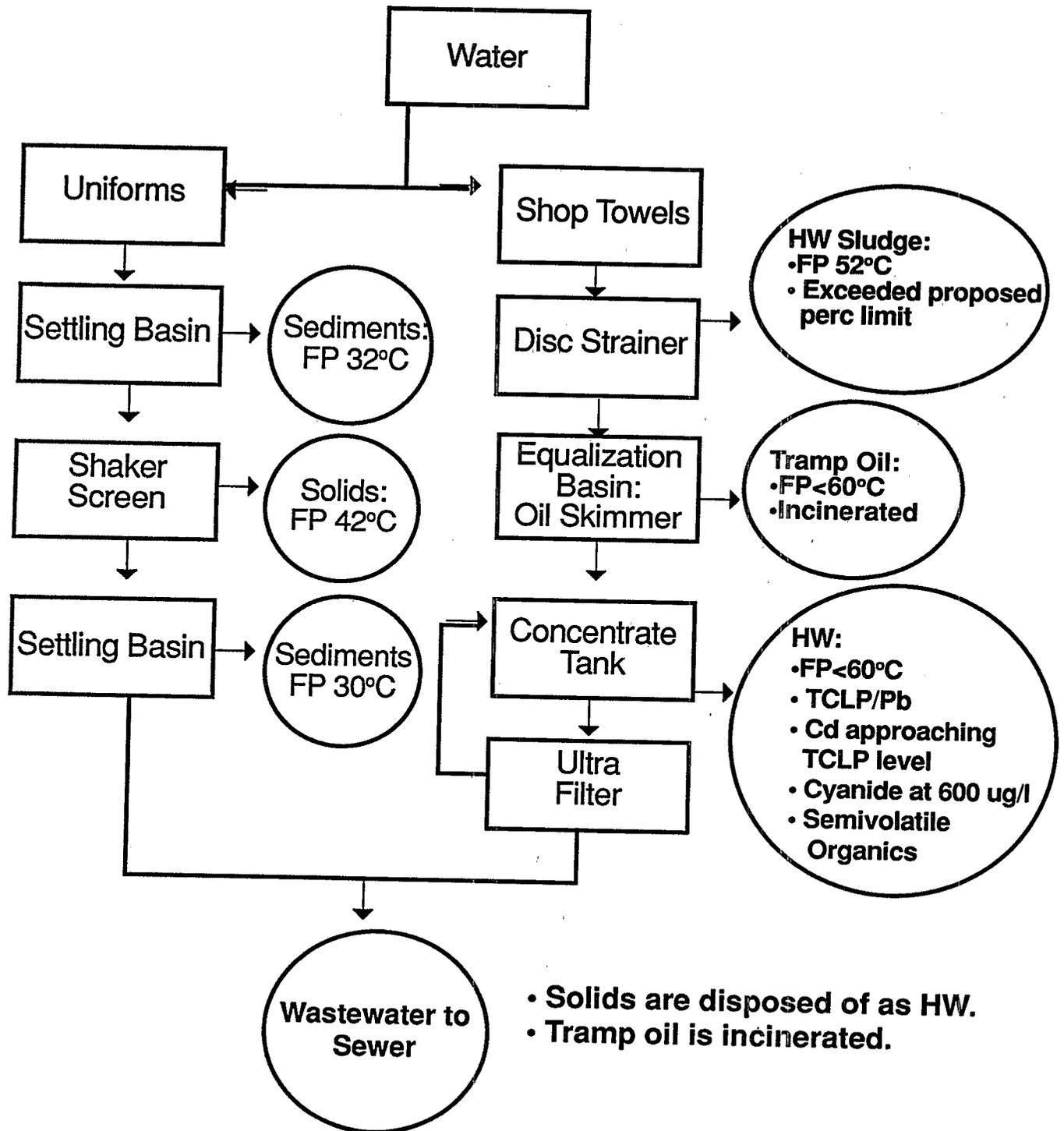
Dust Mops



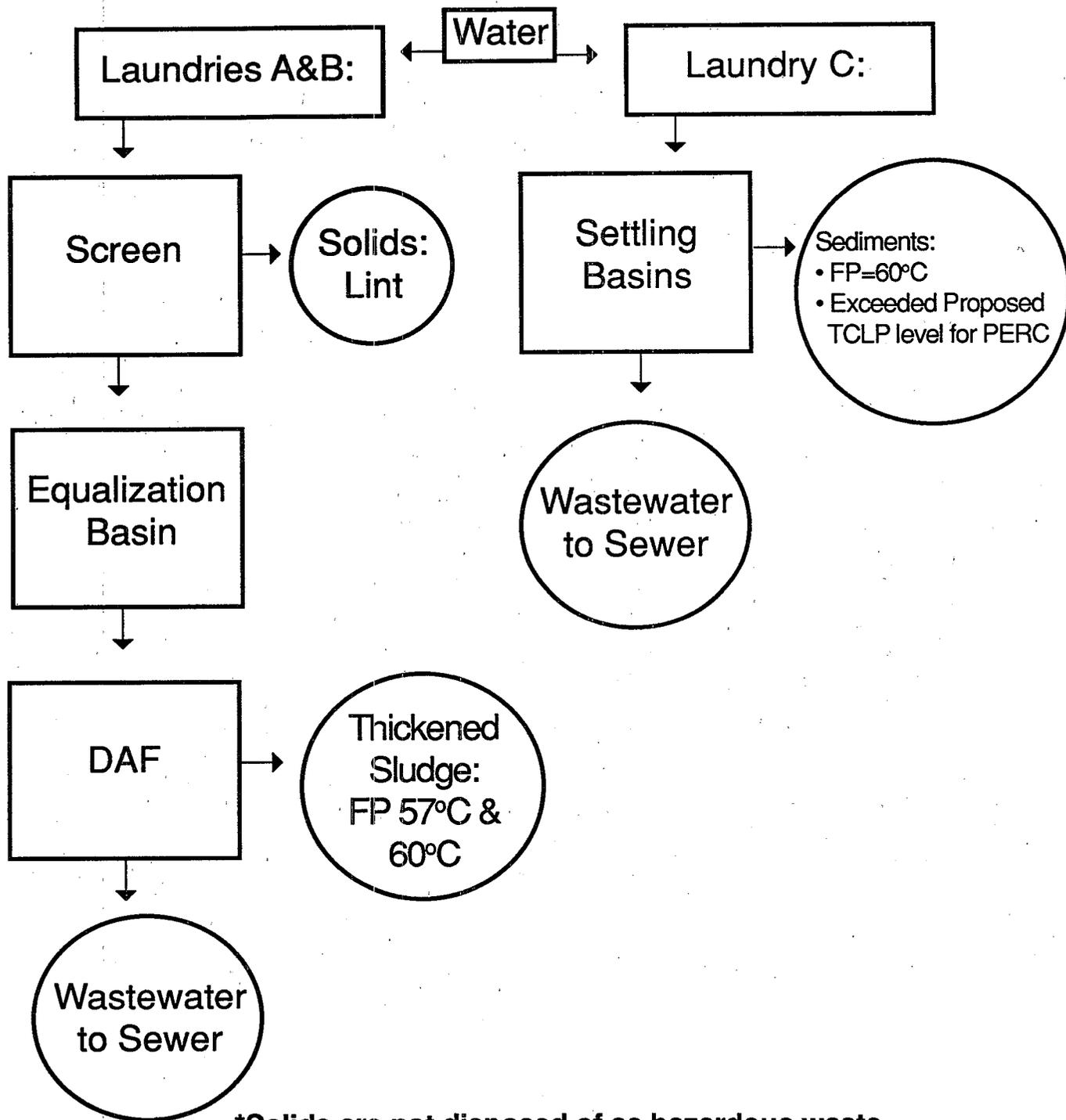
Dual-Phase or Dual -Stage Processing is Being Phased Out as a Laundry Process



Typical Treatment Systems



Typical Treatment Systems



***Solids are not disposed of as hazardous waste**

Load Into Water Washing Machine-3 Types

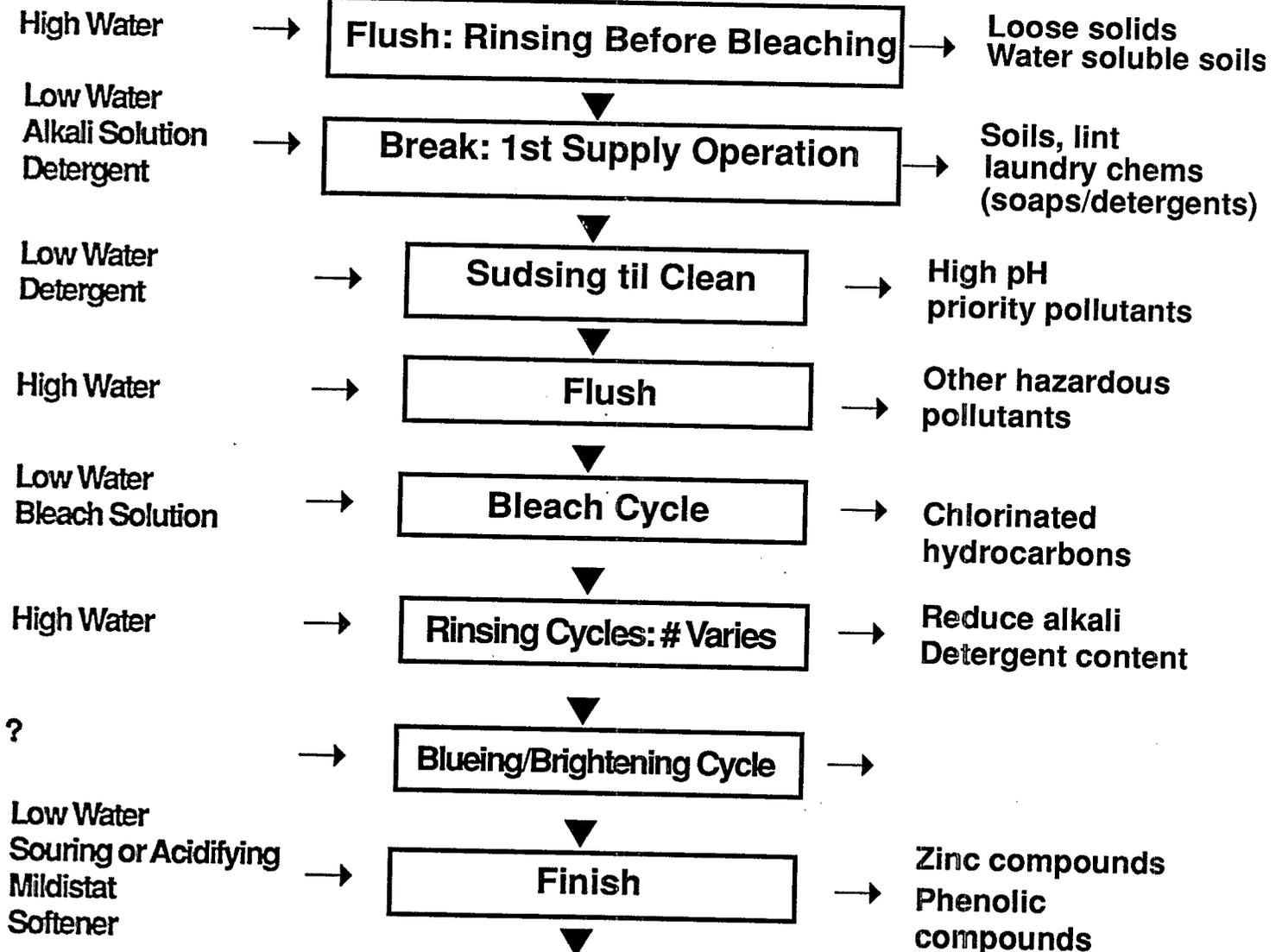
Conventional

Tunnel

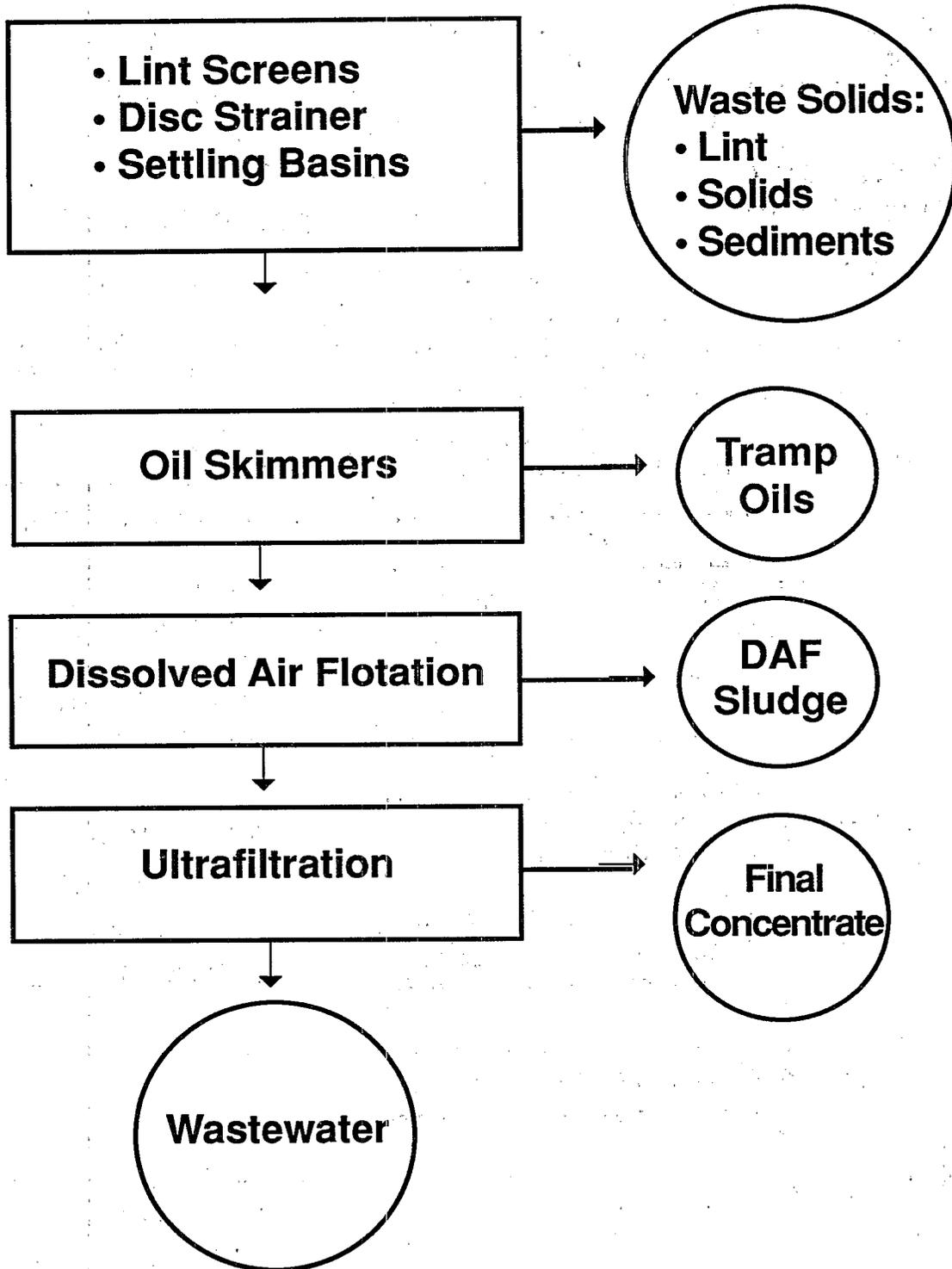
Modular

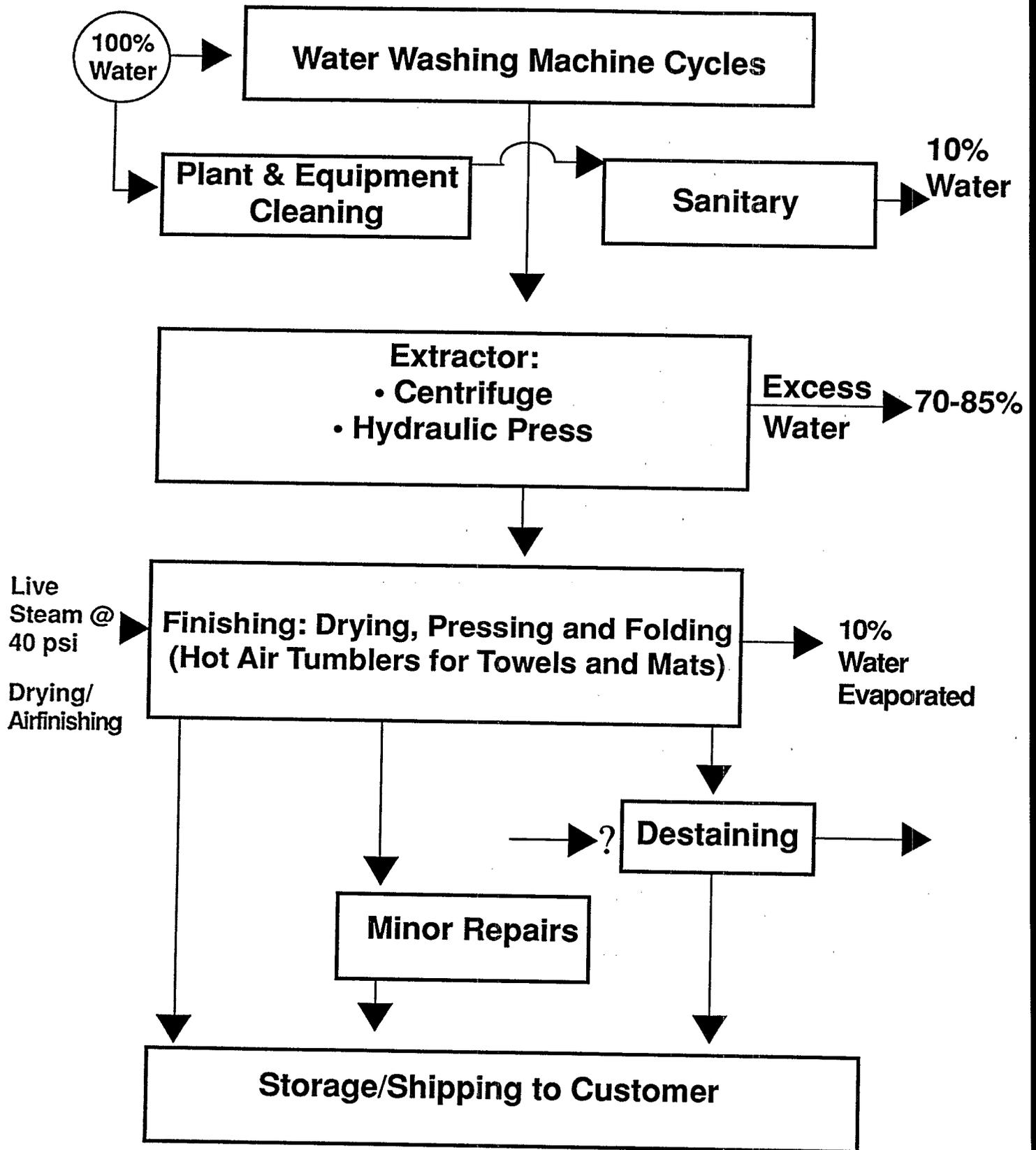
Washing Machine Cycles

- Temp Control
- Water Level Control
- Timing Devices
- Rotation Reverse Device

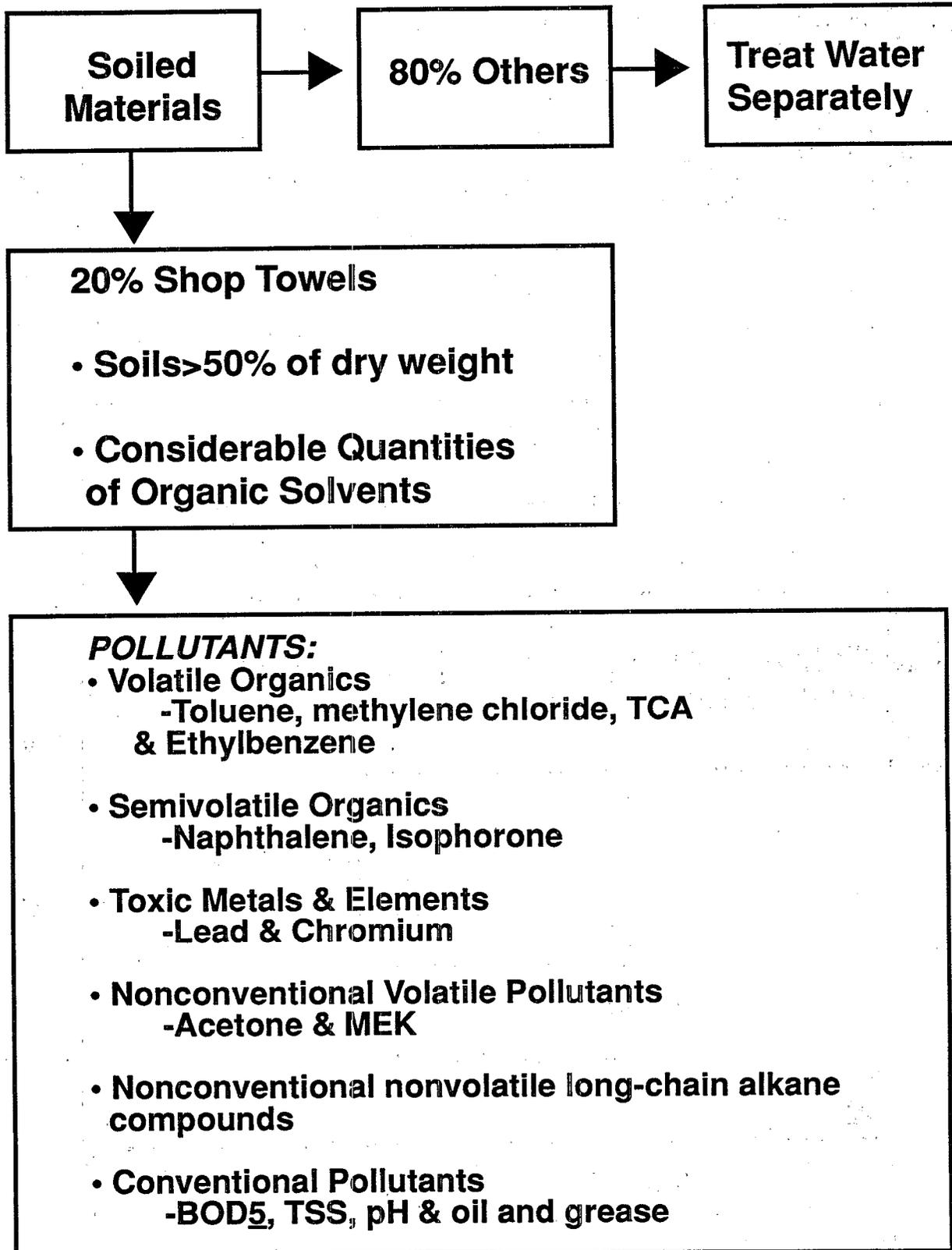


Typical Treatment Systems

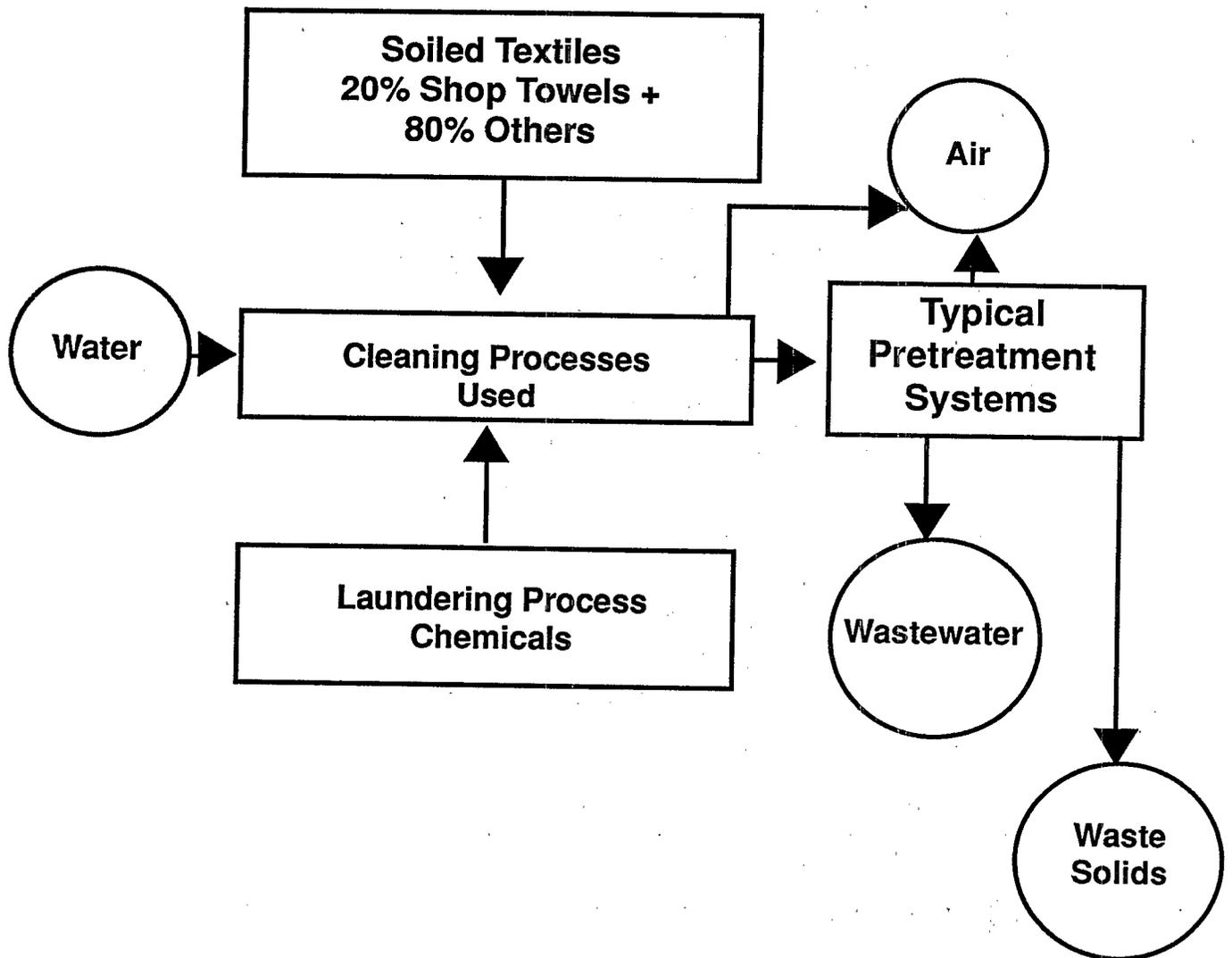




Pollutant Sources



Pollutant Sources



Receiving: Soiled Materials Sorted

- **Soil Type**
- **Fabric Type**
- **Ownership**
- **Garment Type**
- **Color**
- **Destaining**

I.D. Prespotting & Destaining Needed

**Acids
Bleaches
Organic Solvents**

**Soaking
Cold Water**

**Soils
Loose Solids
Lint
Laundry Chems.
Solvent**

Process Depends On:

- **Soil Classification**
- **Item Type**
- **Composition of Fabrics**

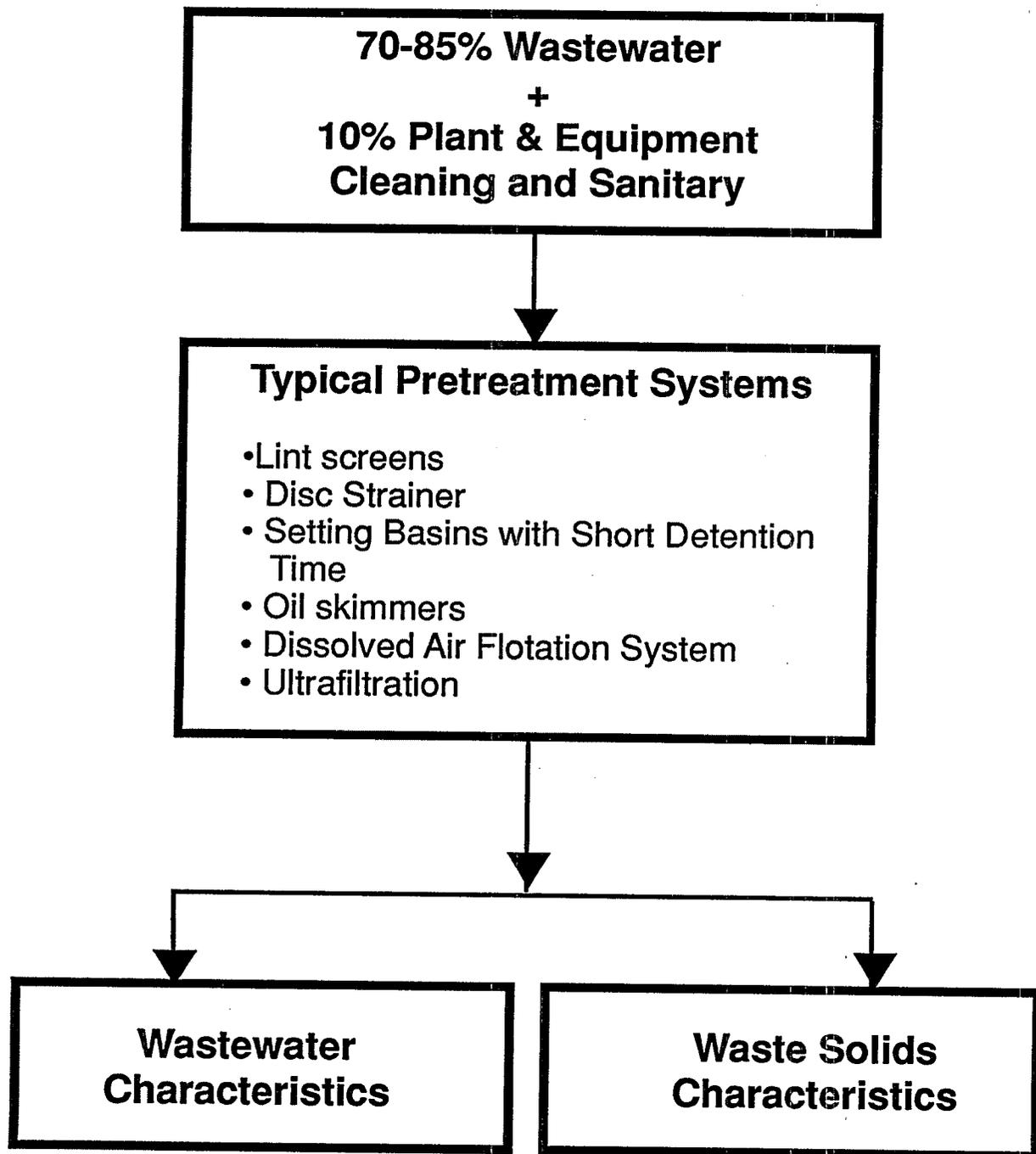
**Water Wash
Laundering
82%**

**Dry Cleaning
13%**

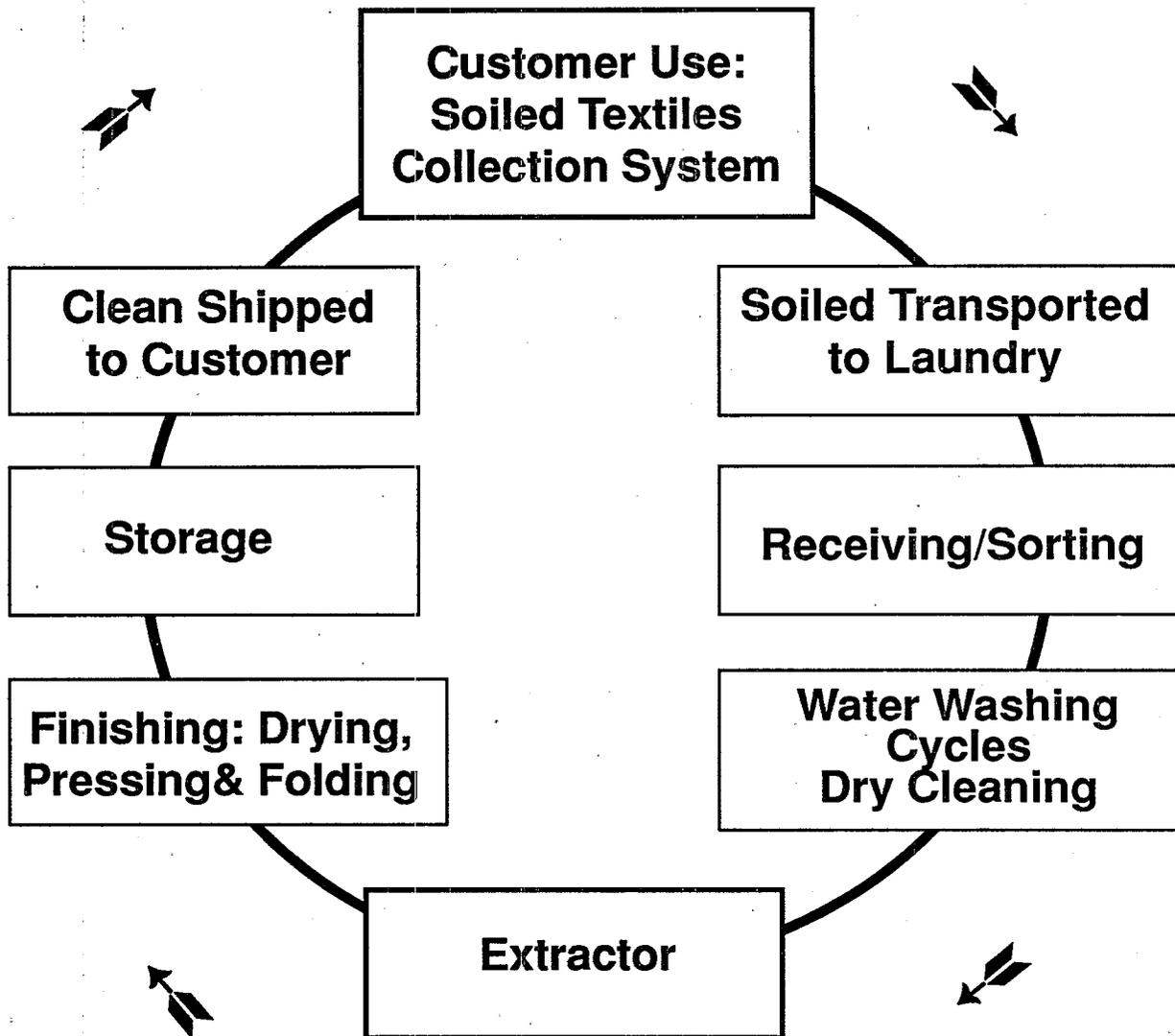
**Dual-Phase
Processing
5%**

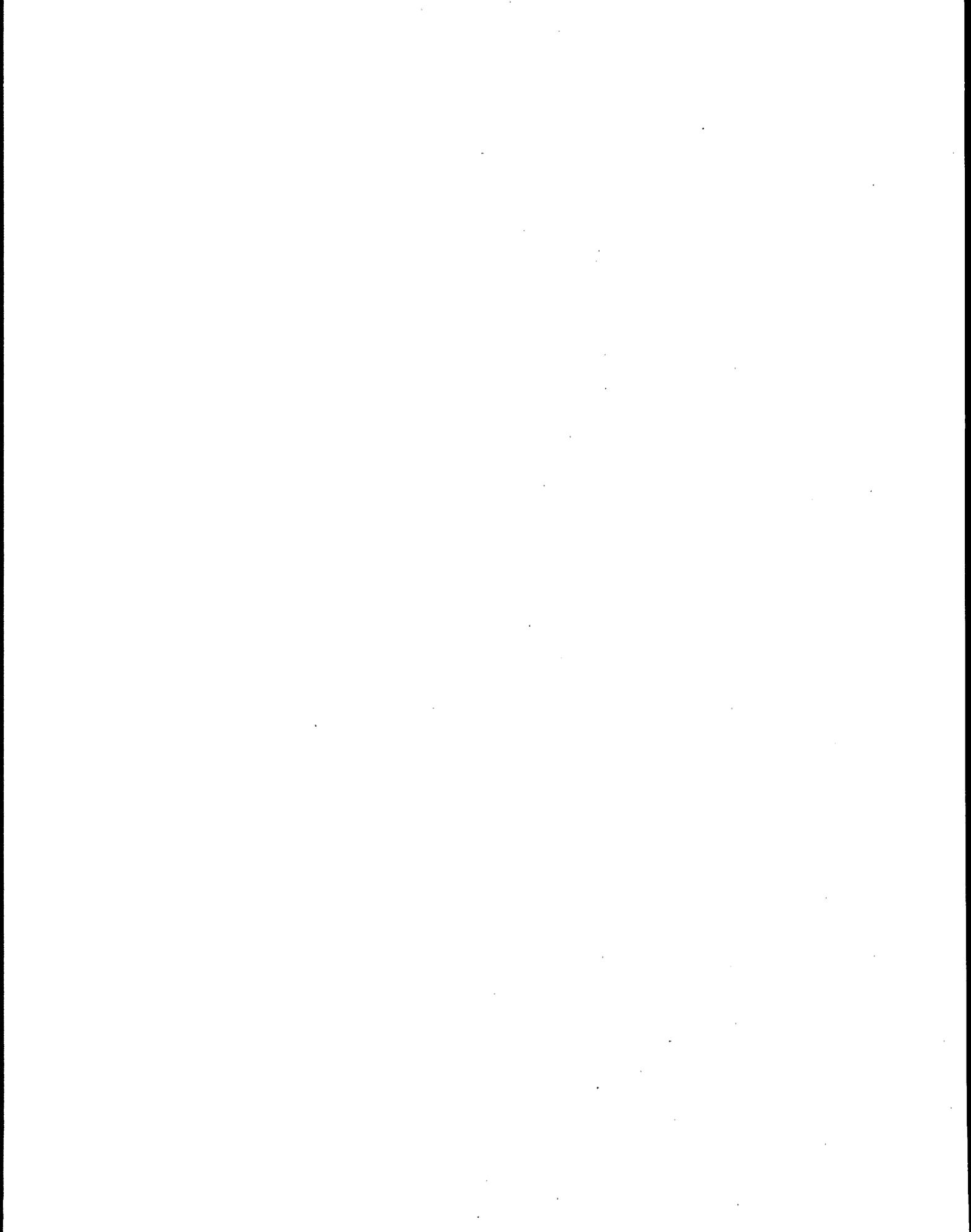


Effluents, Sludges, and Solids

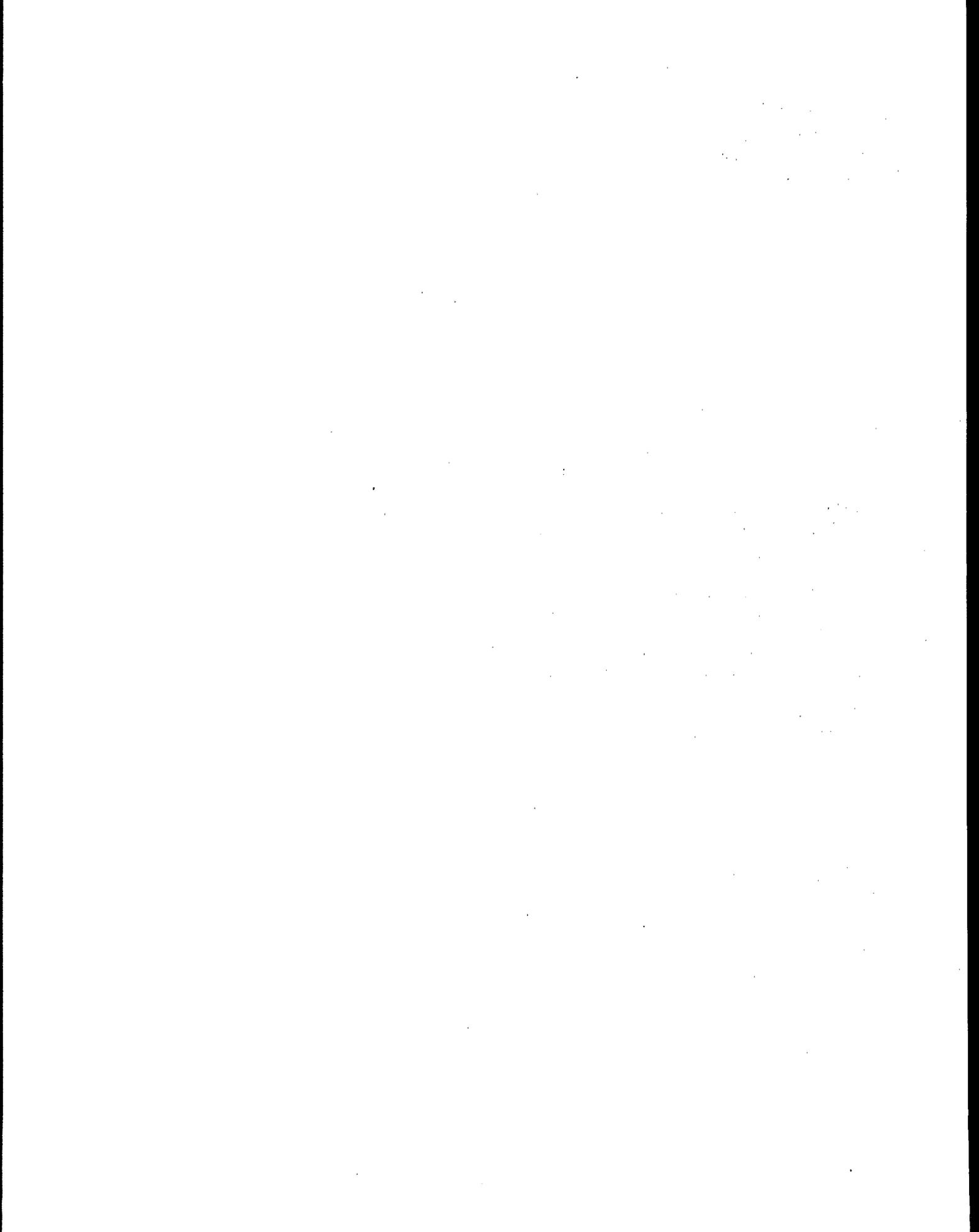


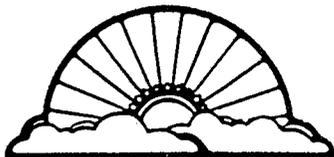
Reusable Textiles Cycle





■ **BEST MANAGEMENT PRACTICES (BMP) FOR SHOP TOWELS**





KERR & ASSOCIATES, INC.

2634 Wild Cherry Place • Reston, Virginia 22091 • (703) 476-0710

May 4, 1993

To: Jim Lund, Office of Water (WH-551)

From: Bob Kerr, Kerr & Associates, Inc.

Subject: Alternative Approaches to Waste Reduction for Industrial Laundries
Region 9 Pilot Project (IP3)

Ref.: EPA Contract #68-W0-0025, Work Assignment #230
Task 1.3

Attached are three pieces prepared in response to requests from participants in the workgroup meetings. These statements summarize both an alternative approach for industrial laundries to meeting environmental management objectives, and the rationale for the approach. They are prepared as succinct statements which could be used in training programs and workshops (such as the one to be held in June). The first summarizes BMPs for both the industrial laundries and their customers in handling shop towels (generally the worst source of pollution). These are succinct derivations of BMPs developed by the Institute of Industrial Laundries (IIL) and the states of Washington and Minnesota. To make these work, buy-in is needed by all parties (regulated and regulator). The other two pieces briefly state why BMPs are important, and how they are beneficial for the laundries.

Best Management Practices (BMPs) for Shop Towels¹

BMPs for the Customer

- DO:**
- o Use non-hazardous cleaning solvents whenever possible
 - o Use cloth or other durable material shop towels
 - o Wring out soiled towels before placing in collection drums
 - o Use centrifuge or mechanical ringer, if appropriate
 - o Make sure no towels bearing free liquids are placed in drums
 - o Make sure liner system (nylon or mesh bag) is in good working order and hangs at correct height
 - o If excess liquid collects at bottom of drum, decant into waste solvent collection drum; manage the liquid appropriately
 - o If collected liquid meets RCRA criteria (listed, characteristic, etc.), manage as a hazardous solvent waste
 - o Always collect, store, and transport in closed containers
 - o Manage containers holding flammable materials according to all local fire department standards
 - o Share your Material Safety Data Sheets with route salespeople

-  **NEVER:**
- o Air dry soiled shop towels
 - o Pick up spills of hazardous liquids with towels
 - o Dispose of excess chemicals by pouring onto towels
 - o Put towels with free liquids in collection system
 - o Allow towels in drum to contact excess liquid (liner should always hang high enough to prevent this)
 - o Pre-wash or launder shop towels on your own

¹ BMPs summarized (in shortened form) from Washington State Dept. of Ecology (DOE) July 1992 Focus handout; Minnesota Pollution Control Agency (MPCA) Oct. 1989 memo; and Institute of Industrial Launderers (IIL) and Textile Rental Services Association (TRSA) 1992 brochure "Management Practices for Soiled Reusable Textile Handling."

Best Management Practices (BMPs) for Shop Towels²

BMPs for the Laundries

- DO:**
- o Let your customers know that you cannot accept shop towels bearing free liquids
 - o Work with customers to outline acceptable and non-acceptable practices to minimize free liquids on towels (start with the summary of customer BMPs provided)
 - o Educate route salespeople on both customer and laundry BMPs; set minimum standards for them to accept or refuse pickup
 - o If refusal notice is given, have follow-up discussion with the customer so they know how to avoid future refusals
 - o Establish in-house procedures for the safe receipt, handling, and processing of soiled shop towels
 - o Make sure all activities associated with transporting and handling industrial textiles comply with applicable EPA, OSHA, DOT, and other federal, state, and local regulations
 - o Incorporate BMP instruction into training of all laundry employees

ALSO CONSIDER:

- o Telling your customers about state and local pollution prevention programs that could help them minimize their wastes
- o Handing out free industry-specific pollution prevention brochures that have been developed by state and local agencies



- NEVER:**
- o Accept free liquid bearing towels
 - o Transport or store soiled shop towels in open containers
 - o Allow mis-management of solvent which collects in drum (e.g., do not pour down drain)

² BMPs summarized (in shortened form) from Washington State Dept. of Ecology (DOE) July 1992 Focus handout; Minnesota Pollution Control Agency (MPCA) Oct. 1989 memo; and Institute of Industrial Launderers (IIL) and Textile Rental Services Association (TRSA) 1992 brochure "Management Practices for Soiled Reusable textile Handling."

WHY ARE BEST MANAGEMENT PRACTICES (BMPs) IMPORTANT?

They are important because:

- Everyone needs to work together to foster the use of reusable textiles which--unlike disposables--contribute very little to the solid waste stream, and when handled properly, are the most environmentally beneficial.
- The status of soiled reusables such as shop towels and wipes which might contain RCRA hazardous waste solvents is an issue yet to be resolved. Clearly, the need to regulate shop towels as hazardous waste diminishes if environmental agencies are made aware that laundries are using BMPs to minimize health and environmental threats.
- Sharing knowledge and information on BMPs with your laundry customers is one positive way to promote cooperation and concern for the environment.
- Liability concerns may be lessened if you follow BMPs because you would not allow potentially dangerous free liquids to be transported in your vehicles.
- Cost savings can be realized by customers when managing shop towels according to the "no free liquid" BMPs. More solvent product would be recovered at the customer site which could then be re-used or recycled.
- When customers share their Material Safety Data Sheets (MSDSs) with laundries, both benefit because the laundry can more appropriately handle the textiles knowing what contaminants may be on them, and the customer can be assured he has followed the spirit of "right to know," so that people who handle their soiled textiles are informed of any toxics or potential hazards.
- Following the BMPs, and encouraging your customers to follow the BMPs, may decrease your laundry's Total Toxic Organics (TTOs); this is a simple, cost-effective, non-technological way to help you meet your Sanitation District's TTO limits.

HOW HAVE OTHER STATES USED BMPs TO PROVIDE REGULATORY RELIEF TO LAUNDERERS?

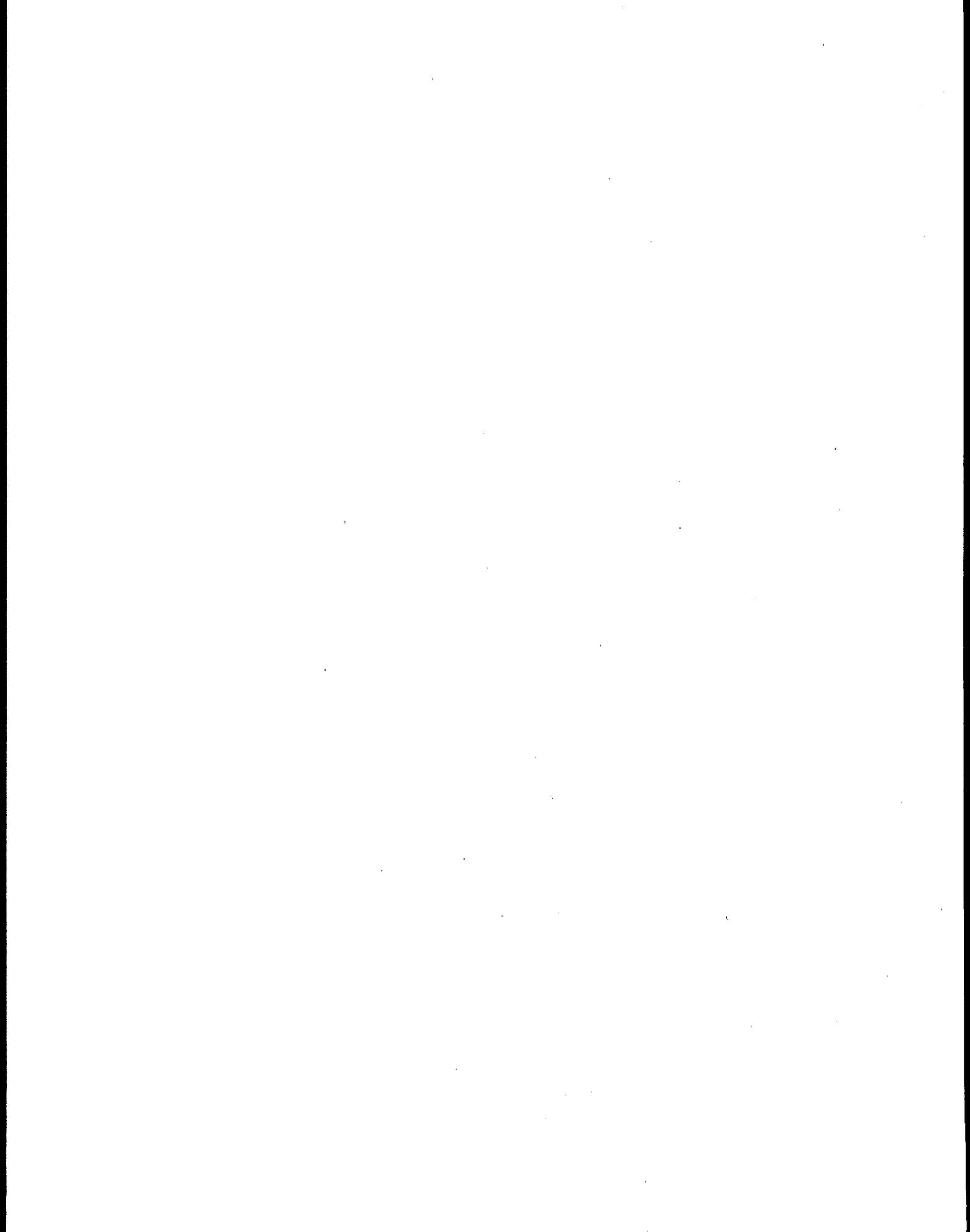
In Minnesota:

- Since 1989, Minnesota Pollution Control Agency (MPCA) policy is that if generators of reusable textiles containing hazardous waste solvents wring them out, either by hand or with a mechanical wringer, to remove maximum amount of liquid, the wrung-out reusables may be transported without manifesting.
- If that generator elects not to wring out towels, they must be managed as a RCRA hazardous waste and cannot be laundered.
- If a launderer elects to install and operate a centrifuge or some other method of extracting liquids prior to laundering, no hazardous waste facility permit is needed.

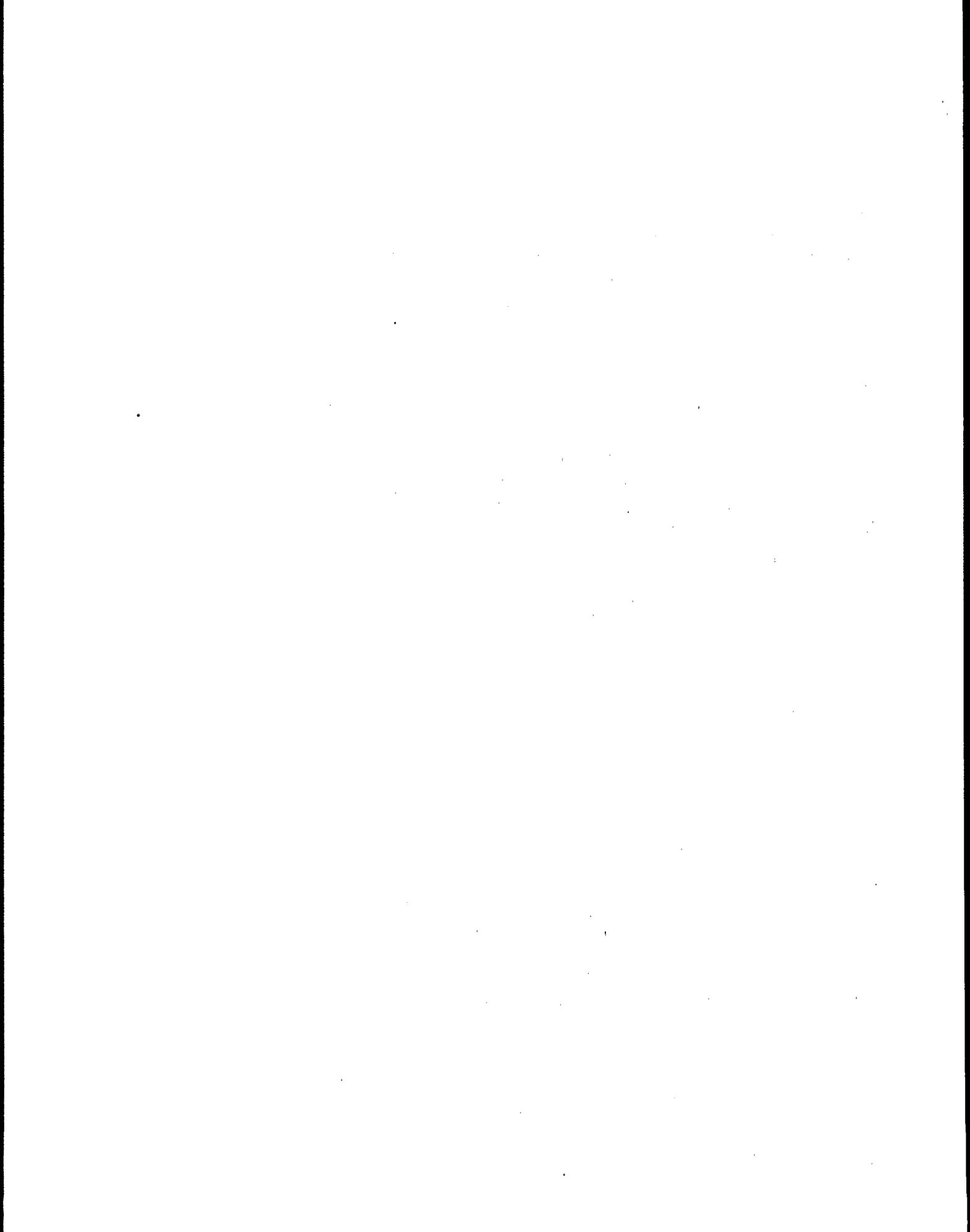
In Washington:

- Since 1992, Washington Department of Ecology provides that used shop towels contaminated with hazardous substances which may designate as "dangerous" under state law, may nevertheless be exempted from compliance with dangerous waste requirements--if both generator and launderer follow specific BMPs.¹
- If soiled textiles are handled according to BMPs, facilities are not subject to generator, transporter, or permitted TSDF requirements, and the textiles are not "counted" as hazardous or dangerous waste.
- If generators use disposable cloth rags or paper wipes that are considered "dangerous" waste, they must be managed as hazardous waste and are subject to all RCRA manifest and permitting requirements.

¹ Summarized in the handouts: "BMPs for Customers" and "BMPs for Laundries" in this workshop packet.



Strategy for the Dissemination of BMPs to Customers



Opportunities for Pollution Prevention

Facing regulatory constraints, some laundries have discontinued servicing some customers because their uniforms and towels are "too dirty" for the laundry to handle. The customer may use another local laundry service, begin using disposable rags, use a laundry from Mexico, or wash their own uniforms and towels at a local coin operated laundry. Along with the obvious reductions in laundry revenues associated with these decisions, many of these options have a questionable impact on the environment.

It is possible for laundries to work cooperatively with the customers on pollutant prevention programs. By assisting their customers in reducing the amount and the toxicity of pollutants the customer puts on the rented products, it is possible for the laundries to keep the customer's business, help the customers themselves in dealing with worker safety and environmental issues, and reduce the level of pollutants found in the laundry's discharges. To assist the laundries in this process, there are many resources that have already been developed.

Specific opportunities that the laundries have include the following:

1. Have route salespeople distribute technical resources as a service to the customers;
2. Provide referrals to customers about the different pollution prevention assistance and regulatory compliance programs available;
3. Have professional salespeople (full-time salespeople) distribute technical resources and provide specific technical information to the customers as part of the process associated with setting up an account;
4. Coordinate with the local environmental enforcement agencies to ensure that the laundries and the agencies are providing the same message to the customers;
5. When a customer is contributing pollutants to a laundry's system that are causing operational or environmental problems, work cooperatively with the customer on pollution prevention measures that can eliminate the problems.

Strategies For Training Industrial Laundry Field Representatives

Providing Information at Meetings: The route salespeople usually have weekly meetings and the professional salespeople meet nearly daily with their supervisors. These meetings are opportunities to provide information on pollution prevention.

Videos: Some laundries have produced videos on pertinent topics, e.g., safety, OSHA, etc.. A pollution prevention video could be developed as well. One laundry developed an excellent video for approximately \$400 due to the fact that they have an employee with professional video equipment. Having a test after the video promotes a more attentive audience.

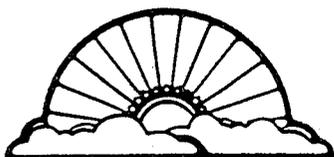
Train by Example: On-the-job training is commonly used to show new employees how to do their job. Hands-on pollution prevention assistance training could be provided.

Incentive Programs: Many laundries have incentive programs for safety. Cash prizes are commonly used as the incentive. While it is easy to see how incentives can be used for safety, they may be difficult to use for pollution prevention.

One incentive would be to incorporate providing pollution prevention assistance into the employee's evaluation. This could be done via random field checks of customers or through customer service surveys done through the mail.

War Stories/Positive Case Studies: Examples of how a particular employee has helped a customer could be shared with other employees as a means of encouraging them. The employee with the success story could receive some type of reward as well.

Reinforcing The Message: It was brought up that the pollution prevention message must be reinforced over time. Having cards in the trucks that change periodically would be one way to do this. The message on the cards could rotate between pollution prevention, safety, and sales motivation. The card could be changed on a set schedule.



KERR & ASSOCIATES, INC.

2634 Wild Cherry Place • Reston, Virginia 22091 • (703) 476-0710

June 21, 1993

To: Jim Lund, Office of Water (WH-551)
From: Bob Kerr, Kerr & Associates, Inc.
Subject: Summary of Industrial Laundry Workshop
Region 9 Pilot Project (IP3)
Ref.: EPA Contract #68-W0-0025, Work Assignment #230
Task 2.3

Attached is the summary of the workshop for industrial laundries held in Anaheim on June 14, 1993.

...the first of these is the fact that the ...

...the second of these is the fact that the ...

...the third of these is the fact that the ...

...the fourth of these is the fact that the ...

...the fifth of these is the fact that the ...

...the sixth of these is the fact that the ...

...the seventh of these is the fact that the ...

...the eighth of these is the fact that the ...

...the ninth of these is the fact that the ...

...the tenth of these is the fact that the ...

**SURVIVAL IN THE 90'S
POLLUTION PREVENTION STRATEGIES
FOR INDUSTRIAL LAUNDRIES
June 14, 1993
WORKSHOP SUMMARY**

INTRODUCTIONS

Eileen Sheehan, Pollution Prevention Coordinator for the Water Program, Region 9, EPA:

This workshop represents a new effort by EPA to find ways to work cooperatively with industry and local agencies to solve environmental problems. Economic and environmental issues have become increasingly intertwined. EPA believes joint efforts such as this one will achieve better environmental results than confrontation, as well as leading to more efficient economic alternatives. EPA looks forward to continuing to work with industrial laundries over the coming months.

Anthony Eulo, Policy Director, Local Government Commission:

The principal purpose of the workshop is to provide ideas on how industrial laundries can work with their customers to promote pollution prevention -- to reduce some of the environmental problems which result from excessive contaminants on shop towels and other materials to be laundered. While regulatory issues provide a necessary background to the workshop, particular regulatory problems cannot be resolved at the workshop, and should not become the focus of discussion.

WHY ARE WE HERE?

Bob Kerr, Kerr & Associates:

Regulations are becoming increasingly stringent -- both at the state and federal level. Laundries will need to work actively with their customers to reduce the volume and toxicity of wastes being sent to them if they are to avoid ever increasing treatment and control costs. Reducing pollutants at the source is economically preferable for all those involved -- especially the laundries. (Overheads from the presentation, which reviews current and potential future regulatory requirements, is included as an attachment).

Adriana Renescu, Special Projects Engineer, County Sanitation Districts of Orange County:

Pollution prevention is a new way of tackling environmental problems. It considers releases to air, water and ground all at once, focusing on the sources of the releases and how to avoid them, instead of looking at each waste stream in isolation and focusing only on how to treat or dispose of it. Because it includes consideration of the plant's entire operation, rather than ignoring everything except the waste streams, it provides an opportunity to achieve both economic and environmental gains, rather than sacrificing either one of the other. (Overheads which explain more about pollution prevention and how to achieve it are included as an attachment).

Dave McKenzie, Executive Director, Textile Rental Services Association:

The pollution prevention approach, and cooperative efforts like this with the regulatory agencies, are good for the industrial laundries. In negotiating with the Teamsters on behalf of industrial laundries, Mr. McKenzie noted that he wants two results: (1) get as much flexibility in the contract as possible, and (2) get the union on the same side of the bargaining table, so that the union leadership will advocate the proposed settlement. Both of these objectives are good models for dealing with environmental problems. This process with EPA and the local agencies, and this workshop, are steps in the right direction.

POLLUTANTS OF CONCERN AND SOURCES

Tara Lusk, Associate Environmental Engineer, Bureau of Sanitation, City of Los Angeles:

POTW regulations of industrial laundries are based on requirements that the POTWs themselves must meet. Like industrial laundries, POTWs do not generate pollutants; their job is to treat or dispose of pollutants generated by others. Pollutants coming into a POTW can cause problems for three basic reasons:

- o they may exceed the treatment capabilities of the POTW, and cause the water discharged from the POTW to violate the standards that the POTW must meet;
- o they may persist in the sludge generated by the POTW, and make it difficult or impossible to dispose of or utilize the sludge cost-effectively; or

- o they may upset the operations of the POTW.

For the City of Los Angeles, the primary concern with respect to the kinds of pollutants which could come from laundries is with the latter two problems. Oil and grease is a major issue, since it can cause upsets at the treatment plant. Metals such as molybdenum, selenium and lead cause problems with the sludge.

OPPORTUNITIES TO WORK TOGETHER WITH CUSTOMERS ON POLLUTION PREVENTION ACTIVITIES

Joe Zapalac, Regional Engineer, Welch's Uniform Rental:

The pollution prevention approach is good business for industrial laundries. As an example, one of Welch's largest customers (a printer) was causing serious compliance problems for the laundry. Welch's was left with 3 options:

- o stop servicing the customer;
- o invest, at great expense, in more treatment at the laundry; or
- o work with the customer to develop other process alternatives.

Obviously the first two alternatives were not desirable, so Welch's went to the third. The printer changed to a soybean ink which could be cleaned off the presses with water and soap. The laundry didn't provide the only incentive for the printer to change its process, but it was important as one of a set of motivations.

It is important for laundries to establish open communications with their customers. It's not that hard to identify the sources of pollution problems at the laundries. For example, you should ask for the MSDSs of whatever is being used on the printing line. You should ask for tours of your customers' facilities. The customers are under pressure already from the regulatory agencies (POTWs, AQMD, etc.). You're less threatening to them, but you may succeed in reinforcing the message.

The laundries are currently looking at the possibility of writing the BMP approach into law in California. The BMP program is actually included in a California Senate bill.

The bottom line? The more you work with your customers, the happier your customers will be. That's good business.

RESOURCES AVAILABLE TO SUPPORT POLLUTION PREVENTION EFFORTS

Donna Chen, Director, HTM Office, City of Los Angeles

Kathy Barwick, Pollution Prevention Specialist, California Department of Toxic Substances

Diane Garcia, California Business Environmental Center

Noel Kurai, Executive Director, Environmental Compliance Support Association of California

Moustafa Elsherif, Program Manager, Small Business Assistance, South Coast Air Quality Management District

Each of the organizations in this panel provides some form of support to businesses. Copies of brochures providing information on their services and roles are attached. The offices represented by Donna Chen and Kathy Barwick provide technical support and information to businesses, and are non-regulatory (although DTSC itself is a regulatory agency). Both offices provide technical documents, and HTM also provides on-site technical assistance.

The Small Business Assistance organization in SCAQMD provides loans for companies to invest in equipment to reduce emissions, so long as the company meets the criteria for a small business (under 500 people, under \$3 million gross). The maximum loan is for \$250,000, and the maximum period is for seven years (whereas most commercial loans are limited to three years). This group is non-regulatory, and provides on-site technical assistance. It will not report non-compliance to the regulatory people at SCAQMD so long as compliance is achieved within a specified period.

The California Business Environmental Center and the Environmental Compliance Support Association of California are non-profit organizations which provide free services to businesses. The Environmental Compliance Support Association of California, staffed by people with business backgrounds, is business-oriented, and serves as a buffer between the private sector and government. It provides a total from government; there is no reporting of compliance problems. It

is supported by major industries which are concerned with the erosion of their customer and supplier base. There is a membership fee of \$100-400/year, depending on the size of the company.

Mr. Kurai noted that he had previously worked in the petroleum, mining and chemical products industries. He commented that when he worked in those industries, people frequently stuffed contaminated towels in with the clothes for industrial laundries and never thought about it. To the best of his knowledge, the companies were never approached by an industrial laundry to indicate that this was creating a problem.

THE IMPORTANCE OF ROUTE SALESPEOPLE AND PROFESSIONAL SALESPEOPLE AND DESIGNING TRAINING FOR SALESPEOPLE

Rick Dumas, District Manager, L&N Uniform Supply Company

Route salespeople tend to deal more with smaller customers, while the dedicated sales staff deal with larger customers. It is important to emphasize to route salespeople that they need to make it clear that they are providing a service to the customers. Most route salespeople are trained by example, by riding with current drivers. One way of getting a handle on what a route salesperson is doing is through complaints and/or questions about new programs from the customers.

Sales meetings are good times to get to the sales force with environmental training. Videos are a particularly good mechanism. (Welch's has used them for salespeople on how to help customers). It is important that the salesperson be well enough informed to be able to make any point clearly, thoroughly and quickly. It is important to keep changing the message, so the salesperson doesn't begin to ignore it.

All businesses are becoming sensitive to environmental problems. Providing environmental support and information is an added way of keeping your customer, protecting yourself against competitors. If the laundry helps the customer clean up an environmental problem, both can use this in their PR with clients and the community. Several agencies and POTWs will support or encourage PR about positive environmental or pollution prevention measures.

Incentives are an important part of an effective program. For example, if the reward for some kind of environmental achievement with a customer is a dinner for two, the family may encourage get behind promoting the activity. It is important to emphasize rewards which can be widely distributed (not just to a couple of people on the staff); perhaps use a team approach.

POLLUTION PREVENTION OPPORTUNITIES IN LAUNDRY OPERATIONS

Cam Metcalf, Training Manager, University of Tennessee's Center for Industrial Services

Pollution prevention assessments of individual laundries indicated that there are a number of ways in which laundries could both avoid environmental problems and save costs. These findings are summarized both in the overheads from this presentation, and the overview report on the assessments, both of which are attached.

PARTICIPANT SURVEY

SURVIVAL IN THE 90's

POLLUTION PREVENTION STRATEGIES FOR INDUSTRIAL LAUNDRIES

Dear Workshop Participant:

In order for us to more effectively assist you in the future, it is imperative that we receive your input. Your opinion is of great value and will affect future workshops and assistance efforts. Therefore, we would greatly appreciate it if you would fill out this survey and return it to the workshop coordinators. Thank you for your participation.

1. How would you rate the overall quality of the workshops?

- excellent good fair poor

2. How did you find the presentations?

- very useful/informative
 useful/informative
 moderate
 unuseful/uninformative
 very unuseful/uninformative

3. The workshop helped me to understand these topics: (check all that apply)

- current issues facing industrial laundries
 incorporating environmental issues into your marketing approach
 preparing for future regulatory mandates
 providing training to field representatives
 resources available to support pollution prevention efforts

4. What did you like most about the workshop?

5. What did you like least about the workshop?

6. What suggestions do you have for improving future workshops?

7. What specific skills and/or knowledge did you gain from the workshop?

8. What specific programs, incorporating pollution prevention into your operations, are you now considering as a result of the workshop?

9. Would you attend a similar pollution prevention workshop in the future, if it covered new material?

- yes no

10. What issues would you like to see addressed in the future?

11. Please discuss the current needs of your business and industry as related to pollution prevention.

AGENDA

9:00 WELCOME AND INTRODUCTIONS

*Eileen Sheehan, Pollution Prevention Coordinator, Water Program, U.S.
Environmental Protection Agency*
Anthony Eulo, Policy Director, Local Government Commission

9:15 WHY ARE WE HERE?

Regulatory Mandates: Current Realities and Future Trends
Bob Kerr, President, Kerr and Associates
Pollution Prevention: An Introduction For Industrial Laundries
*Adriana Renescu, Special Projects Engineer, County Sanitation Districts of
Orange County*
Pollution Prevention Is Good For Business
Dave MacKenzie, Executive Director, Textile Rental Services Association

10:00 POLLUTANTS OF CONCERN AND SOURCES

Which Customers Are Contributing To The Problem?
*Tara Lusk, Associate Environmental Engineer,
Bureau of Sanitation, City of Los Angeles*

10:30 BREAK

10:45 OPPORTUNITIES TO WORK TOGETHER WITH CUSTOMERS ON POLLUTION PREVENTION ACTIVITIES

Pollution Prevention Is Good For Business: Opportunities For Industrial Laundries
Joe Zapalac, Regional Engineer, Welch's Uniform Rental

11:15 RESOURCES AVAILABLE TO SUPPORT POLLUTION PREVENTION EFFORTS

Donna Chen, Director, HTM Office, City of Los Angeles
*Kathy Barwick, Pollution Prevention Specialist, California Department of Toxic
Substances Control*
Diane Garcia, California Business Environmental Assistance Center
*Noel Kurai, Executive Director, Environmental Compliance Support
Association of California*
Moustafa Elsherif, Program Manager, South Coast Air Quality Management District

12:00 LUNCH BREAK (Lunch Provided)

1:00 THE IMPORTANCE OF ROUTE SALESPEOPLE AND PROFESSIONAL SALESPEOPLE AND DESIGNING TRAINING FOR SALESPEOPLE

Rick Dumas, District Manager, L & N Uniform Supply Co.

2:00 POLLUTION PREVENTION OPPORTUNITIES IN LAUNDRY OPERATIONS

*Cam Metcalf, Training Manager, University of Tennessee's Center For
Industrial Services*

3:00 ADJOURNMENT

Participant List • Pollution Prevention Strategies For Industrial Laundries

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Moustafa Elsherif
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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial statements. This includes not only sales and purchases but also expenses, income, and any other financial activity.

The second part of the document provides a detailed breakdown of the accounting process. It starts with the identification of the accounting cycle, which consists of eight steps: identifying the accounting cycle, analyzing and journalizing the transactions, posting to the ledger, preparing a trial balance, adjusting the accounts, preparing financial statements, and closing the books. Each step is explained in detail, with examples and practical advice.

The third part of the document focuses on the preparation of financial statements. It covers the balance sheet, the income statement, and the statement of owner's equity. It explains how these statements are derived from the accounting records and how they provide a comprehensive view of the company's financial health.

The fourth part of the document discusses the importance of internal controls. It outlines various control procedures, such as segregation of duties, authorization, and documentation, which are essential for preventing errors and fraud. It also discusses the role of the auditor in verifying the accuracy of the financial statements.

The fifth part of the document covers the final steps of the accounting process, including the closing of the books and the preparation of the final financial statements. It explains how the temporary accounts are closed to the permanent accounts and how the final financial statements are prepared and presented.

POLLUTION PREVENTION
A NEW WAY OF THINKING

OR
"IT'S NOT THE OLD SHELL GAME"

**TRADITION
END-OF-PIPE POLLUTION CONTROL**

**TREATMENT TAKES POLLUTANTS
FROM
ONE MEDIUM (WATER, AIR, SOLIDS)
AND
PUTS IT IN ANOTHER MEDIUM
(WATER ⇒ SOLIDS, WATER ⇒ AIR, ETC)**

DEFINITION OF POLLUTION PREVENTION

EPA Statement of Definition, May 28, 1992

- **REDUCE THE AMOUNT OF POLLUTANTS AND TOXICITY OF POLLUTANTS ENTERING A WASTESTREAM PRIOR TO RECYCLING, TREATMENT AND DISPOSAL.**
- **INCREASE EFFICIENCY IN THE USE OF RAW MATERIALS, ENERGY, WATER AND OTHER RESOURCES**
- **CONSERVE NATURAL RESOURCES**

DEFINITION OF POLLUTION PREVENTION

IN PLAIN ENGLISH

- **REDUCE OR ELIMINATE (PREVENT) POLLUTION BEFORE IT IS GENERATED**
 - **PRODUCT MODIFICATION**
 - ⇒ Lower the toxicity of product
 - ⇒ Make product recyclable
 - ⇒ Increase product life
 - **PROCESS AND TECHNOLOGY MODIFICATION**
 - ⇒ Install equipment that produces little or no waste
 - ⇒ Modify piping and plant layout
 - ⇒ Change operating conditions
 - ⇒ Redesign equipment and production lines
 - ⇒ Modify equipment to facilitate recycling
 - ⇒ Segregate waste

■ CONTROL THE SOURCE OF POLLUTANTS

● RAW MATERIAL USE

⇒Substitute toxic raw materials with less toxic or non-toxic materials

⇒Control and reduce raw material contamination

● RAW MATERIAL HANDLING

⇒Improve raw material receiving, storage and handling

⇒Inventory and trace raw material use

● RAW MATERIAL REDUCTION

⇒Optimize use

⇒Recycle and reuse*

***BEWARE: IT COULD BE THE OLD SHELL GAME AGAIN!**

LEGISLATIVE AND REGULATORY ORIGINS

THE OLD SHELL GAME (END-OF-PIPE)

- **CLEAN AIR ACT**
- **CLEAN AIR ACT**
- **ETC**

FEDERAL

- 1990 Pollution Prevention Act
- Congress Finds:
 - ▶ Pollution Prevention at the Source is More Desirable Than Any Other Method of Pollution Control
 - ▶ Existing Regulations and Regulated Industry Focus on "End-of-Pipe" Pollution Control
- Congress Declares:
 - ▶ Pollution Prevention to be the National Policy of United States
- Congress Sets Hierarchy:
 1. Pollution Prevention
 2. Recycle and Reuse
 3. Treatment (Pre-Treatment)
 4. Disposal (Landfill, Sewer, Air)
- Congress Instructs:
 - ▶ EPA To Develop A National Environmental Protection Policy to Reduce Pollution at the Source

FEDERAL

- National Pollution Prevention Strategy (56 FR 7849; February, 1991)
- Objectives:
 - ▶ Make Pollution Prevention The Central Part Of EPA's Mission
 - ▶ Incorporate Pollution Prevention In EPA's Existing Regulatory And Non-Regulatory Programs
 - ▶ Incorporate Pollution Prevention Into Every Aspect Of EPA's Operations
 - ▶ Make Pollution Prevention The First Choice In All Environmental Activities
- Strategy:
 - ▶ Outreach And Training
 - ▶ Incorporate Pollution Prevention In Permitting And Enforcement
 - ▶ Partnership With Industry
 - ▶ Technology Research And Exchange

FUTURE

NEW CULTURE

- **NEW ADMINISTRATION HAS DECLARED POLLUTION PREVENTION TO BE A "POLICY GUIDELINE"**
- **ENVIRONMENTAL GROUPS HAVE EMBRACED POLLUTION PREVENTION (ZERO DISCHARGE)**
- **WATERSHED POLICY MAKES POLLUTION PREVENTION ITS MAIN POLICY ELEMENT**
- **INDUSTRY HAS RECOGNIZED THAT POLLUTION PREVENTION REDUCES THEIR ENVIRONMENTAL LIABILITY**

WHAT DOES IT MEAN?

- **INCORPORATE POLLUTION PREVENTION PRACTICES AND PHILOSOPHY IN THE CLEAN WATER ACT REAUTHORIZATION**
- **INCORPORATE POLLUTION PREVENTION IN EFFLUENT GUIDELINES STANDARDS AND REQUIREMENTS**
- **INCORPORATE POLLUTION PREVENTION IN NPDES AND ENFORCEMENT ACTIONS**
- **INCORPORATE POLLUTION PREVENTION REQUIREMENTS IN POTWS PRE-TREATMENT PROGRAMS**
- **EXPAND TRI REPORTING (FORM R)**
- **USE TSCA TO ENFORCE POLLUTION PREVENTION**
- **STATE PROGRAMS ARE REQUIRED TO INCLUDE POLLUTION PREVENTION AS PRIORITY ELEMENT**
- **INDUSTRY IS ADOPTING POLLUTION PREVENTION PROGRAMS**

THE NEW

VS.

THE OLD

REDUCING POLLUTANTS AT THE SOURCE

VS.

THE "SHELL GAME" OF POLLUTANTS

POLLUTION PREVENTION

VS.

COMMAND-AND-CONTROL

"THE DIFFERENCE"

COMMAND AND CONTROL

**Management Of
Generated Waste**

End-Of-Pipe

Prescriptive

Limit Oriented

Single Media

POLLUTION PREVENTION

**Management of Waste
Generation**

Holistic*

Flexibility

Goal Oriented

Multi Media

"NEW THINKING"

⇒ FLEXIBILITY

⇒ INNOVATION

⇒ OUTREACH

AND

⇒ TOTAL QUALITY ENVIRONMENTAL MANAGEMENT

TOTAL QUALITY ENVIRONMENTAL MANAGEMENT

⇒ EXTERNAL CUSTOMERS

- **Identify your customers**
 - **users of your services**
 - **regulatory agencies**
- **Identify your critical customers**

⇒ INTERNAL CUSTOMERS

- **Commit Management**
- **Involve and Commit Shop and Office Personnel**
- **Suppliers**
- **Staff/personnel in contact with external customers**

⇒ CONTINUOUS IMPROVEMENT

- **Internal Customers**
- **External Customers**

⇒ WHOLE SYSTEM APPROACH

- **Internal customers facility**
- **External customers facility**
- **All environmental media**

THE ECONOMICS OF POLLUTION PREVENTION THE BENEFITS

TIER 0 ■ CAPITAL AND O&M COSTS

**Equipment and Installation
Raw Materials
Energy
Disposal
Maintenance**

TIER 1 ■ HIDDEN REGULATORY COSTS

**Reporting
Monitoring
Permit Requirements
Paperwork**

TIER 2 ■ LIABILITY COSTS

**Penalties and Fines
Transportation of Waste
Disposal to Landfill
Disposal to Sewer**

TIER 3 ■ LESS TANGIBLE COSTS

**Consumer Response
Employee Relations
Corporate Image**

WHERE DO YOU START?

- ⇒ **DEFINE THE NEED**
- ⇒ **GAIN MANAGEMENT AND INTERNAL CUSTOMER COMMITMENT**
- ⇒ **CONDUCT ENVIRONMENTAL ASSESSMENT**
- ⇒ **CONDUCT WASTE CHARACTERIZATION**
- ⇒ **DEVELOP PROGRAM**
 - **Goal**
 - **Technical Feasibility**
 - **Financial Feasibility**
 - **Benefits**
- ⇒ **SELL PROGRAM TO INTERNAL AND EXTERNAL CUSTOMERS**
- ⇒ **IMPLEMENT**

Current Regulatory Mandates

REGULATIONS

Current requirements

Future changes

**Federal
State**

Pollution prevention:

Reduce volume/toxicity of wastes requiring treatment, control, disposal

**Where feasible, could result in
lower costs
better compliance
reduced long-term risk**

MAJOR REGULATORY AREAS

Water

Air

Solid waste

Hazardous waste

Community Right to Know

Superfund

USTs

OSHA

Use/transportation of hazardous materials

CLEAN WATER ACT

Water quality limits

Categorical (technology-based) limits

Direct dischargers

Dischargers to POTWs (pretreatment stds.)

**No current categorical pretreatment standards
for industrial laundries**

POTWs may impose either

Categorical limits

Best Conventional Technology (BCT)

Best Available Technology (BAT)

Local limits - stringency depends on limits the POTW is required to meet, volume and concentration of pollutants released by other industrial, commercial, domestic sources in service area; also on interference in POTW treatment plant operations due to a pollutant

**POTWs may also charge fees to pay part of
cost of discharges which are allowed (e.g.,
BOD, TSS)**

Conventional pollutants

biochemical oxygen demand (BOD)

total suspended solids (TSS)

pH

oil & grease

Toxic pollutants

**TTO limits (exs. toxic organics: TCE,
benzene)**

**toxic metals (exs.: copper, silver, zinc,
nickel)**

New categorical requirements

**Industrial laundries category
new proposed rules by EPA - 1996
final rule - 1998**

**Technology-based limits for removal of
metals, organics (or could determine not
necessary)**

Examples of requirements might include treatment for metals, additional or combined treatment for organics, separate pretreatment or segregated treatment for heavily-soiled towels

EPA currently gathering information on releases, alternative technologies

POTWs may also apply more stringent requirements

- new requirements imposed on POTWs to meet water quality goals

- increased industrial activity

CLEAN AIR ACT

1990 Amendments

- Air Toxics**
- Criteria Air Pollutants**

AIR TOXICS

Federal requirements

State requirements

AIR TOXICS - federal

MACT Standards (Maximum Achievable Control Technology)

Major Sources

- 10 tons per year (for single hazardous air pollutant (HAP))**
- 25 tpy combined HAPs**

MACT Standards

Industry Categories Include:

POTW emissions

Industrial dry cleaning (perc)

Printing, coating, dyeing of fabrics

Printing/publishing

Wood furniture (surface coating)

Perc NESHAPs limits for drycleaning equipment

Transfer equipment:

- **>300 gal/year:
carbon adsorber or refrigerated
condenser**
- **>2000 gal/year:
carbon adsorber**

Dry-to-dry vented equipment:

- **>220 gal/year - carbon adsorber or
refrigerated condenser**
- **>3100 gal/year - carbon adsorber**

HAPs Include

methylene chloride

TCA

TCE

MEK

chloroform

xylenes

lindane

AIR TOXICS - California

State program to identify toxic air contaminants (TACs); control measures include pollution prevention

Toxic hot spots - sources provide information on air toxic releases, health risk assessments

CRITERIA POLLUTANTS

Regulate VOCs (for ground-level ozone - smog), carbon monoxide, particulate matter, sulfur dioxide, nitrogen oxides (also ozone)

Areas violating standards - 'nonattainment'

Different classes of nonattainment areas; Los Angeles is only area in worst category ('extreme') for ozone

**SCAQMD - South Coast Air Quality
Management District -- responsible for
developing plans/requirements for meeting
air quality standards**

**Emissions cap and emissions trading for
stationary sources (RECLAIM)**

**Transportation limits (alternative fuels, stricter
emission standards)**

HAZARDOUS WASTE

RCRA

California hazardous

Listed Wastes

Characteristic Wastes (ignitability, corrosivity, reactivity, toxicity)

California characteristics are more stringent than RCRA -- esp. for toxic metals

Examples of hazardous wastes at industrial laundries include:

**waste solvents
heavy metals
perc still bottoms (if drycleaning)
waste oil
waste fuels
filter cake
vehicle maintenance waste**

Primary source of hazardous wastes for laundries from customers (esp. towels)

Primary Issue for Laundries

Status of towels contaminated with waste solvents, metals, etc.

Both a RCRA issue and a state hazardous waste issue

Some states use adherence to BMPs to make determination

No decision yet at EPA HQ; could be left to EPA regions/states

Implications if towels hazardous wastes:

Laundries would be TSDFs rather than just RCRA hazardous waste generators

Customers would need to meet manifesting requirements

Waste Reduction Planning

Under requirements of California bills SB14 & SB1726 (passed 1992), waste reduction plans required of all facilities routinely generating more than 5000 kg/year of hazardous waste

Toxic Release Inventory

Reports required from facilities which use more than 10,000 pounds of a listed toxic chemical & have more than 10 full-time employees

Current reporting requirements do not include the SIC code for industrial laundries, but expansion of the requirement is likely

Regular generators (>1000 kg/month)

**Small quantity generators (over 100 kg/m;
less than 1000 kg/month)**

**Conditionally exempt SQGs (<100
kg/month)**

**Some rules for SQGs less restrictive (180
days on-site storage for up to 6,000 kg
hazardous waste [270 days if shipping
greater than 200 miles]; limit for storage for
full generators 90 days**

Smaller ('area') sources of air toxics

**EPA must develop strategy including
generally available control technologies
(GACT) -- not until Nov., 2000**

This IP3 Demonstration Project

Pollution prevention demonstration project

Partnership

Agencies

- EPA**
- state/local agencies**
- POTWs**

Industrial laundries

To promote pollution prevention:

- overcome old mindset**
- flexibility**
- partnership**
- technical innovation**

EPA Office of Water

IPPP

Regional pilot project

San Francisco regional office

Objective of IPPP

promote pollution prevention

promote multi-media approach

look for alternatives to:

- end-of-pipe controls**

- single medium approaches**

Principal stakeholders

- POTWs**
- larger industrial laundries**

For pilot project, selected:

- southern California

- industrial laundries

**o service industry
concentrates and transfers
pollutants (potential for
impacting laundry
customers)**

o limited # of companies

o compliance problems

**o EPA developing effluent
guidelines**

STEPS

- o Participation**
- o General meeting**
- o Focus group**
- o Site assessments**
- o Workshop**

Primary Issue for Laundries

**Status of towels contaminated
with waste solvents, metals,
etc.**

**Both a RCRA issue and a state
hazardous waste issue**

**No decision yet at EPA HQ;
could be left to EPA
regions/states**

Implications:

**TSDFs rather than just RCRA
hazardous waste generators**

**Manifesting requirements for
towels/clothes to laundries**

Barriers to participation by industrial laundries

- o fear of enforcement focus**
- o lack of awareness of opportunities**
- o doubts about agencies' motives/ability to help**

Incentives for industrial laundries

- o Current regulatory problems**
 - discharge limits (esp. TTOs, oil & grease)**
 - hazardous waste**
- o Expected additional regulations**

New categorical requirements

**Industrial laundries category
new proposed rules by EPA -
1996
final rule - 1998**

**Technology-based limits for
removal of metals, organics
(or could determine not
necessary)**

POLLUTANTS OF CONCERN & PROBABLE SOURCES

- lindane (agriculture, pest control companies)
- tri methyl benzene (?)
- bis (2 ethylhexyl) phthalate (cutting oils, furniture manufacturing, machine shops, maintenance of machinery)
- methylene chloride (maintenance of machinery, auto repair, printers, graphics, furniture manufacturing)
- copper (printers, metal finishers)
- silver (printers, metal finishers, photo processors)
- zinc (agriculture, pest control, laundry chemicals, automotive repair)
- chromium (metal finishers)
- TCE (printers, automotive, metal finishers, aerospace)
- TCA (printers, automotive, metal finishers, aerospace)
- nickel (automotive repair)
- benzene (automotive repair, printers, refineries)
- chloroform (health services)
- MEK (automotive repair, printers, labs)
- xylenes (automotive repair, printers, labs)
- cadmium (printers, graphics)

SITE ASSESSMENTS

(P2, not compliance)

- o Internal P2 opportunities**
- o Customer P2 opportunities**

Workshop

- **benefits of P2**
- **educating customers**
- **training salespeople**

Internal Opportunities

- o Water reuse**
- o Solid waste reduction**
- o Vehicle maintenance**

**Won't resolve major pollution
or compliance problems**

Customer Opportunities

- o Best Management Practices for laundries**
- o BMPs for customers**
 - Technical criteria**
 - Environmental objectives**
 - Simplicity**
 - Training/education**
 - Marketing**
 - Link to regulatory requirements**

BMPs for Laundries

- o Don't accept towels with free liquids**
- o Work with customers on acceptable practices to minimize free liquids on towels**
- o Educate route salespeople; set minimum pickup standards**
- o Establish in-house handling procedures for towels**
- o BMP training for all employees**
- o Provide customer information on sources of pollution prevention technical assistance**

BMPs for Customers

- o Wring out or centrifuge towels**
- o No free liquids**
- o Appropriate management for extracted liquids**
- o Share MSDS sheets with route salespeople**
- o Don't pick up spills with shop towels**
- o Don't pour excess chemicals onto shop towels**
- o Don't pre-wash towels**

Benefits of BMPs

- o for laundries**
 - marketing tool**
 - avoid fire-drill compliance problems**
 - avoid high cost control/treatment**

- o for agencies**
 - use laundries as outreach to other industries**
 - build cooperative attitude**
 - avoid media-shifting**
 - more self-implementing**

Effectiveness of BMPs requires:

- enforcement of level playing field**
- either/or strategy**

Laundries' Concerns

- o Cost of controls**
- o Non-compliance penalties**
- o Aggressive competition for accounts**
- o Competition with paper products**

General Lessons

- **Value of partnership**
- **Time/effort required to develop cooperation**
- **Equitable enforcement**
- **Value of MM perspective**
- **Importance of understanding market/economic factors**
- **Importance of understanding technical opportunities/constraints**
- **Need for interagency coordination**

Best Management Practices by Customer

- Institute of Industrial Launderers and Textile Rental Services Association of America
 - ◆ Minimum Requirements designed to eliminate free liquid from textiles prior to transportation and laundering
 - Waste Minimization Options for Printers
 - ◆ To Aid Industrial Laundries
 - Design for the Environment Printing Project: US EPA and Printing Industry Associations Nationwide
 - ◆ Case Study 1: Managing Solvents and Wipes
-

Best Management Practices by Customer

Institute of Industrial Launderers and Textile Rental Services Association of America

- Minimum Requirements designed to eliminate free liquid from textiles prior to transportation and laundering
 - ◆ Service Co./Customer Responsibilities
 - ◆ Textile Usage
 - ◆ Soiled Textile Collection
 - ◆ Soiled Textile Transport
 - ◆ On-going Pursuit of Compliance with All Local, State, and Federal Regs
-

BMPs by Customer

- Waste Minimization Options for Printers to Aid Industrial Laundries
 - ◆ Use more environmentally desirable chemicals in printing and cleaning
 - ◆ Eliminate or minimize metals and heavy metals in pigments
 - ◆ Separate wipes according to soils
 - ◆ Remove excess solvents
 - ◆ Multimedia Regulatory Partnerships which ensure P2 information, handling, and transport of liquid-free, soiled, reusable textiles
-

Continuous Improvement by Customer

Design for the Environment Printing Project:
US EPA and PIA Nationwide

- Case Study 1: Managing Solvents and Wipes
 - ◆ Chemical Supplier Partnerships for Solvent Reevaluation and Substitution
 - ◆ Laundry Service Partnerships for Materials Recovery/Reuse by Centrifuge or other BMPs
 - ◆ Multimedia Regulatory Partnerships

What are MN & KS doing to facilitate this?

What was developed in Washington state in cooperative effort with laundries?

P2 Opportunities for Customers

Service Stations/Vehicle Maintenance

- "New" Safety Kleen Approach
 - ◆ Solvent blend at 155° F flashpoint
 - ◆ Will it pass TCLP after use?
 - ◆ Will this reduce loading to launderers?
 - Alternate cleaners (trade-offs)
 - ◆ Health & Safety
 - ◆ Environmental
 - ◆ Operations Procedures
-

Waste Reduction Options for Industrial Laundries

- Use Environmentally Friendly Cleaning Solutions (Not Dry-cleaning Chemicals)
 - Convert Industrial Wastewater into Usable, Energy-efficient, High BTU Fuels for Fuels Blending
 - Use a Continuous Wash System
 - Water Use Reduction
 - Energy Use Reduction
 - Separate Shop Towels from Other Textiles and Treat Wastewaters Separately
-

Semi-Aqueous Acceptance

- ❑ Health and Safety Trade-offs
 - ◆ Terpene cleaners containing d-limonene (positive carcinogenicity tests after further investigation)
 - ◆ Low flash points
 - ❑ Environmental Trade-offs
 - ◆ Terpenes have high BOD & COD (if used extensively, will likely require pretreatment before discharge to POTW)
 - ❑ Operational Trade-Offs
 - ◆ New operating or maintenance skills may be needed
 - ◆ Tighter controls may be needed
 - ◆ Product quality and operating rates may be affected
-

P2 Program-in-Place

- Top Management Commitment
 - Characterization of Wastestreams
 - Assessment of P2 Options
 - Waste Cost Allocation System
 - Employee Involvement
 - Program Evaluation
-

Top Management Commitment

- P2 Policy: Continuous Improvement
 - Toxics Use Reduction
 - Best Operating Procedures to Reduce Unnecessary Wastes
 - Planning: Eliminate Waste in Energy and Water Use
-

Characterization of Wastestreams

- Wastewater
 - Waste solids
 - Air releases
 - Shop towels, wipes & rags (impact on wastestreams)
 - Others?
-

Assessment of P2 Options

Water Use Reduction

- Water discharged depends on:
 - ◆ Efficiency of equipment
 - ◆ Efficiency of operations
 - ◆ Water conservation measures applied
 - ◆ Types of articles cleaned
 - ◆ Types and loadings of soils
 - ◆ Total amount of waterwashing vs. dry-cleaning
-

Waste Cost Allocation System

- Costs & Amounts of Laundry Process
Chemicals Used
 - Treatment Costs
 - Disposal Costs
 - Regulatory Fees
 - Oversight Costs
 - Water Costs
 - Energy Costs
-

P2 Program-in-Place

- Employee Involvement
 - ◆ Customer Oversight on Free Liquids
 - ◆ Training
 - Program Evaluation
 - ◆ On-going Program with Someone in Charge
 - ◆ Measure Results & Set New Goals
-

P2 Program-in-Place

- Assessment of P2 Options
-

Regulatory Barriers to P2

- End-of-Pipe Focus
 - Media-Specific Focus
 - Regulatory Program Evaluation Criteria
 - Regulatory Inflexibility
 - Regulatory Uncertainty
 - Pollution Fees
 - Data Gathering and Management
-

Wastewater Characteristics

- Soiled Materials from Processes & Operations
 - ◆ 12 Volatile Organics
 - ◆ 10 Semivolatile Organics
 - ◆ 4 Pesticides & Herbicides
 - ◆ All Priority Metals
 - ◆ Cyanide found in all (several > 0.1 mg/l)

1989 US EPA Report

Soiled Materials from Processes & Operations

- 12 Volatile Organics
 - ◆ Ethyl benzene, Methylene chloride, Toluene and TCA
- 10 Semivolatile Organics
 - ◆ Isophorone, naphthalene & N-nitrosodi-n-propylamine
- 4 Pesticides & Herbicides
 - ◆ Endosulfan sulfate
- All Priority Metals
 - ◆ Pb, Chrome, Cu & Zn (>1 mg./l)

1989 US EPA Report

Laundry Process Chemicals

- Phenolic Compounds (germicides, bacteriostats, detergent additives, dust treating compounds)
- Zinc Compounds (sours and germicides)
- BOD₅, Oil and Grease (soaps and detergents)
- High pH (alkaline conditions)
- Oils to Clean Dust Mops
- Chlorine Bleaches
- Cleaning Processes Used
 - ◆ Volatile Organics (dry-cleaning solvents)

Waste Solids Characteristics

Pollutants:

- ◆ Volatile Organics: “Exceeded Proposed Level for Perc”
- ◆ Semivolatile Organics
- ◆ Toxic Metals & Elements
- ◆ Cyanide Found in All Sludge Samples but One
- ◆ Pesticide Endosulfan Sulfate Found but No Regs Available
- ◆ Ignitability Exhibited by Sediments, Screened Materials, DAF-thickened Sludge, and Final Ultrafiltration Concentrate

Is there an approved flammability test for solids?

(Results 1986-87 Sampling of 5 Laundries from 1989 EPA Report)

Effectiveness of Typical Treatment Systems

<u>System Type</u>	<u>Pollutant Removal</u>
Bar and lint screens	Ineffective
Settling Basins	Ineffective
Dissolved air flotation clarifiers	High
Membrane filtration systems	High

Pollutants

- ☐ Volatile Organics: Exceeded Proposed Level for Perc
 - ◆ Sludge from Disc Strainer (Shipped as HW)
 - ◆ Sediment from Settling Basins (?)
- ☐ Semivolatile Organics
 - ◆ TCLP extracts at low levels
- ☐ Toxic Metals & Elements
 - ◆ Cu, Pb, Ni, Zn at relatively high concentrations
 - ◆ Final concentrate from ultrafiltration (Shipped as HW)
 - ❖ Pb > regulatory level
 - ❖ Cd approaching regulatory level
- ☐ Cyanide found in all sludge samples but one

Solid wastes which exhibit the characteristic of toxicity or ignitability are designated HW and must be handled and disposed of in conformance with HW regulations.

1989 US EPA Report

Key Industries Using Shop Towels

- Auto/Vehicle Maintenance- 42%
 - ◆ SIC 75 (25.5%)
 - ◆ Dealers & Service Stations (16.5%)
 - Wholesale Trade/Durable Goods 6%
(SIC 50)
 - Printing/Publishing 5%
(SIC 27)
 - Furniture <1%
 - Aerospace <1%
-

Application of RCRA to Soiled Textiles

States:

- ◆ Many have chosen to exempt soiled towels if managed properly.

Washington State Department of Ecology:

- ◆ Reduce the amount of ignitable, volatile and toxic chemicals used through substitution with less hazardous chemicals, when effective.
 - ◆ Establish management practices that result in minimal amounts of hazardous chemicals on used shop towels that are sent to recyclers.
 - ◆ Allow towels that are recycled and handled according to best management practices to be considered as managed in compliance with hazardous waste requirements.
 - ❖ Recyclers may process shop towels without being permitted as a treatment facility under state and federal hazardous waste regulations.
 - ◆ Ensure that hazardous wastes are safely managed from "cradle to grave" preventing the release of hazardous substances to the environment.
 - ◆ Save money, raw materials, and energy while keeping hazardous chemicals out of your local landfill.
-

Application of RCRA to Soiled Textiles

EPA Region 9:

- ◆ Rags contaminated with listed spent solvent are hazardous due to “mixture rule” if the mixture continues to exhibit a characteristic.
- ◆ If F001-F005 spent solvents, mixture is subject to LDR and must be treated prior to land disposal.
- ◆ Also, listed spent solvent wastes generated in the cleaning process would be a RCRA waste.
- ◆ Treatment by laundry facility preferable to incineration, if transported and stored in compliance with RCRA prior to cleaning

EPA Regions 4, 7, & 8:

- ◆ Towels that are laundered cannot be characterized as solid waste and, therefore, cannot be a hazardous waste.
-

Application of RCRA to Soiled Textiles

EPA HQs:

- ◆ When F001-F005 solvents are applied to a surface, then cleaned off with rags, the solvents are spent and the rags are covered by F001-F005 listing.
 - ◆ When solvents are applied to a rag prior to use, the solvents are not spent and the rags are not covered by the spent solvent listing.
 - ◆ Both types of rags pose similar hazards and it is hard for the land disposal facilities to distinguish the difference. May choose not to accept solvent rags unless they meet the treatment standards.
 - ◆ After these considerations, HQs recommends that any rags contaminated with listed solvents be managed as hazardous wastes.
 - ◆ HQs has not encouraged regions or states to rigidly enforce.
-

Application of RCRA to Soiled Textiles

☐ IIL & TRSA Guidelines:

- ◆ Soiled textiles containing free liquids that may be listed or characteristically hazardous, will constitute improper management by the customer and **SHOULD BE CONSIDERED** a hazardous waste by the laundry.
-

POLLUTION PREVENTION RESOURCE DOCUMENT LIST

<u>Industry</u>	<u>Title</u>	<u>Type</u>	<u>Prepared By</u>
Auto Repair	Waste Minimization for Automotive Repair Shops	Fact Sheet	Cal-EPA DTSC
	Automotive Maintenance Industry: Basic Environmental & Business Requirements	Fact Sheet	L.A. City HTM
	Radiator Repair Industry: Basic Environmental & Business Requirements	Fact Sheet	L.A. City HTM
	Hazardous Waste Reduction Assessment for Automotive Repair Shops	Handbook	Cal-EPA DTSC
	Used Oil: Handling, Storage & Transport for Recycling	Fact Sheet	Cal-EPA DTSC
	Used Oil Filters: Handling, Storage & Transport for Recycling	Fact Sheet	Cal-EPA DTSC
Printers	Waste Minimization for Commercial Printing Industry	Fact Sheet	Cal-EPA DTSC
	Mangaging Solvents & Wipes	Case Study	U.S. EPA DfE Project
	Printing: Pollution Prevention Opportunities Checklist	Factsheet	L.A. County San. Districts
	Commercial Printing: Pollution Prevention Opportunities Guidelines	Guidelines	Orange County San. Districts
Metal Finishers	Waste Minimization for Metal Finishers	Fact Sheet	Cal-EPA DTSC
	What Should I Do With My Electroplating Sludge?	Fact Sheet	L.A. City HTM
	Plating with Trivalent Chrome	Fact Sheet	L.A. City HTM
	Decorative Plating with Trivalent Chrome	Fact Sheet	Cal-EPA DTSC
	Metal Finishers: Pollution Prevention Opportunities Checklist	Factsheet	L.A. County San. Districts

POLLUTION PREVENTION RESOURCE DOCUMENT LIST

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Metal Finishers (con't)	Metal Finishing: Pollution Prevention Opportunities Guidelines	Guidelines	Orange County San. Districts
	Hazardous Waste Reduction Checklist & Assessment Manual for the Metal Finishing Industry	Handbook & Checklist	Cal-EPA DTSC
	Waste Minimization Opportunity Assessments: East L.A. Enterprise Zone Metal Plating Facilities	Case Studies	Cal-EPA DTSC/L.A. City HTM
Metal Fabricators	Metal Fabricators: Pollution Prevention Opportunities Guidelines	Guidelines	Orange County San. Districts
	Metal Fabricators: Pollution Prevention Opportunities Checklist	Factsheet	L.A. County San. Districts
Aerospace	Waste Minimization for Aerospace Industry	Fact Sheet	Cal-EPA DTSC
Printed Circuit Boards	Waste Minimization for Printed Circuit Board Manufacturers	Fact Sheet	Cal-EPA DTSC
	Printed Circuit Board Manufacturing: Pollution Prevention Opportunities Guidelines	Guidelines	Orange County San. Districts
	Printed Circuit Board Manufacturing: Pollution Prevention Opportunities Checklist	Factsheet	Orange County San. Districts
Furniture Refinishers	Furniture Refinishers-- Regulatory Requirements	Fact Sheet	L.A. City HTM
	Waste Minimization Assessment for a Manufacturer of Military Furniture	Case Study	U.S EPA RREL
Jewelry	Jewelry Manufacturers: Basic Environmental & Business Requirements	Fact Sheet	L.A. City HTM
Paint	Waste Minimization for Paint Formulators	Fact Sheet	Cal-EPA DTSC
	Paint Collection Facilities for Businesses	Directory	L.A. City HTM

POLLUTION PREVENTION RESOURCE DOCUMENT LIST

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Paint (con't)	Waste Minimization for Auto Paint Shops	Fact Sheet	Cal-EPA DTSC
	Formulators (Paint, Pesticides, Aerosols): Pollution Prevention Opportunities Guidelines	Guidelines	Orange County San. Districts
	Formulators (Paint & Pesticides) Pollution Prevention Opportunities Checklist	Factsheet	L.A. County San. Districts
Pesticides	Waste Minimization for Pesticide Formulating Industry	Fact Sheet	Cal-EPA DTSC
	Formulators (Paint, Pesticides, Aerosols): Pollution Prevention Opportunities Guidelines	Guidelines	Orange County San. Districts
	Formulators (Paint & Pesticides) Pollution Prevention Opportunities Checklist	Factsheet	L.A. County San. Districts

POLLUTION PREVENTION RESOURCE DOCUMENT LIST

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The publications on this list are available to the public free of charge. To order, call or write:

- Cal-EPA**
DTSC
*California Environmental Protection Agency
Department of Toxic Substances Control
Pollution Prevention & Regulatory Assistance Division
Technology Clearinghouse
P.O. Box 806
Sacramento, CA 95812-0806*

(916) 322- 3670
- L.A. City**
HTM
*City of Los Angeles
Hazardous and Toxic Materials Office
Board of Public Works
200 N. Spring Street, Room 353
Los Angeles, CA 90012*

(213) 237-1209 (213) 237-1445 (FAX)
- L.A. County**
San. Districts
*Los Angeles County contact: Theresa Dodge
Sanitation Districts
P.O. Box 498
1955 Workman Mill Road.
Whittier, CA 90607*

(310) 699-7411 (310) 692-5103 (FAX)
- Orange County** **Orange County** contact: Adriana Renescu
San. Districts *Sanitation Districts
P.O. Box 8127
10844 Ellis Avenue
Fountain Valley, CA 92728-8127*

(714) 962-2411 (714) 962-6957 (FAX)
- U.S. EPA**
DfE Project
*U.S. Environmental Protection Agency
Design for the Environment Project
Pollution Prevention Information Clearinghouse*

(202) 260-1023 (202) 260-0178 (FAX)

