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**A CONFERENCE ON CORPORATE ENVIRONMENTAL POLICIES AND
PROGRAMS
A WASTE MINIMIZATION WORKSHOP FOR INDUSTRY
A WASTE MINIMIZATION WORKSHOP FOR GOVERNMENT INSPECTORS
A WASTE MINIMIZATION OPPORTUNITY ASSESSMENT: DEPARTMENT
STORE**

MANILA, PHILIPPINES

MARCH 19-27, 1993

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Washington Department of Ecology
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AND
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PARTNERSHIP**

World Environment Center



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DISCLAIMER

This project was supported by the U.S. Agency for International Development through the World Environment Center's Cooperative Agreement in support of the U.S. - Asia Environmental Partnership. The opinions expressed herein are the professional opinions of the author and do not represent the official position of the Government of the United States of America or the World Environment Center.

A

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I. Executive Summary

From March 19-27, 1993, the author visited Manila, Philippines to participate in the Philippines Business for the Environment (PBE) conference: *Corporate Environmental Policies and Programs*, to teach two workshops on waste minimization (WM), and to evaluate retail industry WM opportunities. The author's visit was sponsored by the U.S. Agency for International Development through the World Environment Center's (WEC) Cooperative Agreement in Support of the US-Asia Environmental Partnership (US-AEP).

The PBE conference was an apparent success. Attendance met expectations and productive exchanges between participants revealed strong interest in environmental sustainability among the business people attending. The author spoke on "Elements of a Corporate Environmental Policy," facilitated work group discussions, and provided closing integration of conference themes.

The two workshops attended by business people and environmental inspectors from the Department of Environment and Natural Resources (DENR), appeared quite successful. In particular, the workshop for DENR inspectors was ground-breaking for most participants and a general consensus was reached that the methods presented were applicable to the inspector's daily jobs.

An assessment was made of retail industry WM opportunities by visiting a major shopping mall in Manila. The assessment identified many opportunities and is attached.

The following findings were made on this assignment:

- Chief Executive Officers (CEOs) and owners of companies are not being effectively reached through current efforts. This is a major concern because top management commitment is required for environmental sustainability.
- Targeted education is needed to better address the specific environmental information needs of various groups. Distinct business targets include CEOs, managers, and technical staff. Distinct government targets include DENR field staff, inspectors and development staff including Environmental Impact Statement (EIS) reviewers.
- Many more Philippine success stories are available than may be apparent. Conversations with DENR inspectors and business people revealed many WM actions underway, even though those individuals declined to discuss or mention them publicly.

- Existing resources can be used to assist WM implementation, including technical assistance organizations, DENR inspectors and academic organizations. Use of existing resources should be much higher priority than developing new ones.
- Retail industries have potential for environmental improvements. A WM assessment was conducted at a retail mall and many opportunities were identified.
- Assistance is needed to identify ways to incorporate waste minimization into the development of industrial areas. A request was made to the author for planning assistance in the development of the Subic Bay Economic Zone.

The following conclusions and recommendations are made:

- **Create a DENR Waste Minimization Team.** In the US, the core WM expertise has been developed by government staff who provide help to a wide range of businesses. A core WM team in the DENR can supplement their field work with WM, and become in-house instructors and experts for other DENR and other government staff.
- **Survey and Test Existing Technical Assistance Organizations.** Initially the author planned to help prepare a written questionnaire to be distributed to these groups. However, because of the gap between intended and actual service delivery in developing countries, it was determined that this would probably not be very helpful. It would be more instructional to observe several smaller businesses over time as they attempt to get government help. Such an exercise would provide a "reality check" on actual technical assistance organizations available for businesses to call, what happens when they call, and what the service are they eventually receive and when they receive them.
- **Develop Targeted Educational Strategies for Specific Industry and Government Groups.** WM concepts have to be tailored to the audience and the allowed time frame. Each targeted group should have a standard training agenda prepared that meets its particular needs.
- **Develop a DENR Inspector Education Program.** All DENR inspectors should participate in an annual one-day training exercise (minimal) in WM, and be required to document how they have helped at least one business each quarter to prevent a problem waste stream.
- **Create Pollution Control Officers (PCO) Education Program.** PCOs in industry should be required to obtain a certification in WM concepts. This is a very promising and unique opportunity that should definitely be implemented.

- **Focus Training Needs on the Unique Situation of the Philippines.** The major areas of need are: data gathering procedures; cost analysis (specifically long-term cash flow analysis); low-tech solutions such as better process control, housekeeping, employee training, and water conservation; and basic management methods such as quality improvement teams, business forecasting, situational analysis, etc.
- **Create a Core Training Program from which Targeted Education Programs Can Be Adapted.** A core training course should include identifying environmental concerns of business, including an examination of why waste happens, what the true costs of waste and chemical use are, an explanation of the Pollution Prevention Hierarchy, and WM program steps. A core training program should create a message for industry or government that appeals to their existing self-interests and provides practical solutions that either save money or make their jobs easier or more productive.
- **Build Library Resources for WM.** This should include evaluation of existing public libraries for potential service delivery, and creating a core collection of materials that can be found in all information centers.
- **Provide Assistance to the New Environment Office of the Subic Bay Economic Zone.** The Director of the Environmental Office has requested assistance in planning and development strategies incorporating waste minimization.

II. Introduction

This is a report on Burton Hamner's visit to Manila, Philippines on assignment for the World Environment Center (WEC), from March 19 - 27, 1993. It is provided in fulfillment of the Scope of Work for Contract No. 4189.

The main purpose of the visit was to participate in a conference on *Corporate Environmental Policies and Programs*, sponsored by the non-profit group Philippine Business for the Environment (PBE). The author's participation was requested by Ms. Grace Favila, Executive Director of PBE, who attended the January 1993 Waste Minimization (WM) workshop which was co-taught in Manila by Mr. Hamner and Mr. Alan Gagnet.

Other work tasks included teaching one-day workshops to business and government groups, working with the retail and packaging industries, and conducting a capability assessment of potential environmental technical assistance organizations in the Philippines. These tasks were organized by Ms. Bebet Gozun, consultant to the Philippine Department of Environment and Natural Resources (DENR).

The assigned tasks were completed with one modification and one exception. In place of meeting personally with retail representatives as planned, the task was modified to include a waste minimization assessment conducted by the author at a retail outlet. The assessment report is attached.

The capability assessment of potential technical assistance (TA) organizations was not conducted as described in the scope of work. No time was allowed for it. Consideration was given to writing a draft survey questionnaire, but it was felt that any written survey results would give only the TA organization's idea of effectiveness. This may be radically different from the opinion of businesses which have tried to get help from the organization. Institutional capability assessment in the Philippines must be conducted in person, by interviews, and with actual trial cases of business requesting help from the institutions. Such an exercise will ultimately require months of work.

III. Conference and Workshops

A copy of the program for the PBE Conference: *Corporate Environmental Policies and Programs*, is attached.

The author spoke on "Elements of a Corporate Environmental Policy". The speech outline and visual aids used are included in **Appendix A: Figures**. The author also spoke at the end of the conference, recapping the themes and sharing observations.

The PBE conference was quite successful. Attendance met expectations, participants

interacted well, an feedback was quite positive. Discussion groups were organized by industry type and this clearly led to some very helpful networking between participants. The official presentations were well coordinated, and as the wrap up speaker on the last day, I had no trouble tracking and summarizing the main themes. The only area of concern to note is that, like the other meetings on environment I have attended in the Philippines, too few CEOs and company owners were in attendance. CEOs are the industry people who really need to see the benefits of waste minimization, sustainability and quality. Senior management seem only to show up when invited as a speaker. Suggestions for dealing with this concern are included in the report.

Following the conference, the author taught a one-day workshop on waste minimization to members of the industry group Voluntary Organization of Industry Concerned for the Environment (VOICE). The training session seemed productive. Participants were able to identify many costs and risks of waste generation, and seemed to appreciate the idea of waste minimization. Workshop participants acknowledged that the tools and techniques were practical and would be considered further. A representative of the Industrial Environmental Management Project (IEMP) spoke for the last 1.5 hours of the workshop, describing how they provide on-site WM Technical Assistance and how to organize a WM program in a company.

The next day the author taught a one-day workshop on waste minimization to inspectors of the Philippine DENR. The Inspector training was very productive. Many attendees said that they could and would use WM problem solving techniques on their future inspection visits. For almost all, this was their first exposure to WM concepts and to the idea of using their inspection authority to improve a given situation, not just enforce regulations. They liked the idea. An outline of the training they received is attached. Recommendations for working with DENR inspectors are included in the report.

On the last day of the author's assignment, pollution prevention assessment of a retail mall in Manila was conducted, as a way to start thinking about waste minimization in the Philippine retail industries. The retail store site assessment was probably a lot more productive than a meeting with industry representatives. Many opportunities for waste minimization, energy conservation, and consumer education and protection were discovered. Some would be significant cost savers for the owners if implemented; others would be better business practices. The assessment report is attached.

IV. Findings

1. CEOs ARE NOT BEING EFFECTIVELY REACHED

Not enough top executives or business owners are being reached by the current environmental education efforts in the Philippines. At both the PBE conference, as well as the January waste minimization workshop in Manila, most of the business

representatives were managers or Pollution Control Officers (PCOs). The same was true of the industry workshop I conducted for about 26 people. Only a few were CEOs or owners of companies. The same problem exists in the US. It seems that it is generally hard to get CEOs to workshops or to multi-day conferences.

This is a concern because, in general, environmental commitment and action has to come from the top down. The majority of case studies show that executive action was needed to make sustainable changes in companies.

PBE is clearly an indicator of a change in industry attitude, and is reaching some CEOs. But more is needed. Existing education efforts should continue, but a specific strategy is needed to increase the outreach to CEOs.

2. TARGETED EDUCATION IS NEEDED

Business Targets

CEOs. CEOs tend not to go to workshops with lower level staff from other companies, or to multi-day conferences. They do go to half- and one-day conferences if they are sure that most of the other participants will also be top executives from industry or government.

The Philippines has several peculiarities regarding CEOs. First, a large proportion of businesses are owned by ethnic Chinese. They are as a group traditionally very close-mouthed and avoid the public eye. They also have active community associations. To reach them, it may be necessary to recruit community leaders and obtain speaking opportunities at community functions. It may be helpful to refer to the effect of good environmental behavior on their children's lives, since many of their values tend to be family oriented.

Second, several Filipinos commented about the patriarchal nature of Philippine society, which extends into business. As in the US, worker-driven teams and empowerment of employees has a hard time competing against the traditional top-down management-by-control style. Waste minimization success stories commonly show that the best results came when ordinary workers were trusted and empowered by management to come up with solutions. In designing communications, the Filipino executive management style, whatever it is, must be addressed.

Managers. Middle managers from industry seem to be able to attend more substantial training or conferences. The education efforts to date have been most successful at reaching this group of managers. However, the logical approach to take is to get CEOs interested first and then make the training available to their staff.

Technical Staff. Technical staff such as Pollution Control Officers have major potential for training, but without management support it may be wasted. Training for technical staff really must focus on technical issues and low-tech solutions, since they don't have the authority to implement long term programs.

Government Targets

DENR Field Staff. Field inspectors and Environmental Impact Statement (EIS) staff of the DENR have major potential for training. The workshop for inspectors and EIS staff was very successful based on the comments received from participants. Interestingly, only two or three participants raised their hands when asked if they were familiar with the waste minimization concept, and none had received any training or briefings from management. This may be due to the short time between training the DENR Regional Technical Directors and their inspector staff; the directors may not have got around to it yet.

Development Staff. A request for assistance in planning was made by Elsie Palazzo, Director of the new Environment Office at the Subic Bay Economic Zone. She has to set up an office to deal with forest protection, Subic Bay water quality, waste management, and waste minimization. There are a number of waste minimization principles which should be incorporated into industrial area development planning. Government planning staff could do a lot if given the right training.

4. MANY PHILIPPINE SUCCESS STORIES ARE AVAILABLE

In the conference and in the training sessions, I and others asked participants who had environmental success stories at their business or knew of other ones to describe them. There were very few if any volunteers. Yet in private discussion a number of participants revealed to me that they had done significant WM projects or had seen good ones at other businesses. Many people are shy about describing their accomplishments in public. More one-on-one communication with business people may be necessary to discover a good range of success stories for documentation.

5. EXISTING RESOURCES CAN BE USED

Technical Assistance Organizations. In the two one-day workshops, I asked for some assistance from IEMP. My concern was to ensure that they were well represented, since they are the major technical assistance provider at the moment. Reynaldo Esguerra of IEMP took over the last hour and a half of the workshops, describing their Pollution Management Appraisals and basics of a waste minimization program. I found that IEMP was ready to help and provided the assistance necessary to do a good workshop. I also met with other IEMP staff and found that they had drawn many conclusions about technical assistance strategies similar to my own.

One concern I have is that the two IEMP staff I met who are doing regular PMAs are American. Every effort needs to be made to have local people doing PMAs. If it were up to me, it would be a rule that no assistance visit could be made to a company without a Filipino on the team.

The Industrial Technology Development Institute (ITDI) provided flyers about their waste minimization services at the PBE conference. But in two fairly well publicized visits to the Philippines I have not been contacted by anyone from that organization. Given that they are publicizing their services it is important that their success in assistance be documented.

DENR Inspectors. The DENR Inspectors in the Thursday workshop appeared in general to appreciate the waste minimization concept and said they could apply it in their work. At the beginning of the workshop one inspector stated, "We do not do technical assistance". He later agreed that helping to identify the source of waste problems was a good idea and he could do it on his job. The DENR inspectors can be stimulated into action through good training.

6. RETAIL INDUSTRIES HAVE POTENTIAL FOR ENVIRONMENTAL IMPROVEMENTS

The retail mall waste minimization assessment revealed several important findings. First, most foods in the supermarkets were packaged in the Philippines, so strategies for packaging reduction and recycling are not confounded by many overseas suppliers. Second, no "environmental" products of any kind were seen, not even energy saving light bulbs or shower heads. Given the dire power situation in Manila, this oversight is tragically ironic. Third, some smart things are already being done, such as using reusable dishware in the dining areas. The attached assessment report details other ideas.

V. Conclusions and Recommendations

1. CREATE A DENR WASTE MINIMIZATION TEAM

The apparent success of the DENR training session illustrates a major opportunity. The DENR inspectors see many businesses and have the opportunity to become familiar with a wide range of waste minimization techniques by observing them in the field. American waste minimization professionals learn the same way; by going out and doing it a lot.

A core team of DENR inspectors should be created to catalyze waste minimization as a professional expertise within the Philippines. Conducting WM assessments should be made a part of their regular visits to business. This means visits take longer, so the number of visits may need to be reduced from current inspection-only rates. As they visit businesses they can document why waste is created and also what successes are

being implemented. They can produce regular reports about what is happening with WM in industry.

The knowledge gathered this way is one of the most important resources the Philippines can have. WM is a way of looking at things and it needs to be practiced. The team members should be chosen for their professionalism, curiosity and interest in solving problems, not just having a steady job.

Related to this is a point made earlier. No Pollution Management Appraisals or other WM assessments should be conducted without local Filipino participation. This should include local DENR staff. While it may be convenient and reliable to turn PMAs over to outside consultants, it is imperative that each PMA maximize its potential for training local people.

2. SURVEY AND TEST EXISTING TECHNICAL ASSISTANCE ORGANIZATIONS

It is difficult to assess the technical assistance (TA) potential of government or other organizations anywhere. There is often a large gap between a TA organization's self-assessment of effectiveness, and the opinions of businesses who want help. If the current effectiveness of existing organizations is to be surveyed, it is critical to stand in the shoes of business and try to get help just as they would. One way to conduct a survey of technical assistance available is to go to a business, pick up a phone book and try to get some help. The reason for this is that in the Philippines access to information is the first barrier. Many organizations that provide TA are unknown and, when called, cannot effectively even describe what help they can actually provide on a timely basis. By approaching the question of capability in the shoes of a business person looking for help, the reality of the situation is much more likely to be identified. Since assistance may be slow in coming, a relatively long-term commitment to monitoring the project would be needed.

The usefulness of a survey questionnaire sent to potential technical assistance organizations is doubtful. Personal interviews are likely to get more information and a better feel for the reality vs. the desire to provide TA. Also, interviews should be conducted with businesses which have supposedly been helped by the TA organizations in the past. Until this is done, it is not possible to recommend a TA organization that is both capable and accessible.

One way to initiate a capability assessment is to get a business volunteer to do it as a real task. They can report on who they could learn about, who was responsive, who provided real help, and who never returned phone calls. I recommend starting this as soon as possible.

3. DEVELOP TARGETED EDUCATION

The different WM education needs of different industry groups were discussed earlier. The basic targeted educational needs breakdown appears to be as follows:

Targeted Waste Minimization Education:

<u>Groups</u>	<u>Needs</u>	<u>Constraints</u>
CEO's, Business Owners	big picture/success stories/peer support	short attention span, time
Managers	program specifics	not technical
Technical Staff	process-specific solutions	lack of mgt. support
Trade Associations	packaged messages	limited reach
Community Groups	success stories, methods	motivation
Academia	sample curricula	no money
Government Agencies	sample programs	staff availability
Government Inspectors	assessment procedures, solutions	existing commitments
Judges and Officials	WM planning concept; success stories	new way of thinking

4. CREATE DENR INSPECTOR EDUCATION PROGRAM

All DENR inspectors should be given a basic training in WM and quarterly or semi-annual refreshers. Experience in the US is that basic training is enough to get some government inspectors motivated and exploring WM in their jobs on an informal basis. The key is enabling them to get together on a regular basis to discuss what they are learning and share lessons. Lack of time for professional exchanges with peers in other regions is extremely frustrating for me, since I know they are learning many things I have not yet come across, and vice versa.

5. CREATE POLLUTION CONTROL OFFICERS (PCO) EDUCATION PROGRAM

There are currently several levels of certification available to Pollution Control Officers (PCOs). A WM certification should be offered to PCOs and eventually made a requirement. This is a unique opportunity to use an existing mechanism to ensure that every company required to have an environmental compliance certificate, has at least one staff person who understands WM and its impact on business. The certification course should not be longer than a week. If it is a week, it should include practicing site assessments at local businesses.

6. FOCUSED TRAINING

Training needs in the Philippines must reflect the real needs there. Specific attention should be given to the following area.

Data Gathering. Many small businesses have little or no operations data and have no idea about where they are wasting the most money. Training should include WM data needs, how to collect data, where to find it, how to measure it, and where to apply it. Also, when is data not needed; sometimes a decision can be made without lots of data. Fishbone cause-and-effect diagrams, Pareto charts, process control diagrams, and flow charts are all recommended data gathering tools.

Cost Analysis. Everyone needs to know that cash-flow analysis over several years is the only suitable way to evaluate the financial aspects of a waste minimization project. This is because environmental costs are increasing everywhere, including the Philippines. Through WM, these increasing costs are avoided. Thus WM saves even more money in the future than today. Unless future cash flows and savings are forecasted, the true financial benefits of WM will not be recognized. The basic payback method (investment divided by savings per year) should also be taught but only to show why it does not recognize increasing future savings, and to familiarize the class with this basic business analysis method.

Another key focus of cost analysis training is how to estimate the potential value of a waste if it is used as a resource. For example, brewery slops have good value as cattle feed when dried; naphtha in flue gases can be captured and distilled for sale. A major reason things are thrown away is that no one has spent the time to figure out how much it would really be worth if something creative was done with it. This requires some familiarity with project analysis methods and also with marketing and market research.

Low - Tech Solutions. Experience from the US shows that, especially in small businesses, there are many low-tech ways to prevent waste. Some of the most common are water conserving devices, counter-current or reverse-cascade rinsing, better housekeeping, reduced drag-out rates, better employee training, and inventory management. It generally takes some experience in the field to become practiced at recognizing how many of these simple things can be applied in most businesses. They can be easily demonstrated in a classroom and applied in a training visit.

Management Methods. Fundamental to long term industrial environmental sustainability is better management methods. These include cost accounting, employee development and training, quality management, supplier and customer relations, and other key areas. Any one of these areas can provide study for a lifetime, but it is very important for all education to include the basics of these methods. At the least, TA providers should know how to recognize the lack of these basic business management methods and where a business person could learn more about how to apply them.

Core Training Program. The basic focus areas above should be incorporated into all training. A core training agenda is described on the next page. It incorporates the experience gained by the author in two Philippine training assignments as well as extensive training experience in the US.

Build Library Resources. The Industrial Environmental Management Project should begin or continue building a library of materials on waste minimization and environmental management. Documents should be chosen for their clarity, brevity, and specificity. In particular, documents that can be easily photocopied should be collected. A suggested "core library" is attached.

A survey should be done, however informal, of existing libraries in the Philippines and how they are used. The question is, can public or school libraries be effective as storehouses for business environmental information? Libraries currently available to businesses should be identified. Businesses should be asked if they would ever consider the libraries as resources. If answers are positive, then a pilot project should be initiated to place environmental materials in a library and inform local businesses that they are available, and monitor their use.

Provide Assistance in Planning for New Economic Development Zones. I was asked by the director of the new Environment Office of the Subic Bay Economic Zone to visit the area to identify opportunities for including waste minimization concepts in industrial planning. A wide range of businesses, including highly-polluting ones such as tanneries and metal finishers, have expressed interest in starting operations at the old base. Because of the time constraints on my visit, I could not make the time to visit Subic. **Such planning assistance should be a very high priority.** With early training the local officials can apply WM concepts to their planning and work with companies to get them into a proactive environmental mode. This can make a tremendous long term difference in the ecological health of the area. New industrial development zones should be made special targets for WM training and assistance because of the opportunity to do things right the first time. The Subic Bay Economic Zone would be an excellent place to do a pilot WEC project of this sort, since it was requested of me.

CORE TRAINING AGENDA FOR INDUSTRIAL POLLUTION PREVENTION

Environmental Concerns of Business

range of concerns; trends; class exercise.

Why Waste Happens

identify causes of waste; people vs. process; class exercise.

Costs of Waste

identify types of costs related to wastes; class exercise. Explain basic cash flow concept and show why long-term cash flow is way to consider waste costs.

Risks of Waste

identify risks to business associated with generating wastes; class exercise.

The Waste Minimization / Pollution Prevention Concept

terms; basics of pollution prevention; pollution prevention hierarchy; case studies illustrating each element of hierarchy

How to Find Opportunities for Pollution Prevention

creative problem solving exercises; process analysis methods; management diagnostic methods

How to Analyze Pollution Prevention Opportunities

cost and risk comparisons; long term forecasting

Demonstration Analysis

conduct analysis using above methods of a particular industry of concern

Steps in a Pollution Prevention Program

step by step elements with rationale and examples

Applicability of Pollution Prevention to Class Participants

discussion in groups by participants how they can apply concepts to their own jobs, what obstacles to overcome, how they can get help.

Basic Library Reference Material for Pollution Prevention

The following documents and information on EPA's pollution prevention activities are available from the EPA Pollution Prevention Information Clearinghouse, c/o EPA, 401 M Street SW, PM-211A, Washington DC, 20460. Phone 202-260-1023, fax 202-260-0178.

Directory of State and Local Pollution Prevention Programms

program descriptions and staff, organized by EPA Region. Approx. 200 pp.

Pollution Prevention Resources and Training Opportunities in 1992. EPA/560/8-92-002

documents, videos, events, Federal/state/university/industry programs. 115 pp.

Call 513-569-7562 to order the following:

Facility Pollution Prevention Guide, EPA/600/R-92/088 513-569-7562

generic guidelines and information for facility pollution prevention planning. 143 pp.

Pollution Prevention Case Studies Compendium, EPA/600/R 92/046

abstracts of industrial facility pollution prevention projects. 99 pp.

EPA Guides to Pollution Prevention.

industry - specific guides to pollution prevention. avg. 40 -50 pp.

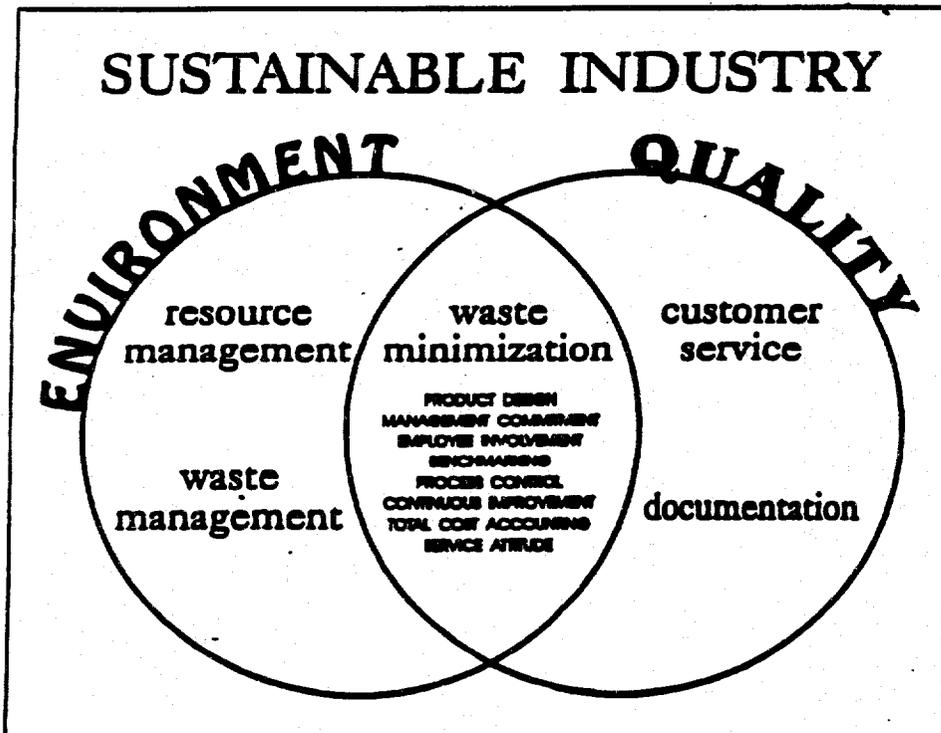
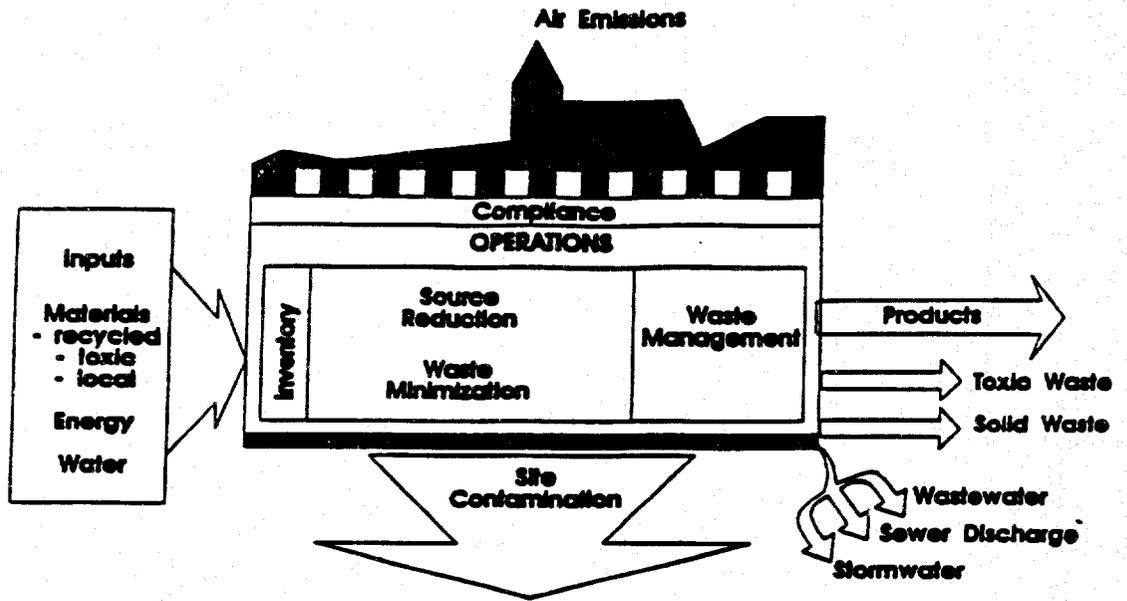
EPA Waste Minimization Assessments

industry - specific case studies in pollution prevention. avg. 4 - 8 pp.

Useful Phone Numbers

Center for Hazardous Materials <i>information on hazardous materials effects, safety, cleanup</i>	800-334-2467
EPA Pollution Prevention Information Clearinghouse <i>general information, on-line database</i>	703-821-4800
EPA Pollution Prevention Research Branch <i>technical studies, research projects, industry assessments</i>	513-569-7215
Global Environmental Management Initiative <i>industry group promoting Total Quality Environmental Management</i>	202-296-7449
Solid Waste Information Clearinghouse <i>recycling and solid waste management information</i>	800-677-9424

Appendix A: Figures and Photographs
Conference Presentation Handout (page 1)



Elements of a Corporate Environmental Policy

Goals

Real Results, Not Vague Wishes - AT&T
Sustainable Resource Management - Nordstroms Inc
Risk Reduction - Amoco, Sunstrand Aerospace
Energy Conservation - Westin Hotels
Water Conservation - Production Plating, Magnolia Corp
Toxics Use Reduction - AT&T
Waste Reduction - Aquarose, Honda

Procedures

Management Commitment - various companies
Employee Involvement and Responsibility - Dow, 3M, ATL
Communications and Training - Boeing, Dow
Supplier Management - Madison Paper, Rexham Inc
Research and Development - AT&T, 3M
Accounting - Polaroid, DuPont

Incentives

Recognizing Employee Motivations - Monsanto
Rewarding Creativity - Dow, Northrup
Performance Measurement and Reward - Magnolia Corp

Workshop Agendas

INDUSTRY WORKSHOP (all day)

Waste Minimization Concept

What Kinds of Waste Does Business Generate - group discussion and listing

What are Risks of Waste Generation - group discussion and listing

What Are Costs of Waste Generation - group discussion and listing

Why Does Waste Happen - group discussion and listing

Tools for Diagnosing Waste Problems: fish bone diagrams, pareto charts, process control diagrams.

Solutions: The Pollution Prevention Hierarchy

Steps in a WM Program

Management Commitment

Team Participation

Waste Stream Identification

Waste Costs Identification

Process Analysis

Problem Solving

Feasibility Analysis

Implementation Scheduling

Monitoring and Control

Pollution Management Appraisals (presented by IEMP representative)

Resources Available to Business Through IEMP

DENR INSPECTOR WORKSHOP

Waste Minimization Concept

How WM and Inspection Can Be Integrated

What Kinds of Waste Does Business Generate - group discussion and listing

What are Risks of Waste Generation - group discussion and listing

What Are Costs of Waste Generation - group discussion and listing

Why Does Waste Happen - group discussion and listing

Tools for Diagnosing Waste Problems: fish bone diagrams, pareto charts, process control diagrams.

Solutions: The Pollution Prevention Hierarchy

Role of the Inspector in Promoting WM - group discussion

How to Provide Consultation to Business

Pollution Management Appraisals (presented by IEMP representative)

Resources Available to Business Through IEMP

Workshop Graphics

the illustrations were hand drawn on chalk boards during the workshops.

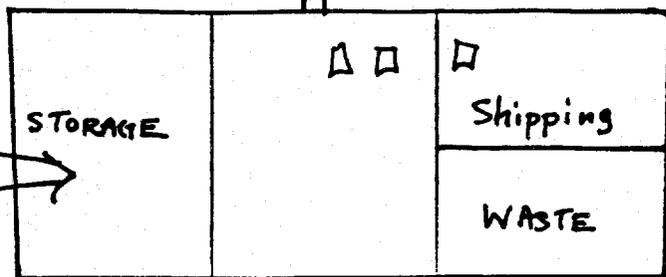
Environmental Concerns in Business

AIR POLLUTION

MATERIALS:

- regulated
- recycled
- renewable

WATER
ENERGY

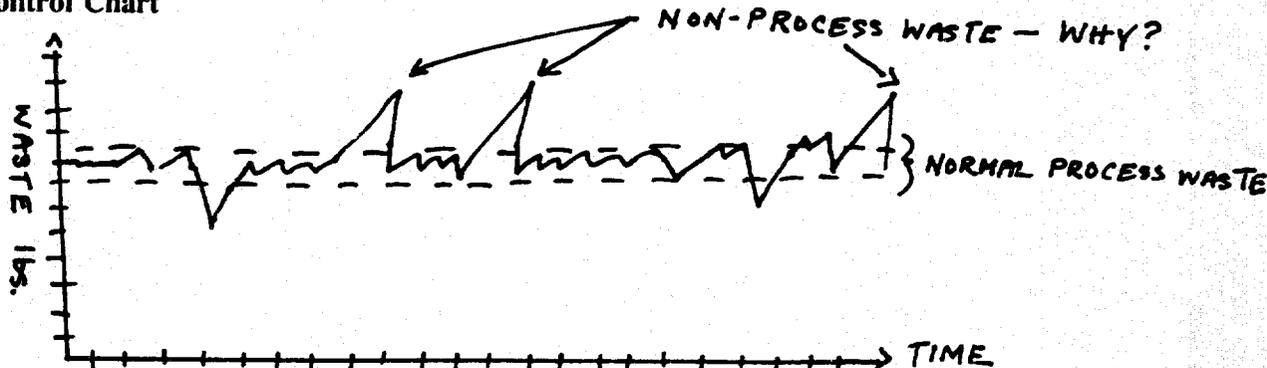


PROPERTY

CONTAMINATION

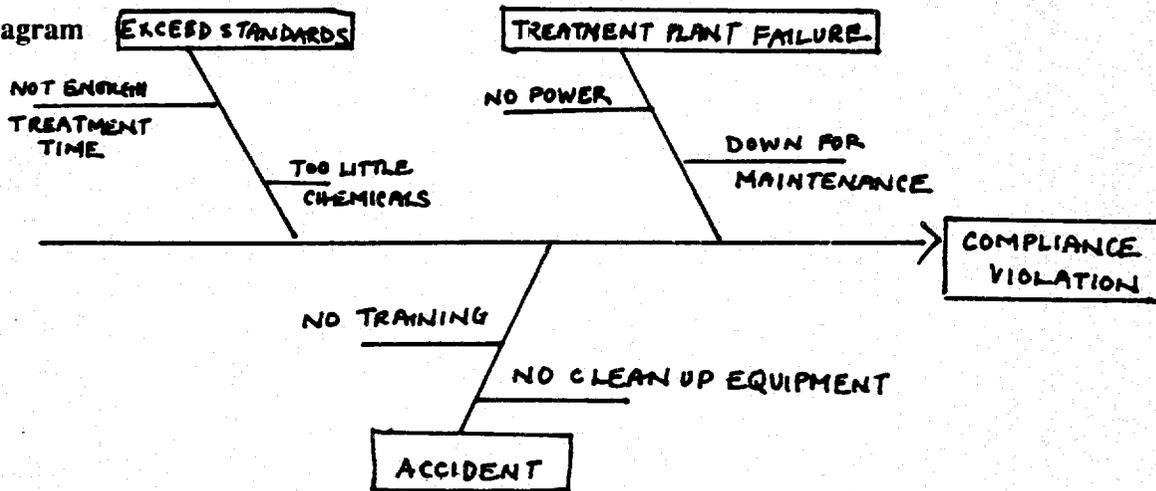
Process Control Chart

WHERE
WASTE HAPPENS

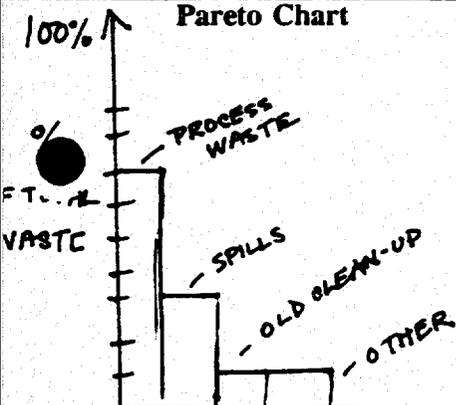


Fish Bone Diagram

WHY
WASTE HAPPENS



Pareto Chart



Appendix B: Itinerary

Friday, March 19, 1993

Leave Seattle for Philippines, Northwest Airlines, 1:20 pm. Taxi to airport.

Saturday, March 20

Arrive Manila, 10 pm. Taxi to hotel.

Sunday, March 21

Had dinner with Grace Favila, PBE, David Chittick, AT&T, Ken Prussner, US AID, and several others to discuss next day's conference.

Monday, March 22

Attended PBE conference. Participated in afternoon work group discussions. After conference, met with IEMP staff to discuss training methods and interests.

Tuesday, March 23

Attended PBE conference. Gave presentation on Elements of a Corporate Environmental Policy. Participated in discussion groups. Gave concluding wrap up remarks. Met with Elsie Palazzo, new director of the Subic Bay Economic Development Zone environmental office. Received invitation to visit Subic and evaluate opportunities for building waste minimization concepts into development efforts.

Wednesday, March 24

Taught workshop on waste minimization to about 25 business representatives. Workshop was sponsored by VOICE (Voluntary Organization of Industry Concerned for the Environment). Led workshop from 9 am to 3 pm; then IEMP representative took over and presented the IEMP program and how they do Pollution Management Appraisals.

Had dinner with Ken Prussner, US AID, and his family. Discussed AID program objectives and potential US resources.

Thursday, March 25

Taught workshop on waste minimization to about 35 DENR inspectors, largely from Metro Manila National Capital Region. Led workshop from 9 am to 3 pm; then IEMP representative took over and presented the IEMP program and how they do Pollution Management Appraisals.

Had dinner with Dr. Emberto D. Jesus, Dean of Research at Asian Institute of Management, plus another AIM faculty and two consultant staff working with IEMP on banking and finance. Discussed AID environmental objectives and US resources, and many other concerns.

Friday, March 26

Subic Bay visit was cancelled early in morning by sponsor due to other commitments. Instead I visited the ShoeMart retail department/grocery store in Makati and evaluated opportunities for waste minimization and environmental improvements. Wrote up notes on hotel computer in afternoon. Had dinner with Bebet Gozun and two World Bank representatives.

Saturday, March 27

Left Manila 9:20 am to return to Seattle. Taxi from Seattle airport home.

Appendix C: Persons and Organizations Visited

Leonardo B. Alejandrino, President, Philippine Business for the Environment; President, Peregrine Capital Philippines, Inc.

Pearl V. Aragon, Director for Administration, Hotel Nikko Manila Garden

David Chittick, Environmental and Safety Engineering Vice President, AT&T

Grace Favila, Executive Director, Philippine Business for the Environment

Bebet Guzon, Consultant, Philippine Dept. of Environment and Natural Resources

Lauro D. Guevara, Vice President, Philippine Investment-Management Consultants

Alberto D. Jesus, Dean of Research, Asian Institute of Management

Antonio A. Oposa, Jr. President, Philippines Environmental Network; Attorney, Oposa Law

Kenneth Prussner, Chief, Office of Natural Resources, Agriculture and Decentralization, US Agency for International Development, Philippines Office

Jun P. Salipsip, General Sales Manager, Dow Philippines

Richard Stevenson, Director, ASEAN Environmental Improvement Project

various staff, US AID Industrial Environmental Improvement Project

Appendix D: Business Cards of Persons Visited



Phone Address
 P.O. Box 241, Greening Park Office - 102
 San Juan, Metro Manila, Philippines
 Office Address
 Republic Plaza Building
 Emerald Square, 72nd Metro Manila
 Telephone Numbers: 831-5716
 831-5716
 Telex Number: 32073 OTEC PH
 Fax: 831-5716

Corazon Pe Benito Claudio, Ph.D.
 President

Technology, Risk, and Development Foundation, Inc.

hotel nikko manila garden
 ☆ nikko hotels international

Pearl V. Aragon
 Director for Administration

AYALA CENTER, 1223 MAKATI, METRO MANILA, PHILIPPINES
 TELEPHONE: 810-4101 TELEEX: 45883 GARDEN PH
 FACSIMILE: 817-1888



David R. Christie
 Environment & Safety Engineering
 Vice President

131 Morristown Road
 Basking Ridge, NJ 07920
 908 204-8700
 FAX 908 204-8218

RICHARD S. STEVENSON

Director

ASEAN ENVIRONMENTAL IMPROVEMENT PROJECT

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 Fax: (83-2) 810-8878

1228 Calaburo Street
 Desmarcos Village
 Makati, Philippines
 Tel. (83-2) 810-8879
 Fax: (83-2) 810-8879



Dow Philippines

JUN P. SALIPSP
 Country General Sales Manager

Dow Chemical Pacific Limited
 23rd Floor, 6750 Ayala Avenue
 1226 Makati, Metro Manila
 Philippines
 (83-2) 819-1888

(83-2) 815-2180; Fax

PEREGRINE

Peregrine Capital
 Philippines Inc.

Leonardo B. Alejandrino
 President & CEO

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 Ayala Avenue, Makati
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 Direct Line: (832) 812-2217
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Alan L. SyCip

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 Cellular: 0912-303-8488
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Lauro D. Guevara
 Vice President

Philippine Investment-Management Consultants, Inc.
 Phoenix Building, 105 Salcedo Street, Makati, Metro Manila, P.O. Box 1171 MCPO
 Telephone: 810-8828; Telex: 22288 PHO PH/22288 PHO/2288 PH; Fax: (832) 817-1887

Home 721 1623 **Esteban N. Estrada**
 (832) 815-3708

**ANDERSEN
 CONSULTING**

SGV Development Center
 105 De la Rosa St., Makati
 1200 Metro Manila, Philippines
 Telephone: (832) 817-4301
 Facsimile: (832) 817-2397

RICHARD S. STEVENSON

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1228 Calaburo Street
 Desmarcos Village
 Makati, Philippines
 Tel. (83-2) 810-8879
 Fax: (83-2) 810-8879

Appendix E: List of Documents Received

Participants' Document Packet, Conference on Corporate Environmental Policies and Programs,
Philippine Business for the Environment

Information Package, US Agency for International Development, Office of Natural Resources,
Agriculture and Decentralization

Primer / Brochure, Philippine Industrial Technology Development Institute

Appendix F: Retail Mall Waste Minimization Assessment

ShoeMart Mall, Makiti, Manila, Philippines

March 26, 1993

Background

The author is a waste minimization specialist with the Washington State Department of Ecology. He made a visit to Manila, Philippines on March 20-27, 1993, sponsored by the World Environment Center, to participate in several activities. One of the activities planned was to evaluate opportunities for waste minimization in retail industries.

Due to time constraints, it was not possible to meet with members of the retail industry for consultation. However, the author took advantage of an unplanned break in activities to make a visit to the ShoeMart shopping mall in Makati, Manila, to evaluate opportunities for waste minimization and environmental improvement.

The ShoeMart mall contains a food supermarket, fast food center, and extensive department store. All areas were visited. The following notes were made.

Food Supermarket

The visit was made just after the store opened. Many employees were stocking shelves. According to one, the cardboard boxes being emptied would be recycled. It was not possible to visit the receiving area of the store, but it would be good to know if other packing materials such as plastic wrap or packing "peanuts" are also recycled. Store management can reduce non-recyclable packing received by working with suppliers to reduce their packaging.

In the fresh fruits and vegetables section, old or unsold stock should be collected and composted. Many US supermarkets are composting such stock and selling it for a modest amount rather than disposing of it. Unsold meats should not be composted due to health hazards of decaying meat, but unsold seafood maybe composted if done quickly.

Pears wrapped individually in Styrofoam nets were on sale. The netting is provided to prevent bruising during transport. It should be removed and recycled before the fruits are put on the shelf, thus avoiding unnecessary consumer waste.

Some spices and delicacies were sold in bulk in a special section. This could be expanded. The Ballard Market in Seattle has developed a regional niche by providing many foods in bulk, such as rice, flour, cornflakes, raisins and many other items. They are held in 30-gallon drums with clear plastic lids; customers put what they need into paper or plastic bags and mark the bin number on the bag. The bag is weighed at checkout. This method may be particularly advantageous in the Philippines as the products sold this way are significantly lower in price per pound, which appeals to lower-income consumers. Almost all packaging waste is thus avoided.

Egg cartons are easily recycled and could be collected by the store. Also, customers can be asked to bring back their old egg cartons and fill them themselves from the egg stock. This is being done in

several Seattle stores.

No "generic" goods were seen. Generic goods are lower price, and reduce pollution by having labels which are printed in simple black and white. This reduces the generation of waste inks at the label printing plants.

Plastic bottles are used to contain many products. Many of the bottles were marked as PET (polyethylthalene), which is an easily recycled plastic. The plastic bottle makers should consider labelling the bottles with the Recycle symbol and making bottles out of recycled plastic.

Chillers for frozen foods and meats did not have covers, which leads to cool losses and higher energy costs. Since Manila has a serious energy crisis, installing covers with sliding or lifting openings would be more energy efficient and perhaps worth the small inconvenience to customers.

Many brands of juice were packaged in single serving containers made of paper or metallic foil. The paper is recyclable; to my knowledge the foil is not, and also may generate more pollutants during manufacturing. Packagers should consider using paper containers exclusively, and making the containers from recycled paper where possible.

Many canned foods were for sale. Cans are commonly recycled by consumers in the US and should be evaluated for recycling in the RP.

Paper goods such as paper towels, napkins etc. can be made out of recycled paper and also from unbleached paper. With a "green label" such products often have significant consumer appeal.

Pesticides for sale included various sprays and solids. The labelling was carefully examined. While health warnings were included, they were not distinguished from the rest of the label by larger type, poison symbols etc. This is a particular concern in markets where consumer literacy is not high. Pesticide packagers should consider using graphic symbols to emphasize health hazards and make them prominent on the label. Also it was noted that many of the pesticides use methylene chloride as a propellant. This chemical is a carcinogen and I believe is no longer used as a propellant in the USA. Packagers should eliminate the use of toxic chemicals as propellants in spray cans, since non-toxic propellants are widely used elsewhere.

A home dry cleaning solution was for sale in a one-gallon can. The contents were not identified as to type. It is assumed that the material is perchlorethylene since the label instructed the user to hang washed fabrics in the air for quick drying. No mention was made on the label that drying should absolutely not be done indoors where exposure could be continuous. Perchlorethylene is a carcinogen and is heavily regulated in the US; it would never be sold in a retail package with such poor hazard identification. The product was made by Shell Corp. This product should be removed from store shelves, or the labelling should be significantly improved.

The store can help consumers protect themselves from pesticides by placing a poster with graphic warning signs and instructions on the display case. This would help buyers to remember not to spray the pesticides around children, pets, food or water, and to leave the room immediately for several hours after spray

Department Store

The department store component of the wall contained a very wide variety of dry goods. In the plumbing and bath section, shower heads and sink nozzles were sold. None were identified as having water conserving properties. As Manila is facing increased pressure on its water supplies, and since heating water for showers takes electricity which is already in very short supply, the store should sell and vigorously promote low-flow shower heads and sink nozzles. These are very cost competitive and can reduce home water use by as much as 50%, with concurrent reductions in electricity use for water heating. This point also applies to the hotel where the author has twice stayed; the showers put out several times more water than necessary, thus increasing the hotel's water and electrical or fuel bill with no benefit to the guest.

In the lighting section, no information on energy conservation was provided and no fluorescent bulbs were identified as energy conserving. This is particularly unfortunate since power shortages in Manila cause daily brownouts. A serious national campaign should be launched to provide energy efficient lighting, label bulbs according to their energy use, and to inform consumers about their choices. The bulbs for sale were made by Phillips which sells all kinds of energy efficient lighting and labels the energy use of bulbs sold in the USA. This should be a high priority and quite cost effective.

The store had the largest display of artificial plants the author has seen. While this does not lead to significant waste, it seems quite ironic given the wonderful climate of the RP for growing decorative plants and the potential for a local decorative live plant industry. It could not be determined if the fake plants were made in the RP or elsewhere; in the authors experience most are made in China. Selling live plants grown locally would help the RP economy.

Parcel wrapping is a significant cost to the store and leads to much consumer waste. Boxes, paper wrapping and bags should be made of recycled paper if possible. Clerks can be trained to ask customers if they want much paper wrapping or packaging, and can point out to the customer that reduced wrapping benefits the environment. This simple training could reduce the store's cost for purchasing packaging and also reduce consumer waste. This procedure is currently followed by the very successful Nordstroms department stores in the USA.

Store employees were observed cleaning glass and floors. The chemicals used for store cleaning and maintenance should be reviewed for their environmental impact. In particular, glass cleaner can be formulated in bulk from ammonia and water (one cup ammonia to one gallon of water) for very effective glass cleaning. Floor tile stains can often be removed with vinegar and water instead of commercial acid products. Of course the cost of these environmentally friendly alternatives may be less than 1% the cost of commercial products, and avoids waste cleaner packaging. The author has worked with a department store in Seattle and found that a wide number of chemical products were used which could and will be replaced with cheaper, more environmentally friendly products. Also it was found that different store departments were ordering their own cleaning supplies in small quantities, which led to increased overall cost. By centralizing the purchase of maintenance supplies the store is obtaining significant volume discounts and ensuring that toxic chemical use is reduced as much as possible.

The store management can also reduce its costs by installing water saving devices in bathrooms throughout the store.

Retail Food Circus

The food circus in the store basement had about twenty stalls selling various items. It was good to see that re-usable plates, utensils and trays were in use. As these require washing, attention should be paid to minimizing water use and energy in the wash room. Disposable paper cups were used; these can often be replaced with re-usable plastic cups at a substantial long-term saving to the store.

Food waste is hard to manage for environmental benefit in such a multi-outlet venue since it is a mix of vegetable and meat wastes with human contact. However the food waste stream should be reviewed for its fate and any alternatives to landfilling.

Behind the scenes, opportunities for recycling of boxes and packaging received should be implemented. Low-flow nozzles should be placed on all faucets to minimize water and electricity use.

Ventilation is a concern in the food circus. Walking by several of the stalls, I felt warm drafts emanating from them. These warm drafts flow into the central dining area which is airconditioned. Stalls should be ventilated to ensure that heat from cooking is drafted back into the stalls and out the building.

Cleaning agents in the food circus should be reviewed to ensure that they are environmentally friendly. Biodegradable detergents without phosphorus or nitrates should be used. For difficult cleaning jobs, citrus-based solvents can be used instead of petroleum - derived cleaners or acids.

Overall Store Design

Since the food circus with its many kitchens is in the basement of the store, rising heat contributes to the difficulty of cooling the department store above it. Ceilings in the kitchens should be fitted with insulating tiles to minimize heat transfer to the department store floor above.

Windows in the store were single-pane design, which has the highest heat transfer rate. Refitting to energy-efficient double pane windows is expensive, but should be considered as a possible long term investment to reduce electrical costs for air conditioning. Solar films and shades can be installed on windows exposed to direct sun to reduce heat.

The extensive use of live plants, particularly very leafy plants, inside buildings helps improve air quality significantly. Some species such as chrysanthemums and spider plants are known for their ability to remove contaminants from air, and can survive in low light conditions. Live plants also create a more pleasant work environment.

Continuous customer traffic through the doors of the store causes significant losses of cool air. Since the doors can't be kept closed, directed air jets over the doorways should be considered as a way to keep warm air outside. Cost of operating the air jets needs to be compared to any resulting savings on air conditioning.

The air condition system itself is a subject for concern. Under the Montreal Protocol, CFC refrigerants that are used in air conditioning systems will be phased out of production by the end of this decade. The store should be actively researching alternatives for air condition refrigerants and for

refrigerants used in the food supermarket and food circus chillers. HCFCs are commonly being used as replacement chilling agents in the US.

CURRICULUM VITAE

BURTON HAMNER

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(206)-784-4023

WASHINGTON DEPARTMENT OF ECOLOGY

3190 160th Avenue SE
Bellevue, WA 98008
206-649-7180; fax 206-649-7098

CURRENT POSITION

5/91 - **Environmental Planner** Bellevue, WA
Washington State Department of Ecology
Senior industrial pollution prevention specialist. Help organizations reduce chemical use, wastes and emissions. Provide on-site planning and technical assistance to all facility staff levels. Responsible for ensuring the adequate preparation of 128 pollution prevention plans (to date) by industrial facilities, including assistance, review and compliance; have most facility planning responsibility of all agency staff. Help develop state pollution prevention regulations and guidelines. Agency lead worker on cost analysis for pollution prevention. Make regular presentations to business, public interest, academic and government groups. Develop communication materials, including slide shows, press releases, articles. Chief lecturer for agency's six-month Industrial Pollution Prevention Planning class.

EDUCATION

6/1988 **Master of Business Administration** Seattle, WA
University of Washington
Majors: Marketing, Finance

6/1988 **Master of Marine Affairs** Seattle, WA
University of Washington
Majors: Marine Environmental Policy, Marine Technology Management

6/1983 **Bachelor of Arts cum laude** Cambridge, MA
Harvard University
Major: History of Science. Minor: Marine Ecology

TRAINING

3/93 **Total Quality Management** Seattle, WA
24-Hour Course. Instructor: Padgett-Thompson Company.

7/92 **Principles of Supervision** Tacoma, WA
28-Hour Course. Instructor: Washington Dept. of Personnel.

2/92 **Pollution Prevention Assessment Methods** Bellevue, WA
32-Hour Course. Instructors: Washington Dept. of Ecology, US EPA, Waste Reduction Institute.

12/91 **Hazardous Materials Safety and Emergency Response** Bellevue, WA
40-Hour Course. Instructors: Washington Dept. of Ecology, CADRE Group.

12/91 **EPA Basic Inspector Certification** Bellevue, WA
24-Hour Course. Instructor: US EPA.

8/91 **Pollution Prevention Instructor Training** Seattle, WA
24-Hour Course. Instructor: US EPA.

PREVIOUS EXPERIENCE

- 3/93 **Consultant** US Agency for International Development *Manila, Philippines*
Assisted the Conference on Corporate Environmental Policies, sponsored by Philippine Business for the Environment, as a keynote speaker and resource person. Taught one day workshops on pollution prevention to an industry group and to government inspectors. Conducted a retail industry waste minimization assessment. Overseas assignment was managed by the World Environment Center, Washington DC office.
- 1/93 **Instructor** Environmental Management Bureau *Manila, Philippines*
Served as Course Instructor for the five-day Workshop on Waste Minimization: An Emerging Corporate Strategy, held in Manila, Philippines, sponsored by the Environmental Management Bureau of the Philippine Department of Environment and Natural Resources and the US Agency for International Development. Recommended strategies for promoting industrial waste minimization in the Philippines. Overseas volunteer assignment was managed by the World Environment Center, New York office.
- 4/90 - 5/91 **President** Aqua Marine Enterprises, Inc. *Seattle, WA*
Communications and public relations consultant. Conducted market research; designed and installed marketing information systems; wrote articles, press releases, business plans, brochures, etc.
- 6/88 - 4/90 **Marketing Manager** BioSonics, Inc. *Seattle, WA*
Managed new marketing department in sonar engineering and consulting firm. Recruited and managed staff, interns and contractors. Developed and managed budget. Developed marketing information system. Wrote business plans. Designed and produced company marketing materials. Represented company at conferences and shows.
- 5/84 - 5/86 **Environmental Planner** US Army Corps of Engineers *Seattle, WA*
Managed environmental studies for Corps marine projects. Prepared EISs and environmental assessments. Designed, negotiated and managed studies conducted by contractors; made presentations to public; chaired interagency work groups. Developed expertise in wetlands, sediments, fisheries, sampling.
- 2/84 - 5/84 **Marine Policy Analyst** Washington Environmental Council *Seattle, WA*
Researched and prepared technical briefs and articles on marine environmental issues. Obtained and implemented grant to research wastewater discharges to Puget Sound.
- 9/80 - 7/82 **Research Assistant** Harvard Museum of Zoology *Cambridge, MA*
Conducted laboratory and field studies of marine biology and ichthyology.

PUBLICATIONS

- "Environmental Management Accounting".
Industrial Pollution Prevention in Washington.
"Pollution Prevention Afloat".
"Fish Size Representation for Sonar Displays."
"Smart Sonar Shopping."
Sonar for Fisheries Research.
Introduction to Dredged Material Management.
Seattle Harbor Dredging Impact Statement
- Pollution Prevention Review* (accepted)
Washington Dept. of Ecology, June 1992
Sea Magazine, November 1991
Marine Electronics, Jan/Feb 1990
Sea Magazine, April 1989
BioSonics, Inc. Seattle, Washington 1990
U.S. Army Corps of Engineers, 1987.
US Army Corps of Engineers, 1986

PUBLIC CONFERENCES AND PRESENTATIONS

- (1) **First - Wave Pollution Prevention Results in Washington; (2) International Pollution Prevention Case Study: The Philippines.** (accepted) Annual Conference, American Institute of Chemical Engineers, Seattle, WA, August 1993.
- (1) **Helping Business with Pollution Prevention Cost Analysis; (2) International Pollution Prevention.** (accepted) National Roundtable of State Pollution Prevention Programs, San Diego, CA, April 1993.
- Environmental Accounting and Cost Analysis for Pollution Prevention.** Washington Department of Ecology, Bellevue, WA, April 1993.
- Elements of a Corporate Environmental Policy.** Conference on Corporate Environmental Policies, Philippine Business for the Environment, Manila, Philippines, March 1993.
- Waste Minimization Strategies.** Workshop on Waste Minimization: An Emerging Corporate Strategy. Philippine Dept. of Environmental and Natural Resources, Manila, Philippines, March 1993.
- Waste Minimization: A Strategy for Inspectors (workshop).** Philippine Dept. of Environmental and Natural Resources, Manila, Philippines, March 1993.
- Waste Minimization Strategies (workshop).** Voluntary Organization of Industry Concerned for the Environment (VOICE), Manila, Philippines, March 1993.
- Pollution Prevention for Small Business.** Chemical Free Fremont, Seattle, WA, January 1993, October 1992.
- Pollution Prevention: A Strategy for Inspectors.** US EPA Region X Basic Inspector Training, Seattle, WA, December 1992; January 1991.
- First-Wave Pollution Prevention Results in Washington State.** US EPA Pollution Prevention Office, Washington DC, November 1992.
- Strategies for Industrial Pollution Prevention from Washington State.** World Bank, Washington DC, November 1992.
- Strategies for Industrial Pollution Prevention from Washington State.** US Agency for International Development, Asia Bureau, Washington DC, November 1992.
- Environmental Accounting for Pollution Prevention.** HazMat West '92 Conference and Trade Show, Long Beach, CA, October 1992.
- (1) **Hazardous Waste: The Cost-Benefit Analysis.** (2) **Pollution Prevention Strategies for Laboratories.** Waste Information Network EXPO, Seattle, WA, October 1992.
- Helping Small Business with Environmental Cost Analysis.** King County METRO Hazardous Waste Section, Seattle, WA, September 1992.
- Pollution Prevention Planning.** Annual Conference, National Association of Environmental Professionals, Seattle, WA August 1992.
- Pollution Prevention Planning.** Environmental Management Expo '92, Seattle, WA, May 1992.
- Cost Analysis for Pollution Prevention.** Annual Conference, Air and Waste Management Association, Pacific Northwest & International Section, Seattle, WA, July 1992.
- (1) **Pollution Prevention Planning in Washington; (2) Water Conservation and Wastewater Reduction.** US Navy Hazardous Waste Minimization Conference, San Jose, CA, Feb 1992
- (1) **Counting Chemicals in Coastal Environments; (2) A Strategy for Dredged Material Management.** Coastal Zone '87, Seattle, WA June 1987
- Public Choices for Wetlands Protection.** Northwest Wetlands Conference, Seattle, WA, March 1985.

CLASSROOM TEACHING EXPERIENCE

Senior Instructor, *Industrial Pollution Prevention Planning* course, Washington Department of Ecology. Six-month course meeting monthly for environmental managers of industrial facilities.

Panelist, *Roundtable on Business and the Environment*, video series, City University, Bellevue, WA.

Guest Lecturer, *Business and the Environment* graduate seminar, School of Business Administration, University of Washington.

Guest Lecturer, *Business, Government and Society* undergraduate class, School of Business Administration, University of Washington.

Guest Lecturer, *Introduction to Marine Affairs*, graduate class, School of Marine Studies, University of Washington.

PROFESSIONAL ASSOCIATIONS

<i>Director,</i>	North Seattle Community College Environmental Program.
<i>Director,</i>	University of Washington Business School Alumni Association.
<i>Director,</i>	Seattle Aquarium Society.
<i>Director,</i>	Puget Sound Alliance.
<i>Officer,</i>	Association of Northwest Environmental Professionals.
<i>Officer,</i>	Marine Technology Society, Puget Sound Chapter.
<i>Member,</i>	Northwest Business Environmental Network.

ACTIVITIES AND HONORS

<i>Advisor,</i>	Environmental Management Program, University of Washington Graduate School of Business.
<i>Certificate of Appreciation,</i>	Philippine Dept. of Environment and Natural Resources.
<i>Certificate of Appreciation,</i>	Philippine Business for the Environment.
<i>Green Tree Award,</i>	Washington Environmental Council.
<i>Bradner Scholarship,</i>	University of Washington.
<i>Dean's List</i>	Harvard University, 1980-1983.

PERSONAL

Born 10 / 1961; married; interested in the oceans, environmental politics, making music. Lived in the Bahamas, Mexico, Australia, and Micronesia for over eight years.

References available upon request.

Pollution Prevention Client List

Completions

The following organizations have completed satisfactory Pollution Prevention Plans, according to Washington State regulations, under my supervision, in 1992 and 1993. A star (*) means the organization received an on-site pollution prevention assessment as well as planning and research assistance:

Eldec*	<i>electronics</i>
Intalco*	<i>aluminum smelter</i>
Hydro Swirl*	<i>bath tubs</i>
Rainier Brewing*	<i>brewery</i>
Bardahl*	<i>chemical blender</i>
Heath Techna*	<i>composites</i>
Arima Marine*	<i>fiberglass boats</i>
Mirage Marine	<i>fiberglass boats</i>
Olympic Boat*	<i>fiberglass boats</i>
Bayliner*	<i>fiberglass boats</i>
C Dory	<i>fiberglass boats</i>
Delta Marine*	<i>fiberglass boats</i>
Wright Brothers*	<i>fiberglass boats</i>
King Fiberglass	<i>fiberglass resins</i>
Chemgrate	<i>fiberglass grates</i>
Ershigs	<i>fiberglass tanks</i>
Fisher Mills*	<i>flour mill</i>
Ball Incon Glass*	<i>glass bottles</i>
VN Graphics*	<i>graphics printing</i>
US Printing Ink	<i>ink blender</i>
Alaskan Copper Works	<i>metal fabricator</i>
Alliant Techsystems*	<i>marine electronics</i>
Samson Ocean Systems*	<i>marine rope</i>
Quinton Instrument*	<i>medical devices</i>
ATL*	<i>medical devices</i>
Calvert Industries*	<i>metal finisher</i>
Acu-Line	<i>metal finishing</i>
All Fab	<i>metal finishing</i>
Art Brass Plating	<i>metal finishing</i>
ASKO Processing	<i>metal finishing</i>
Blue Streak Finishers	<i>metal finishing</i>
Color Tech	<i>metal finishing</i>
Production Plating	<i>metal finishing</i>
Protective Coatings	<i>metal finishing</i>
Seafab Metal	<i>metal finishing</i>
Seattle Technical	<i>metal finishing</i>
TC Systems	<i>metal finishing</i>
Western Steel Casting	<i>metal forging</i>
Young Corp	<i>metal forging</i>
Ace Galvanizing	<i>metal galvanizing</i>
Scott Galvanizing	<i>metal galvanizing</i>
Western Pneumatic Tube	<i>hydraulic systems</i>
Davis Wire Co	<i>metal wire</i>

Northstar Casteel*	<i>metal products</i>
Princeton Packaging	<i>printed bags</i>
Circuit Technology	<i>circuit boards</i>
Cello Bag	<i>plastic bags</i>
Georgia Pacific*	<i>pulp and paper</i>
Scott Paper*	<i>pulp and paper</i>
Seattle Steel*	<i>scrap steel mill</i>
Marco Seattle*	<i>shipyard</i>
Todd Shipyard*	<i>shipyard</i>
Unimar*	<i>shipyard</i>
ALPAC	<i>soft drink bottler</i>
Pacific Coca Cola*	<i>soft drinks</i>
VIOX Corp*	<i>specialty glass</i>
Spectrum Glass	<i>specialty glass</i>
Bert-Well*	<i>truck interiors</i>
University of Washington*	<i>university</i>
Coastal Manufacturing	<i>vehicle trailers</i>
Achilles*	<i>vinyl film maker</i>
Cascade Cabinet*	<i>wood cabinets</i>
Western Cabinet*	<i>wood cabinets</i>
Contour Laminates	<i>wood furniture</i>
Brooks Mfg*	<i>wood treatment</i>
Chemco*	<i>wood treatment</i>
JH Baxter	<i>wood treatment</i>
Oeser Company*	<i>wood treatment</i>
Pacific Resources*	<i>wood treatment</i>

In Progress

The following organizations are now preparing Pollution Prevention Plans under my supervision for a submittal deadline of September 1, 1993 (type of business has not yet been confirmed for all):

American Envelope	
Beoit Manhattan	
Belshaw Brothers	<i>car dealer</i>
Boral Cascade Culvert	
Bowen Scarff Ford Volvo	<i>car dealer</i>
Boyer Alaska Barge Lines	<i>shipping</i>
BP Oil Company	<i>oil storage</i>
Chemical Proof	
Conley and Kleppen	
Data I/O Corporation*	<i>electronics</i>
Dunbar Enterprises	
E.W. Saybolt & Company	
Evergreen Ford	<i>car dealer</i>
Fibrex Corporation	
Foss Maritime Company*	<i>tugboats</i>
Hutchinson Cancer Center	<i>hospital</i>
Freeway Truck Parts	<i>metal forger</i>
General Electric	<i>electronics</i>
George Heiser Body	<i>truck repair</i>

Clients In Progress (continued)

Gudmonson Company	
Hatch and Kirk	
Hirshler Manufacturing	
Hydraulic Repair & Design	
Imperial Products	
Jamco America	
Keiwick Construction	
Labels West	
Laboratory of Pathology*	<i>laboratory</i>
Laitala Enterprises	
Lake Union Drydock*	<i>shipyard</i>
Lamson Products Company	
Lauks Testing Lab	<i>laboratory</i>
Mannesman Tally	
Maritime Contractors	
McDonald Industries	
Metal Form	
MRI Corporation	
MTH Finishers	
Mutual Materials	<i>brick maker</i>
National Truck and Paint	
Nivas Corporation	
Olympic Brake & Supply	
Pacific Grinding Wheel	
Pacific Metallurgical	
Sea-Tac Airport	<i>airport</i>
Precision Automotive	<i>car repair</i>
Precision Engineering	
Production Milling	
Puget Sound Tug & Barge	<i>shipping</i>
RDK Prefinishing	
Seattle Finishing	<i>metal finisher</i>
Seattle Times Company*	<i>newspaper</i>
Smithway Company	
Snohomish County PUD	<i>utility</i>
Stearns Company	
Steel Fab	
NOAA Marine Center	<i>shipping</i>
Victory Marine	<i>boatyard</i>
Weyerhaeuser*	<i>laboratory</i>
Wick Construction	

Non-Regulated Clients

The following organizations are not required to prepare Pollution Prevention Plans, but have requested and received pollution prevention assessments or consultations anyway:

Starbucks Coffee	<i>coffee</i>
ShoeMart*	<i>department store</i>
Nordstroms*	<i>department store</i>
General Milling *	<i>food manufacturer,</i>
Century Canning Corp.	<i>fish canner</i>
Seattle Parks Dept.*	<i>government agency</i>
Seattle Water Dept.	<i>government agency</i>
City of Federal Way*	<i>government agency</i>
King County Health Dept*	<i>laboratory</i>
Pacific Environmental *	<i>laboratory</i>
Fastbrite Electroplaters*	<i>metal finishers</i>
OMJ Company*	<i>metal finishers</i>
Mobil Oil Philippines	<i>petroleum products</i>
Larry's Markets*	<i>supermarket</i>
Woodland Park Zoo*	<i>zoological park</i>

ACKNOWLEDGMENT

The Philippine Business for the Environment (PBE), Inc. is very grateful for the generous assistance of:



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

- INDUSTRIAL ENVIRONMENTAL MANAGEMENT PROJECT
- US-ASIAN ENVIRONMENTAL PARTNERSHIP
- WORLD ENVIRONMENT CENTER

and the promotional support of:

- American Chamber of Commerce
- ASEAN Environmental Improvement Project
- Australian/New Zealand Chamber of Commerce
- Bankers Association of the Philippine
- Canadian Chamber of Commerce
- European Chamber of Commerce
- Federation of Filipino-Chinese Chamber of Commerce and Industry, Inc.
- Filipino-Indian Chamber of Commerce (Phil.) Inc.
- Financial Executives Institute of the Philippines
- Makati Business Club
- Management Association of the Philippines
- Philippine Business for Social Progress
- Philippine Chamber of Commerce and Industry
- Rotary Clubs of the Philippines
- US-Asean Council for Business and Technology
- Associated Resources for Management & Dev't., Inc. (ARMDEV)



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Conference

ON

Corporate Environmental Policies and Programs

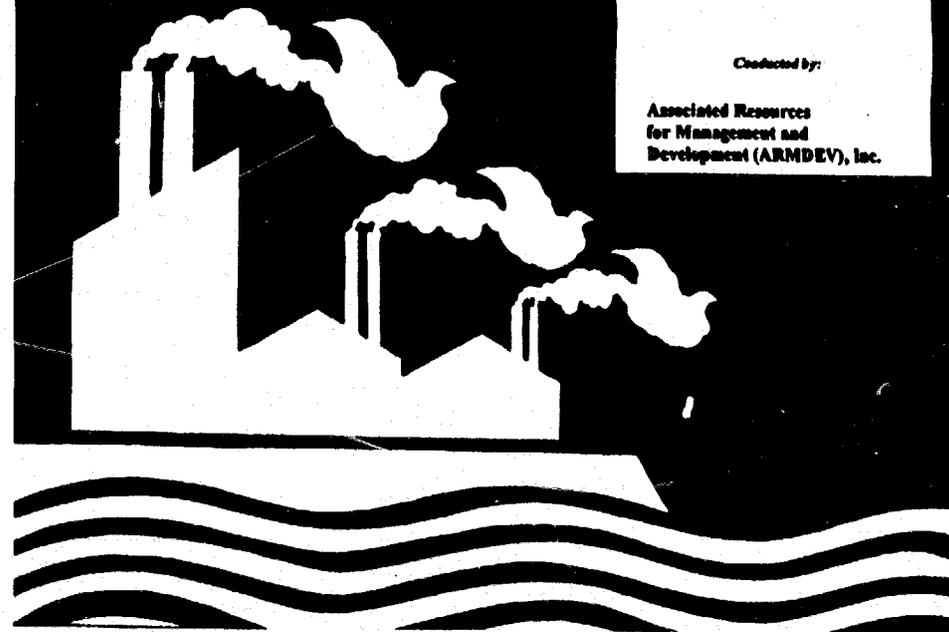
March 22-23 (Monday & Tuesday), 1993
Hotel Nikko Manila Garden

Organized by:

Philippine Business
for the Environment, Inc

Conducted by:

Associated Resources
for Management and
Development (ARMDEV), Inc.



PHILIPPINE BUSINESS FOR THE ENVIRONMENT, INC.

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*Project Director
Louis Berger International*

PBE CHARTER MEMBERS

(As of 15 March 1993)

Alcantara Group of Companies
Caltex Philippines, Inc.
Coca Cola Foundation, Phil. Inc.
Dow Chemical Pacific, Inc.
First Philippine Holdings Corp.
Jaka Group
Louis Berger International, Inc.

PCIBank
Peregrine Capital Phil, Inc.
Philippine Sugar Millers' Association
PHINMA
San Miguel Corporation
Sitech Resources Group, Inc.
SGV Group of Companies

CONFERENCE OBJECTIVES

The Conference aims to assist corporations to integrate their concern for sustainable development into their corporate policies and programs.

Specifically, the workshop seeks to provide the participants the opportunities to:

- * gain insights from the experience of corporations that have adopted environmentally responsible corporate policies and programs;
- * discuss future trends of environmental policies and regulations affecting business and industry, and,
- * explore options and resources available to Philippine business and industry for environmental policies and programs.

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PROGRAMME

First Day: March 22, 1993

**THEME: BUSINESS AND ENVIRONMENT
CHALLENGES AND OPPORTUNITIES**

8:00	Registration	
9:00	Opening Remarks <i>Business and Environment Issues and Concerns</i>	Leonardo Alejandrino <i>President, PBE</i>
9:30	Keynote Message <i>Challenge to the Corporate Sector for Environmental Action</i>	Angel Alcalá <i>Secretary, DENR</i>
10:30	Break	
10:15	<i>The Greening of the Corporations What Happened In the 80s And What Are The Trends In the 90's</i>	David Chittick <i>Director, WEC Environment & Safety Engineering Vice-President, AT&T</i>
11:15	Questions and Answers	Moderator: Corazon PB Claudio <i>President, Sitech Resources Group, Inc.</i>
11:45	Lunch	
12:45	Film Showing	"Less is More"
1:15	Panel Presentation <i>Meeting Environmental Challenges: Some Corporate Experiences</i>	Meneleo Carlos <i>President, Resins, Inc.</i> Oscar Hilado <i>President, PHINMA</i> Evaristo Narvaez, Jr. <i>President, PICOP</i>
2:15	Questions and Answers	Moderator: Bebet Gozun <i>Project Manager, MEIP</i> Corazon PB Claudio
2:30	Philippine Business Charter <i>for Sustainable Development</i>	
3:00	Break	
3:15	Workshop I: <i>Identifying Environmental Challenges and Opportunities in Participants' Companies</i>	Resource Persons: Cora Claudio Bebet Gozun Dr. Delfin Ganapin Larry Guevara Agnes De Jesus Jun Salpisp Vicente Laya Vicente Velarde
4:15	Reporting and Plenary Discussion	Facilitator: Cecile Motus ARMDEV
5:30	Synthesis/Day's Wrap-up	David Chittick

Second Day: March 23, 1993

THEME: TOWARDS ACTION

8:30	Keynote Message: <i>Government Support for Business Environmental Action</i>	Rodrigo Fuentes <i>Director Environmental Management Bureau</i>
9:00	Panel Discussion	Marletto Encelo <i>Asst. Vice-President Industrial Research Center, DBP</i> Kenneth Prosser <i>Chief, USAID Office for Natural Resources, Agriculture and Decentralization</i> Richard Stevenson <i>Chief of Party, ASEAN Environmental Improvement Project</i> Khalid Rahman <i>Private Sector Dept. Asian Development Bank</i> Konrad von Rittner <i>Economist, World Bank</i>
	Resource Support for Corporate Environmental Programs: - Financing - Technology - Trade and Investment - Policy and Programs	Moderator: Grace Favila <i>Executive Director, PBE</i>
10:30	Questions and Answers	Moderator: Grace Favila <i>Executive Director, PBE</i>
10:45	Break	
11:00	Elements of a Corporate Environmental Policy <i>(Models and Case Studies)</i>	Burton Hamner <i>Environmental Planner Department of Ecology Washington State, USA</i>
11:45	Questions and Answers	Facilitator: Gina Ordoñez ARMDEV
12:00	Lunch	
12:45	Philippine Environmental Legislation	Heberson Alvarez <i>Chairman, Senate Committee on Energy and Environment</i>
1:15	Workshop II: <i>Operationalizing the Philippine Business Charter for Sustainable Development</i>	Facilitator: Gina Ordoñez ARMDEV Same resource persons as in Workshop I
3:15	Break	
3:30	Presentation of Outputs and Plenary Discussion	
4:30	Integration	Barton Hamner
4:45	Wrap-up	Grace Favila
5:00	Closing Remarks	Jun Salpisp <i>Trustee, PBE</i>

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CONFERENCE SPEAKERS

Heberson T. Alvarez is a member of the Philippine Senate where he holds Chairmanship of the Committee on Environment and the Committee on Agrarian Reform. He was Minister of Agrarian Reform in 1986-1987. An informed and articulate voice on the environment, he crafted S.B. 1404 - A Comprehensive Forestry Plan, S.B. 1896 - creation of a National Environmental Management Authority, S.B. 1259 - on Pollution Control and 29 other environmental legislative measures. Senator Alvarez graduated with an M.A. in Public Administration from Harvard University. He also holds a Law degree from the University of the Philippines.

Angel C. Alcalá is the current Secretary of the Department of Environment and Natural Resources. He was President of Silliman University prior to his Cabinet appointment. He was Deputy Executive Director of the Philippine Council for Aquatic and Marine Research and Development. Dr. Alcalá was a Visiting Professor at the Tunghai University in Taiwan and at the Marine Science Institute of the University of the Philippines. He obtained an M.A. and a Ph.D. in Biological Sciences from Stanford University in California.

Meneleo J. Carlos, Jr. is President and Manufacturing and Technical Director of Resins Inc. He is Vice-President of the Industry Division of the Philippine Chamber of Commerce. Mr. Carlos is a member of the Energy Coordinating Council, the Day Coordinator of the Multi-Sectoral Task Force on Power Scheduling and the Overall Coordinator of Group of Eleven (G-11). He finished Bachelor of Science in Chemical Engineering and holds a Certificate of Advanced Engineering Study (equivalent to M.A.) from Cornell University.

David R. Chittick is a Director of the World Environment Center. He is Environment and Safety Engineering Vice-President of AT & T. In his current position, he is responsible for environmental, product liability and occupational safety and health administration for the Company. Mr. Chittick earned a Bachelor of Science degree in Electrical Engineering from the University of Vermont and a Master of Science degree in Business Management from the Massachusetts Institute of Technology.

Corazon P.B. Claudio is the President of Sitech Resources Group, Inc. She specializes in large-scale systems requiring engineering and economic expertise, such as environmental, energy, telecommunication, and transportation systems. She has worked in government, private, academic, and non-governmental organizations for about 25 years. For the last four years she has been writing a weekly column on science, technology and environment, *Techno-line*, in the *Business Star*. She chairs the Science, Technology and Environment Committee of the Philippine Chamber of Commerce and Industry & is a co-founder of the Philippine Business for the Environment, Inc. Dr. Claudio obtained an M.S. and a Ph.D. in Engineering-Economic Systems from Stanford University, California.

Marletto Eneco is Assistant Vice-President of Industrial Resource Center (IRC), Development Bank of the Philippines. As head of IRC, he is responsible for management of training and technical assistance component of the industrial restructuring program. He oversees the implementation of DBP's Environment Management Project, a project which started in 1989. Mr. Eneco obtained a Bachelor of Science in Commerce major in Accounting from the University of San Carlos.

Rodrigo U. Fuentes is Director of the Environmental Management Bureau, Department of Environment and Natural Resources. He has been with the DENR since 1981 as Region 6 Executive Director, Service Chief of Foreign Assisted and Special Projects Office and various other responsible positions. Mr. Fuentes is also a Senior Lecturer at the College of Public Administration, University of the Philippines (UP) and a course lecturer at the Environmental Planning Department of Miriam College Foundation. He finished B.S. Forestry from UP Los Baños and holds a Master of Arts in Urban and Regional Planning from the UP.

Burton Hamner has been an Environmental Planner with the Washington State, Department of Ecology since 1991. He was President of Aqua Marine Enterprises, Inc. and was Marketing Manager of BioSonics, Inc. Mr. Hamner also worked as Environmental Planner of the US Army Corps of Engineers and was a Marine Policy Analyst for the Washington Environmental Council. He holds a Bachelor of Arts, *cum laude*, from Harvard University, a Master of Business Administration and a Master of Marine Affairs from the University of Washington, U.S.A.

Oscar J. Hilado is the President/Chief Executive Officer of the PHINMA Group. He is also President of Bacnotan Consolidated Industries, Inc., Manco Holdings, Inc., Union Packing Corp. and Pinuna Fisheries. He is Chairman of the Board of four other companies; a Director for 32 different corporations and is Vice-President or Vice-Chairman of 4 others. He is the current President of the Management Association of the Philippines. Mr. Hilado is Honorary Consul of Ecuador. He holds a Masters in Business Administration from the Harvard Graduate School of Business Administration.

Evaristo M. Narvaez, Jr. is the President/Chief Executive Officer of Paper Industries Corporation of the Philippines (PICOP). He is a member of the Steering Committee, National Forestation Program of the DENR, the President of the International Tree Park Foundation of the Philippines, and Chairman of the Bislig Community Development Foundation. Mr. Narvaez holds an M.S. in Business Administration from the University of California in Los Angeles (UCLA) and an M.A. in Economics from the University of the Philippines.

Kenneth A. Prussner is Chief of the Office of Natural Resources, Agriculture and Decentralization, USAID Manila. He worked also as Chief of the Agricultural and Natural Resources Division, Office of Technical Resources with USAID Washington/Bureau for Africa and as Acting Chief, Deputy Chief and Agriculture Advisor in the USAID Agriculture Office in Jakarta. He was with UNICEF Indonesia, World Neighbors, Inc. Philippines and was a U.S. Peace Corps Volunteer in Malaysia. Mr. Prussner graduated with an M.S. in Agriculture Education from Cornell University.

Khalid I. Rahman is a Senior Investment Officer of the Private Sector Management Department, Asian Development Bank. He has been with ADB for eight years before which he worked with an internationally-known consulting engineering company specializing in oil and gas projects. He holds a Masters degree on Mechanical Engineering from Imperial College in London.

Richard Stevenson is Chief of Party for the ASEAN Environmental Improvement Project. He was Vice-President and Manager of the Asia Regional Office of Energy Resources International, Inc. He worked in a variety of responsible positions for USAID in Pakistan, the Philippines, Tunisia and Kenya. Mr. Stevenson was with the U.S. Department of Energy and U.S. Environmental Protection Agency. He holds an M.A. degree in International Relations from the University of Colorado at Boulder. He took post graduate studies in International Economics at George Washington University.

CONFERENCE FACILITATORS

Cecil Motus
Gina Ordoñez
Elda Montero
Geny Jamias

Fr. Frances Lucas
Margie Uy
Marilyn Cepe
Thomas David Chavez

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