

FINAL REPORT

**POLLUTION PREVENTION (P2)
INFORMATION CENTER FOR ISLANDS**

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Region IX**

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***VOLUME II: InMagic Pollution Prevention (P2) Database**

**Selected Distribution*

INTRODUCTION

Pollution Prevention Act of 1990

The *Pollution Prevention Act*, otherwise known as P2, was established by legislative action in 1990 in response to the increasing awareness of Congress that prevention or reduction of pollutants at their sources should be the national policy of the United States. The act stated that whenever feasible, pollution that could not be prevented should be recycled in an environmentally safe manner. Thus, while the thrust of the legislation was certainly on the prevention of pollutants, the recognition of the importance of recycling and avoidance of disposal was also acknowledged.

In drafting the legislation, Congress found that in the United States, the costs to control the millions of tons of pollution produced each year were on the order of tens of billions of dollars. Congress further declared that there were significant opportunities for industries to minimize pollutant emissions in their production, operation, and use of raw materials. These opportunities for pollution reduction were often not implemented because in the past existing regulations focused almost exclusively on treatment and disposal, not prevention. Congress recognized that businesses required more information and technical assistance to develop alternative practices to eliminate or reduce sources of pollutants in their operations.

The Environmental Protection Agency (EPA) was directed to establish a source reduction program to provide information and financial assistance to the States in meeting the pollution prevention directives of the P2 law. To assist businesses and States in meeting these P2 directives, EPA awarded nine grants in 1997 to establish P2 Information Centers representative of all ten of the USEPA regions. The Pollution Prevention Information Center for Islands was one of the nine such centers established.

All of these pollution prevention centers worked together to form the Pollution Prevention Resource Exchange (P2Rx), a nationwide network of regional centers that strives to improve the spread of pollution prevention information to the service provider community. The P2 programs in EPA Region 9 (the states of California, Arizona, Nevada, Hawaii and the U.S. Territories of Guam and American Samoa) joined together to form the Western Regional Pollution Prevention Network (WRPPN), whose purpose is to share P2 information and technical expertise, promote pollution prevention within the region and assist service providers in solving a wide range of pollution prevention problems.

Pollution Prevention Information Center for Islands

The Pollution Prevention Information Center for Islands was initially proposed to respond to P2 problems in Hawaii, American Samoa, and Guam. However, in the course of its consideration for funding by EPA administrators in Washington, the P2 for Islands

Center was asked to include Puerto Rico and the Virgin Islands in their program. The rationale for establishing an Islands P2 Center was succinctly described in the first year proposal:

Pollution prevention issues pertinent to, and appropriate for, island environments can be extraordinarily different from those facing environmental managers in a mainland/continental setting. Industrially speaking, for the most part, the Pacific Islands are relatively free of toxic pollutants generated by heavy industry. Heavy manufacturing, steel mills, chemical plants, and similar large, potentially polluting, industries are essentially non-existent. Instead, we are faced with many, many, small businesses, the "mom and pop stores", such as car repair shops, dry cleaners, termite and pest control companies, and tourist related businesses that each, individually, contribute their "share" of toxic chemicals, solid wastes, and other pollutants to the environment. Furthermore, many of these small businesses can ill afford to search out and develop new technologies to control their pollutants. Hence, meeting the needs of these small businesses to reduce pollutants to the environment is one of the key areas of focus in developing the communications networking system for the Pollution Prevention Information Center for Islands.

OBJECTIVES

The objectives for the Pollution Prevention Information Center for Islands were set forth, for each year's programs, as follows:

YEAR ONE

1. To develop a formal Pollution Prevention Information Center for Islands incorporating communication networking systems between the islands of Hawaii, Guam and American Samoa (Puerto Rico and the Virgin Islands were subsequently added at the request of EPA).
2. To integrate this network with existing mainland Pollution Prevention Centers, particularly Region 9.
3. To share pollution prevention information pertinent to the unique needs, operations, issues and environments of Pacific island communities.
4. To use this networking system to develop a network pollution prevention resource library and a database of technical advisors that would serve as both reference

materials and resource specialists with expertise on meeting specific island pollution prevention problems.

5. To use the above communication network and reference resources to identify two or three key pollution issues of mutual concern to island businesses or environmental managers and develop mitigative options to prevent or minimize pollutant production from these operations.

YEAR TWO

1. To develop translations of the island based P2 information for use by Spanish and Samoan speaking islanders.
2. To make these translations available to other regions, as requested.
3. To improve the sharing and use of P2 information between islands by expanding our communication efforts.
4. To develop fact sheets of P2 information for island hospitality businesses and agriculture wastes.

YEAR THREE

1. To develop a series of four seminars that address solutions to P2 problems identified in the islands. Topics to include composting, handling household pesticides and two others to be determined from a list developed at the Saipan meeting in June 1999.
2. To continue developing translations of P2 information developed by Island P2 providers.
3. To develop a working relationship with other island agencies that address P2 issues such as the Farm*A*Syst and Home*A*Syst (Farm Assessment System and Home Assessment System) programs of the Cooperative Extension Service (CES) developed by the University of Hawaii's College of Tropical Agriculture and Human Resource's Land Grant program.
4. To develop closer ties with the Western Regional Pollution Prevention Network so that we can share database and other information resources and to meet annually with representative of that program to coordinate our activities for the year.
5. To meet annually with Pacific and Caribbean island representatives as part of the annual EPA Pacific Islands Conference.

6. To work closely with the eight other regional P2 Centers to avoid duplication of materials and effort by attending meetings, participating in monthly teleconferences and developing expertise in the areas of household hazardous waste and agricultural pesticides.

PROCEDURES

The procedures followed for each of the three years are itemized as follows:

YEAR ONE

Contact personnel were established throughout the Hawaiian Islands, Guam and American Samoa. State of Hawaii Department of Health (DOH) personnel, Dr. June Harrigan and Melissa Ihori, agreed to gather information on specific waste streams, alternative products or procedures and disposal options within the state of Hawaii. Their efforts were coordinated with those of the DOH Solid Waste Program so that cooperative, not duplicative, efforts were involved. Peter Rappa, Extension Agent with the University of Hawaii Sea Grant College, maintained communications with Guam and American Samoa territorial Environmental Protection Agencies for similar information. Efforts to obtain information from personnel in the Caribbean were initially unsuccessful. Establishing contact with the appropriate personnel and agencies that were involved in the territory's pollution prevention program was difficult. A six-hour time difference between Hawaii and the Caribbean islands and the difference in language between Hawaii and Puerto Rico added to the difficulty.

To achieve the objectives of the first year, namely to develop a formal pollution prevention communications network with our various island representatives, two modes of communication were initiated. First, to communicate with Hawaii, Guam and American Samoa, we set up a series of PEACESAT conferences with members of the American Samoa, Guam and Hawaii agencies and individuals with special interest in P2 information. The addition of Puerto Rico and the Virgin Islands to our Island Center, at the request of the federal EPA, required alternative types of communication links, as there is no PEACESAT connection between those U.S.-affiliated Caribbean Islands and the U.S.-affiliated Pacific Islands. For Puerto Rico and the Virgin Islands we were largely limited to only telephone communications as even e-mail was seldom operational. In addition, as discussed later, this mode of communication was further compromised by difficulties in language. Puerto Rico representatives were frequently limited to communicating only in Spanish. Furthermore, a ten-hour time difference between Guam and the Caribbean islands compounded the problem with communication by making joint telephone conferencing simultaneously with all the islands difficult. However, our Caribbean and Pacific Island partners extended their personal work schedules, when needed, to accommodate periodic joint sessions by phone.

Mr. Philip Moravcik, the Technology Transfer Specialist with the Water Resources Research Center, was brought into the project to design and maintain a Pollution Prevention (P2) Information Center for Islands web page. As web master for the project, he also reviewed existing web sites for P2 information and worked on the development of a P2 web page that provided links to existing databases that contained information relevant to island P2 needs. A review of various organizations, such as those associated with the hotel industry, was undertaken in search of information on sources of pollutants and possible preventative products or alternatives.

The focus of our data gathering efforts was initially directed to four major activities: the hotel industry; automotive repair shops; maintenance of golf courses; and maintenance and operations associated with boat harbors. Within each of these activities we sought to identify what, if any, environmentally deleterious products were being used or produced and what alternatives were available to eliminate or reduce those pollution sources.

YEAR TWO

The procedures for the second year of the Center focused on continuing to pursue and implement information gathering, database development and the acquisition of information on the hospitality and agriculture industries with regard to P2 practices. In addition, methodologies were developed to improve inter-island communications and the dissemination of P2 information to the respective island communities. Once the P2 on-line networking system was functional and the library information system and list of technical advisors compiled, suggestions were solicited from island communities for pollution problems to address through the information networking system. This provided a practical test case to determine the efficacy of the system and provided insight into areas or topics needing improvement.

The P2 Web Page for Islands with links to local and mainland P2 information sources was further developed. The English version of the web page was translated into Spanish and the Spanish version was periodically updated to include the new links added to the English version. We experienced delays in completing the updates of the Spanish version when commitments, originally made by the Puerto Rico P2 program to provide translators, could not be fulfilled due to personnel changes in their office. Consequently, arrangements were made with a Spanish linguist in Hawaii, who donated her time to update our Spanish language web site. Discussions with the Puerto Rico P2 office suggested that they would eventually take over maintenance of the Spanish version of the P2 web site under contract with the P2 for Islands program.

We also began to translate American Samoa's P2 Regulations into Samoan. A staff person from the State of Hawaii Department of Health prepared this translation, and a copy was sent to the American Samoa EPA.

To improve the sharing and use of P2 information we continued to develop the P2 database using the Inmagic Bibliographic program that would eventually be turned over

to the Western Regional Pollution Prevention Network (WRPPN) for consolidation into their database. At this point, we had a database of approximately 165 P2 related publications and another 40-50 records awaiting entry. The reference material was entered using student help from the University of Hawaii. Due to the frequent changes in data entry personnel, we eventually hired a graduate student, Noel Ludwig, with experience in P2 operations to carry out an editorial review of the database prior to its distribution to WRPPN.

To further the P2 communication efforts, we created an 18 member Board of Advisors to assist us in identifying sources of information for our P2 database and individuals with special expertise in areas pertinent to P2 (Appendix A). The Board of Advisors included six members from industry, six from the University of Hawaii, and six from federal and state government agencies with interest in P2. We relied on our P2 contacts in Guam, American Samoa, Puerto Rico and the Virgin Islands to apprise us of specific needs in their islands.

We asked our Advisors to inform us (via e-mail or phone) of any potential P2 issues, products, manufacturing alternatives or management techniques that would facilitate our program goals. We also sent each member a brief questionnaire requesting their help in identifying key sources of pollution, viable alternatives to the use of toxic products in manufacturing or other business related operations and a critique of our web page. We also asked our advisors to help us spread the word to other departments, businesses and organizations as to the availability of P2 information through the P2 for Islands Center. We received only a few responses, primarily concerning P2 issues pertinent to hazardous waste materials and the costs associated with disposal or remediation. Our military advisors were particularly helpful and we had planned to expand that area of focus in future P2 work. One of our academic advisors volunteered to include the P2 for Islands program in his graduate seminar series in the School of Public Health.

We began discussions with Dr. Carl Evensen, specialist with the Hawaii Cooperative Extension Service, regarding the development of a cooperative program with the Farm*A*Syst/Home*A*Syst program and to broaden the exposure of our P2 efforts to members of the agricultural community in Hawaii and the other islands represented in our Center. In particular, in an ongoing effort, we requested information from the College of Tropical Agriculture faculty regarding the use, storage, disposal and alternatives to hazardous pesticides as an approach to reducing agricultural wastes and contaminants. A number of pamphlets have been produced by the College that deal with the use, disposal, etc. of agricultural chemicals, and these were incorporated into our web site as appropriate.

Our P2 for Islands members met for the first time, as a group, at the Pacific EPA Conference in Saipan in June 1999 where they also organized a session to introduce the attendees to the P2 Center. Although representatives from the U. S. Virgin Islands and Puerto Rico could not attend, the Puerto Rico P2 Program sent a videotape presentation that detailed what their program had accomplished to date. This tape was well received

by the attendees at the conference. We offered to provide partial funding for a P2 person in Puerto Rico to attend the Conference in Saipan if they could match our funds. We negotiated with Ms. Brenda Colon about designating a staff person from their program as the P2 Center for Islands representative, supported partially from our funds. However, due to the cost and travel restrictions instituted by the government of Puerto Rico, no one was able to attend from the Caribbean. Representatives from the Commonwealth of the Northern Marianas Islands (CNMI) and Republic of Palau attended the P2 for Islands meeting and requested the opportunity to participate in our P2 for Islands Center. Hence, we informally added CNMI and Palau to our Islands P2 Center.

We also spent considerable time meeting with members of the other eight regional P2 information centers in face-to-face meetings and teleconferences (Table 1). The purpose of these meetings was to avoid duplicating efforts while offering a seamless access to all the information available through all nine centers. As a result of these meetings, we volunteered to take the lead on four sector hubs for the P2Rx network, the restaurant sector, household hazardous waste sector, marinas and small boat harbors and agricultural pesticides sector.

Year Three

The four seminars proposed for year three began in April 2000 and were completed in September 2001.

The update of our web page was an ongoing project. We completed the Spanish version of our web page in January 2000.

We established a working relationship with the Farm*A*Syst/Home*A*Syst program of the Hawaii Cooperative Extension Service. They prepared four pamphlets on home and agricultural wastes for Hawaii, which were made available to American Samoa, Guam and the Commonwealth of the Northern Marianas Islands. They used our Advisory Board members as reviewers of the publications. We held preliminary talks with specialists Carl Evensen and Mike Robotham of the Hawaii Pollution Prevention Information (HAPPI) program towards merging some functions of our programs.

We continued to cooperate in the P2Rx network by attending the monthly teleconferences and semi-annual meetings on the Mainland United States. We participated in the web masters group and their monthly conference calls. We were a member of the Labeling and Marketing committee and participated via conference calls in that committee's activities.

**Table 1. P2Rx and WRPPN Conferences and Meetings Attended
and Topics Considered at Each Meeting**

P2Rx

Date	Location	Who attended	Topics Addressed
Feb. 19-20, 1998	Seattle	Phil Moravcik Peter Rappa	<ul style="list-style-type: none"> - Network news - Working together (national collaboration) - Specific areas of collaborations - Steps needed to address those areas - Timetable - Resource needs
Oct. 7-9, 1998	Seattle	Jackie Miller Peter Rappa Phil Moravcik	<ul style="list-style-type: none"> - Network and EPA updates - Measurement issues - Sector issues - P2Rx national outreach - Quality assurance - P2Rx Re-calibration - 1999 P2Rx activities - Website measurement - Tools for website management - Emerging Website trends and technologies
May 24-26, 1999	Seattle	Phil Moravcik Peter Rappa	<ul style="list-style-type: none"> - Web Designers meeting - Regional Center and EPA updates - Overview of P2Rx - National Vision for Web pages - Marketing and Branding - Web Design Session and Workplan updates/issues and re-prioritization - Infotopia meeting report - Outreach to other Information Centers -
Oct. 4-6, 1999	Washington D.C.	Peter Rappa	<ul style="list-style-type: none"> - Funding levels in the new proposal - Upcoming meeting in Dallas for the information service providers (representation) - Web topic hubs - P2Rx Standards
Jan. 31-Feb. 2, 2000	Chicago	Phil Moravcik Jackie Miller	<ul style="list-style-type: none"> - Work plan update (national news selection, metatagging, thesaurus) - Sector hub presentations (printing, autobody) - Contact database - Web measurements - Demo p2rx.org, News issues, work plan update, assignments - Center updates - Work plan review/work group updates - RFP Center Ideas - Integrating RFP's (common elements, language, letters of support, specialization, list of items for Coordinator, measurement, center criteria, etc.) - Model of interaction
June 19-21, 2000	Missoula, MT.	Jackie Miller Phil Moravcik	<ul style="list-style-type: none"> - Sector/Topic hub discussion - Programs database

			<ul style="list-style-type: none"> - Build your own hub - Nuts and bolts of standard query language and Microsoft standard query language - Virtual library - Rapid response repository/sector/topic hub - SBO/SBAP Reception - Running Regional Networks Efficiently - Web committee report out - Discussion of PPIN principles - Partnerships - Calibration - Review and update action items and implementation plan - Networking with SBO/SBAP representatives 	
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WRPPN

Date of conference	Location	Who attended	Agenda	s
Nov. 17-19, 1997	Sacramento	Jackie Miller	<ul style="list-style-type: none"> - P2 Technical Assistance - Consumer Products and P2 - Business Case Studies in Electronics Industry - Agricultural and Mining P2 - In-House P2 Services - State Pollution Prevention Program Updates - Poster Session/Internet Information Tools Training - Information & Poster Sharing "P2 Commercials" - Cross Media Panel - Hospitality Industry - Printing - Summary of PPW 1997 - P2 Research - Program Evaluation/Social Marketing/Behavior Change - Data Tracking - Partnerships - New & Emerging Tools - Panel Discussion: Business Assistance Programs - Meeting of Service Providers Based on State Affiliation 	
May 28-29, 1998	San Diego	Jackie Miller	<ul style="list-style-type: none"> - Finalize agenda for Fall P2 Conference - Update & Feedback on WRPPN (sector work progress, 1999 workplan ideas, how WRPPN can best assist members, working with EPA to develop regional priorities) 	
Oct. 14-16, 1998	San Diego	Jackie Miller	<ul style="list-style-type: none"> - Effective grant writing - Integrating P2 into regulatory programs - Design for the Environment/Energy Star - Updates by C2P2C, WRPPN, State agencies, U.S. EPA, other P2 centers - Info-mercials/Group Sharing Information - Measurement Session - Green Recognition Programs - Solvent substitutions - Sector work update 	

			<ul style="list-style-type: none"> - Creative partnerships - Pesticides and other consumer products - Innovative P2 Techniques and Technologies - Establishing P2 Priorities - Academic Research: Cutting Edge P2 Research - P2 and Hospitals - "Serving" the P2 Network - Janitorial/Facility Maintenance Issues - Emerging P2 Issues in Region 9 & beyond
Mar. 25-26, 1999	San Diego	Jackie Miller	<ul style="list-style-type: none"> - Additions to agenda - Review of 1998 Program - Discussion of strengths/weaknesses/addition - Vision statement - Barriers identification - Draft 3 year strategic plan for WRPPN - Identify priority actions
May 13-14, 1999	San Rafael, Calif.	Jackie Miller	<ul style="list-style-type: none"> - Additions to agenda - Evaluation of Fall 98 P2 conference - Review call for Papers - Strategic vision and future of WRPPN - By-Laws and organizational matters - Steering committee replacements - Planning for Fall 1999 P2 Conference (presentation topics, select tract leaders, identify potential speakers, travel assistance and other logistics) - Building the WRPPN (website, list serve and yellow pages, industrial sector work, measurement metrics, network services, other)
Oct. 25-27, 2000	San Diego	Jackie Miller	<p> Laser Touch Painting WRPPN Steering Committee Meeting Agricultural and Pollution Prevention P2 Regulatory Updates Sustainability and "Green Building" P2 and PBT's Recognition Programs for P2 and Compliance Integrating Environmental Health and Safety into P2 Systems Cutting Edge P2 Technologies New Issues in P2 Creating Sustainable Communities P2 for Vehicle Service and Repair Facilities How to Market P2 Industrial Wastewater and P2 Building P2 into Local Government Storm Water Pollution Prevention Exploring New P2 Partnership Opportunities P2 in Air Programs Integrated Pest Management and P2 Local and State P2 Priorities </p>

RESULTS / ACCOMPLISHMENTS

The results/accomplishments for each year of the program were as follows:

YEAR ONE

An inventory of the top producers of waste, by industry, in Hawaii, Guam and American Samoa was developed, with plans for the same data collection being done in Puerto Rico and the Virgin Islands. The Hawaii Department of Health, Guam and American Samoa assigned personnel to collect data and report it to the Center. With this information, we developed a list of target businesses, within the four activity sectors: the hotel industry; automotive repair shops; maintenance of golf courses; and maintenance and operations associated with boat harbors.

Boat Wastes

The University of Hawaii Sea Grant, Department of Health and our Pollution Prevention Center Project Manager developed a pamphlet documenting how to handle boat wastes and use non-chemical cleaners to maintain recreational vessels (Appendix B). The pamphlet was distributed to boat owners and the Division of Boating and Recreation (DOBOR), Department of Land and Natural Resources. There are several thousand registered boat owners in the state and each was mailed a copy of the brochure. Copies given to DOBOR were sent to the state owned marinas for distribution. The total number printed and distributed was 8,000.

Database Information

We began the data gathering on the four activity sectors we had agreed to direct. At first we adopted a comprehensive approach, tracking down all materials pertaining to the four areas and ordering copies of relevant publications and citing relevant web pages. However, this effort was subsequently modified when we learned that similar data had been collected previously on some of the sectors by other organizations. We determined that assisting the development of already established programs (in states and territories) would be a better use of our time and we began to collect only information not cited in existing databases.

P2Rx and Sector Topics

We began attending the nasient P2Rx group meetings in Seattle on February 19-20, 1998. We were introduced to the leaders of the regional P2 Information Centers and learned about their operations. At this meeting, discussions were begun on how all the regional centers could work together to provide a seamless service to all those seeking P2 information. We began our attempts to tailor our service with those being offered by other centers. We also attended the P2Rx meeting in Seattle on October 7-9, 1998, and the WRPPN meetings in San Diego on October 14-16, 1998. These meetings (Table 1)

led to changes in the direction of our sector topics when we learned that considerable P2 related information had already been compiled relative to automotive repair and golf course maintenance. The P2Rx group initiated monthly conference calls following the meeting in Seattle in February 1998. We began participating in those calls after that date. The calls were used to continue unfinished business after the semi-annual P2Rx meetings and to develop topics for discussion for our upcoming meetings.

YEAR TWO

The focus for the second year centered on data gathering needs.

Topic Hubs

The specific elements to be included in the Topic Hubs were developed by attendees at the P2Rx meetings in Chicago in January 2000. These elements included the following:

- URL for Web Sites
- Title of URL
- Title of Originating Agency
- Content Type
- Description
- Annotated Links (sector specific)

To the extent possible, the information gathered by the P2 for Islands Information Center for each of the topic hubs that we were responsible for followed these content recommendations.

We found a number of resources on the Internet that were very informative. Much of our efforts during the second year were directed toward trying to establish a stable and consistent relationship with our Puerto Rico and Virgin Islands P2 coordinators. Telephone conferences were held, but were hampered by hurricane damage that resulted in a long-term communication outage and next by changes in the leadership of the P2 personnel in Puerto Rico to a non-English speaking coordinator.

P2Rx

We continued to attend the P2Rx meetings in Seattle in May 1999 and October 1999 in Washington D.C. The semi-annual P2Rx meeting focused mainly on the issue of how the regional centers could all work together to provide cooperative services. We discussed at length protocols for service delivery to one another, metrics for measuring the level of effectiveness of our services and areas of focus that each center would develop, which turned into the idea of developing topic hubs. The October meeting was dedicated to the same topics, as well as preparing for an EPA-sponsored meeting in Dallas on nationwide P2 service delivery, which included choosing representatives from

P2Rx and other information providers. At the October 1999 P2Rx meeting we came to an agreement on who should represent the P2Rx in Dallas in November.

WRPPN

We continued to participate in the WRPPN meetings on March 25-26, 1999, in San Diego and on May 13-14, 1999 in San Rafael, California. Attending these meetings helped us better coordinate our services with those offered by the WRPPN.

P2 Center for Islands Regional Meeting

Our first regional P2 Center for Islands meeting was held in June 1999 in Saipan, Commonwealth of the Northern Marianas Islands (CNMI) in conjunction with the annual Pacific Islands EPA conference. Attendees included representatives from Hawaii, American Samoa, Guam, CNMI, and Palau. We accepted both Palau and CNMI as members of our P2 Center for Islands network at that meeting. We also decided to produce a series of seminars broadcast by satellite on relevant P2 topics chosen by the representatives. The seminars would be developed and broadcast in year three of the grant. Representatives from Puerto Rico were scheduled to come to this meeting but cancelled their trip because of problems in securing matching travel funds. The P2 Center for Islands Project Manager organized a session of the Pacific Islands EPA conference on the ongoing P2 programs of the state's and territories.

The Samoan translation was completed and sent to EPA in American Samoa.

YEAR THREE

Year three focused on updating the web page and database, as well as compiling information on the four topic hubs, participation in the conference calls with P2Rx, and completion of the teleconference training seminars.

Web Page Development

Philip Moravcik of the Water Resources Research Center served as web master for the project. The web page is located at <http://www2.hawaii.edu/~wrrc/Islandsp2.html> and Appendix C. We concentrated our database collection efforts in several areas (household hazardous waste, agricultural pesticides, marinas and boat waste, tourism and the hospitality industry) that were considered most pertinent to tropical islands. We arrived at these areas of concentration in conjunction with our associates in the Island P2 region and with those on the mainland. We collected a number of links useful to people looking for P2 information in several fields. Unfortunately, to be current, web pages must have frequent updating. Hence, since the Islands Center is no longer operational, the utility of the web page is limited. However, we have transferred the links from the web page to WRPPN so useful information for islands may be available.

There were a number of problems encountered in the P2 for Islands web site. These are noted briefly in the following paragraphs:

1. There was no one person on most of the affiliated islands with sufficient time or interest to participate in the P2 for Islands Center, and there was also a lack of financial resources for them to participate. Hence, developing web page information pertinent to individual island needs, outside of Hawaii, was very difficult if not impossible.
2. Because the islands are so geographically remote it was very difficult to communicate with them. We could not have the face-to-face interchange of ideas that is useful in developing a program, and we could not require them to produce something. We had planned, for example, for each of them to produce their own web pages to which we could link, but we were never able to accomplish this link due to lack of interest on the part of our sister island states.
3. There are, apparently, very few programs aimed at pollution prevention in the region that our center covered, so our colleagues in Guam, Saipan, Samoa, and the U.S. Virgin Islands, had very little to contribute in the way of documents, case studies or other sources of information for the web page. Our mission was to provide assistance to P2 information providers within our regions (as opposed to communicating directly with individuals and businesses). However, it soon became apparent that our region has very few P2 information providers. Those few that did exist did so only in an official capacity and were not actively functioning as disseminators of P2 information to the public or businesses. Therefore, while most of our sister centers on the mainland have well developed P2 programs within their regions to serve, we did not.

Database Information

To ensure compatibility with the other P2 Centers, we used the Inmagic Database software for our database.

The database was expanded throughout the three years of the P2 Center for Islands and now contains 434 records including information from the Pacific Islands, Japan, Indonesia and Australia and a number of EPA and mainland United States documents, many of which relate to the P2 for Islands topic hubs (agricultural pesticides, household hazardous waste, hospitality industry or marinas and small boat harbors), see volume 2. Different medias, CD-ROMS, websites and journal articles, were added to the database along with the location of the documents. Each record has three keywords, or phrases, such as "Household Hazardous Waste," attached for cross-referencing. These keywords include the name of the specific country or region that a document relates to and are generally in their most basic form (e.g., singular rather than plural) to simplify search efforts. Record data has been altered to fit within the Topic Hub guidelines set by

P2Rx. For example, there is an entry for Subject (the equivalent of Topic Hub), and author names are now in last; first, and initial format.

Inmagic Software

There are some useful aspects of the Inmagic program, and thus of the database.

Advantages

1. A search can be carried out using “Query by Example”, in which, the user has the option of putting the cursor in the field he or she wants to search, for example “Subject,” then clicking on “Browse” (the eyeball button). This shows the user a list of all the subject headings in the database and lets the user choose one. This aspect avoids hit-and-miss search attempts.
2. Records (but not the form) can be edited by using the edit button. The user also can add new records with the new record button. The user can also choose between two options for viewing or printing the database, using the “Select Form for This Window” and “Select Report Printing Form” buttons.
3. A very helpful aspect of Inmagic is that it lets a user include more than one entry, allowing cross-referencing. It is a small drawback that any search not only brings up every record with that word in that field (which is good), but also by default it shows you the entire entry for every record (which may not be good if there are dozens or even hundreds of records with that word).

Disadvantages

Inmagic is a fairly rigid program, meaning that once a user creates an entry in it, most of that entry is permanently saved. For future databases, we strongly recommend substituting Microsoft Access, which is easier to use and more widely available.

1. In reconstructing the format (“form” and “skeleton” in the parlance of Inmagic), we discovered that when the format is redesigned the changes only apply to new records that you create; the old ones will still be in the old format. Hence, in updating the database many of the records had to be retyped (there is no copy/paste option for records) to put all of the old records into the new format.
2. We added two new fields to the database: Date Record Added and Geographic Location, the latter is a duplicate of what can be found under a keyword search. However, due to some mysterious glitch in the program we were unable to enter data in these fields. Therefore, these added fields are present, but blank on every record.
3. Yet another problem surfaced, this time in editing out duplicate records. If one deletes a record in Inmagic, it is gone (which is good), but there is also a hole left

in the database (which is not good). Unfortunately, we were not aware of this problem prior to deleting duplicate records. Therefore, records 14, 21, 27, 124, 244, 432, and 433 do not exist, and there is no obvious way to go back and recreate them.

4. There is no spell checking option in Inmagic, hence all spell checks were done manually. Efforts were made to avoid spelling errors by first entering information into several fields by way of existing lists that let you paste in words and phrases. Second, we also checked information in each field via the browse button (the eyeball), which lumps identical entries together to let you see which ones are slightly different.

Topic Hub Information

For each topic hub, we searched the Internet for various sources of information. A list of what was found for each topic and a short summary of the article is as follows. For the complete printout of the web page, please see Appendix C.

Agricultural Pesticides

- Center for Technology Transfer and Pollution Prevention: CT2P2 – <http://pasture.ecn.purdue.edu/~epados/cttp>
This page provides a series of 30 PC-based computer programs on various aspects of the environment and pollution prevention. Topics include agricultural management practices for protecting groundwater, livestock manure storage and soil erosion.
- Pesticide Action Network North America – <http://www.panna.org>
This site has a number of resources and strives to advance alternatives to pesticides.
- Waste Management Information – <http://www.svpa.hawaii.edu/ansc/Papers/waste.htm>
This site contains two articles, “The Use of Composted Poultry Manure as a Fertilizer” and “Handling, Processing and Storage of Animal Waste.”

Household Hazardous Wastes

- City of Toronto: HHW – <http://www.city.toronto.on.ca/hhw/index.htm>
This website explains the process by which Toronto residents may have hazardous waste picked up from their home, including what types of materials are considered hazardous and can be picked up or will be accepted at a drop off location.
- Clean Hawaii Center – <http://www.hawaii.gov/dbedt/ert/chc/>
The Clean Hawaii Center promotes recycling and remanufacturing markets through the development of local end-use businesses, cooperative marketing, cooperative purchasing of recycled products and promotion of Buy Recycled

Hawaii. Through the site, a user may request publications or download fact sheets regarding what businesses recycle or use recycled goods.

- Environmental Defense – <http://www.environmentaldefense.org/search>
This site provides links to many articles on a variety of subjects relating to not only waste management, but other environmental issues as well.
- Envirosense – <http://es.epa.gov/techinfo/facts/facts.html>
A number of articles were taken from this website. Namely, “Fact Sheet: Safe Substitutes at Home: Non-toxic Household Products,” “An Industry Overview of Pesticide End-User/Application Services,” “Dry Cleaning – Industry,” “An Industry Overview of Drycleaning and Laundry Facilities,” “Fact Sheet: Drycleaning and Waste Reduction” and “Cleaning Agents and Cosmetics Manufacturers.”
- Ethanol Production in Hawaii Report, 1994 –
<http://www.hawaii.gov/dbedt/ert/ethanol>
This article contains information on the processes, feedstocks and current economic feasibility of fuel grade ethanol production in Hawaii.
- HIMEX – The Hawaii Materials Exchange – <http://www.himex.org/himex1nu.htm>
This website claims to be “Hawaii’s most comprehensive recycling source.” It contains links to information on recycling for the four main islands of Hawaii, as well as links to other recycling websites across the United States and the globe.
- Maui Recycling Service, Inc – <http://www.mauirecyclingservice.com/oil.html>
This site provides an email contact to request used motor oil curbside pick-up in Kula, Makawao and Pukalani on the island of Maui.
- Oahu Recycling Programs – <http://www.maui.net/~mrghimex/oahuprog.html>
This website offers not only textual information, but also diagrams and charts. The main components of the site are “Know Your Trash”, “Why Recycle”, “How City Government Recycles”, “What You Can Do To Reduce Waste”, “Oahu Recycling Potential”, “Oahu Recycling Centers”, “Recycling And Composting Companies On Oahu”, “Recycling Publications” And “Resources And Mandatory Recycling”.
- Recycle Hawaii – <http://recyclehawaii.org>
Recycle Hawaii is an organization that strives to promote resource awareness and recycling on the Island of Hawaii. Their website contains information on what, how and where to recycle, as well as other valuable information.
- SEA – Household Waste Management –
<http://www.epa.gov/glnpo/seahome/hwaste.html>
The program on this site teaches the user how to safely and efficiently manage waste, particularly hazardous waste in the home.
- Water Saving Ideas – <http://www.wallkillriver.org/Waterwheel.html>
This site lists ways that people can save water in their home or business.

The Hospitality Industry

- BEPO – Tourism and Recreation – Accommodations –
<http://virtualoffice.ic.gc.ca/BEPO/main/english/trc/trc1.htm>

This site contains links to a number of programs and organizations, as well as a short synopsis of each group, that focus on improving environmental performance in the accommodations sector. It includes information on self-assessment tools, identification of environmental impacts from operations, environment-friendly solutions and relevant regulations, acts and standards.

- **Bioremediation** – <http://www.chemfree.com/bioremediation.htm>
This article deals with the use of bioremediation to wash clothes. It claims that using microbes to do laundry is an environmentally safe concept and explains the way it works.
- **Ecotourism Planning Kit** – <http://www.cba.hawaii.edu/pbcp/ecokit.htm>
This website contains two articles, “A Business Planning Guide for Ecotourism Operators in the Pacific Islands” and “A Guide for Ecotourism.” The first is information for people who want to establish an ecotourism-based business, while the latter deals with what governments can do to promote it.
- **Environmental Guide for Ohio Dry Cleaners** – <http://www.epa.state.oh.us/dhwm/drymain.htm>
This fact sheet provides an overview of the environmental regulations relevant to Ohio dry cleaners and how they can reduce the generation of wastes and emissions through recycling.
- **Envirosense** – <http://es.epa.gov/techinfo/facts/dryclean.html>
This article provides information on which dry cleaning and laundry facilities are subject to the Resource Conservation and Recovery Act. It also contains information on what types of solvents are potentially hazardous and how to minimize waste.
- **Greening the Laundry Industry** – http://www.dnr.state.wi.us/org/caer/cea/publications/pubs/co_074.htm
This article from Wisconsin gives hotel owners tips on how to practice “green housekeeping.”
- **The Green Rider** – <http://www.epa.gov/region07/specinit/p2/GreenRhome.html>
The purpose of the Green Rider is to provide information on EPA’s programs that promote environmentally and economically sound building practices and energy efficiency.
- **Hotels and Motels Recycling Tipsheet** – <http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/RECYCLE/Tips/Hotels.htm>
This website is a tip sheet for hotels and motels to successfully recycle.
- **IC&I Waste Management: Laundries/Dry Cleaners** – <http://www.region.peel.on.ca/pw/waste/business/laundry.htm>
This fact sheet contains information for laundries and dry cleaners wanting to be more environmentally friendly in four ways: General Tips, Reduce, Reuse and Recycle.
- **International Hotel Environment Initiative** – <http://www.ihei.org/>
The homepage of the International Hotel Environment Initiative contains information about their organization and educational materials available for sale.
- **International Hotel Environment Initiative Design, Construction and Siting Integral To Hotels of the Future** – <http://www.hospitalitynet.org/news/4000639.htm>

This press release discusses the 1996 meeting of the chief executives of the world's leading hotel groups and representatives of the global travel industry, in which they planned to map out an environmental strategy for the future of the hotel industry.

- Office of National Tourism – Best Practice Ecotourism – <http://www.tourism.gov.au/publications/BPE/Start.html>
This website from Australia provides the practical means to assess energy and waste consumption and offers a range of suggestions for improving energy and waste management of 25 specific activities.
- Restaurant Waste Minimization – <http://www.maui.net/~mrghimex/restaurant.html>
This site provides the results of the implementation of recommendations following resource and waste assessments at two Denny's restaurants, Kihei and Lahaina, on Maui.
- Sea Grant Extension (San Diego) Boating Pollution Prevention Section – <http://commserv.ucdavis.edu/cesandiego/seagrant/coastour.htm>
This webpage contains educational materials available for sale, as well as a number of articles containing information on coastal recreation, boating, harbors and tourism.
- Taking it to the Green – <http://www.club-mgmt.com/manager/9906/green.html>
This site explains what it means to become “green,” specifically geared towards country clubs.
- White Point Green Theme – <http://www.whitepoint.com/wpenvr.htm>
The White Point Beach Resort in Nova Scotia, Canada, has implemented a program that will lessen the impact of the resort activities on both the local and global environment. This website provides the exact changes that they have made and their environmental policy.

Marinas and Small Boat Harbors

- 1999 National Clean Boating Campaign Best Management Practices Partner Tips – <http://www.p2pays.org/ref/03/02274.htm>
A number of activity ideas, success stories and useful references are given on this page. They deal with establishing a BMP and how to promote it.
- Clean Marina Program Q & A – <http://www.naplesnews.com/today/bonita/d295127a.htm>
This site offers pollution prevention tips from the Florida Department of Environmental Protection.
- EPA Office of Water – <http://www.epa.gov/OWOW/NPS/marinas.html>
This site contains a list of marina documents, most notably BMP manuals, which the Nonpoint Source Control Branch at EPA headquarters has found to be especially well done. It also contains other information on the management of Nonpoint Source Pollution and marine engine emissions and control.
- Maryland's Clean Marina Initiative – <http://www.dnr.state.md.us/boating/cleanmarina>

This site contains information about Maryland's Clean Marina Initiative, which through collective effort of individuals and businesses will improve the quality of Maryland's waters.

- Pollution Prevention and Best Management –
<http://www.co.broward.fl.us/ppi00400.htm>
This site from British Columbia promotes Best Management Practices (BMPs), which are needed to reduce and prevent contamination of the aquatic environment and to improve air quality.
- Pollution Prevention Guidelines PPG14: Marinas and Craft –
<http://www.sepa.org.uk/guidance/ppg/pdfs/ppg14.pdf>
This Adobe Acrobat document, viewable through any browser, provides guidelines for boat users to follow to prevent various sorts of pollution. Although this Scottish site does not contain any specific legislation, by-laws or licensing conditions, it does contain many useful suggestions.
- Water Shedss [sic] Boats/Marinas –
<http://h2osparc.wq.ncsu.edu/descprob/boatmrna.html>
This website also promotes BMPs and contains information on many useful ones in boat operation, liquid waste and fuel handling, sewage disposal and solid waste generation and disposal.

Conference Calls with P2Rx

In February 1998, the Northwest Pollution Prevention Resource Center (NPPRC), Acting as the facilitator for the P2Rx suggested that the member centers participate in monthly conference calls. Consequently, we participated in the monthly P2Rx conference calls from March 1998 to October 2000. The conference calls were used to conduct P2Rx business and were carefully structured by the NPPRC. The conference calls were used to discuss P2 Information Center Standards, Information Exchange Protocols, Center Evaluation Metrics and committee work. Committees were created at the semi-annual P2Rx meetings to carry out special tasks developed by the members. The P2 Center for Islands served on the Labeling and Marketing committee.

Another important piece of business that was conducted during the monthly conference calls was the development of the web sector hubs. As mentioned above, P2 for Islands took the lead on four of the sector hubs, household hazardous waste, small boat harbors and marinas, agricultural pesticides and the hospitality industry.

The monthly conference calls were a good way to keep issues moving towards resolution. Without them, it is doubtful that the issues discussed at the semi-annual meeting would ever have come to resolution. The calls were quite time consuming and required some preparation prior to the call itself and always required some follow up after the meetings were over. The calls lasted from one to two hours. We gave our input on a number of the issues that came up during these telephone conferences, such as standards and measurements sector hubs, evaluation metrics and others.

We were also involved in WRPPN and its meetings and conference calls. Jacquelin Miller served as a member of the WRPPN steering committee and chaired a session on Integrated Pest Management and P2 at the Fall 2000 meeting of the WRPPN.

PEACESAT Conferences

Discussions were held with the University of Hawaii PEACESAT office regarding setting up a PEACESAT conference with Guam, American Samoa, and Hawaii. The intended use of the ATS1 equatorial geosynchronous satellite over South America to establish direct PEACESAT contacts with the Virgin Islands and Puerto Rico, simultaneously with Guam and American Samoa, had to be cancelled because Hawaii no longer had access to that satellite. As a result, Guam and American Samoa were connected via PEACESAT and the other participants in the call were connected via telephone conference call.

The first of these calls was held on August 27, 1997. Representing each area was: Sam Carballo (Puerto Rico); Marlyn Aguilar and Carrie McCabe (Hawaii), Sheila Wiegman (Samoa), Conchita Taitano, Betwin Alakoa and Hasina Wong (Guam), and Peter Rappa, Philip Moravcik, and Jacquelin Miller (P2 for Islands).

Teleconference Training Seminars

The Center held four teleconferences in 2000. The goal of the teleconferences was to support the local P2 programs in the Pacific by presenting information on topics of interest to them. The idea for the teleconferences was discussed in year two of the Center's program and put into the year three plan. The topics were chosen at a Pacific P2 meeting held in conjunction with the EPA's Pacific Islands conference in Saipan, CNMI, in June 1999. Representatives from Guam, Palau, American Samoa, Hawaii, and CNMI chose four topics. The topics were "Composting," "Green Hotels," "Household Hazardous Waste" and "Farming According to the Organic Equation."

The teleconferences were scheduled to begin in October 1999 and use the PEACESAT satellite. However, scheduling problems pushed the starting date to March of 2000. Problems with the use of PEACESAT prompted the use of telephones and delayed the start of the first teleconference into early April. Because of the time difference between the Caribbean and Pacific Islands, the teleconferences were broadcast only to the Pacific islands. Tapes and transcripts of the teleconferences were made available to Puerto Rico and the Virgin Islands.

The four teleconference calls each had the same basic format. Each featured a recognized expert on the topic and participants throughout the Pacific islands linked by audio conferencing bridge. The one to one and one-half hour seminars were coordinated and facilitated by the P2 for Islands Center. The format was a 30 to 45 minute presentation on the topic by the expert followed by a question and answer session. The

presenter's CV and complete notes for each seminar can be found in Appendices D through G, respectively.

Composting

The first teleconference was held on April 13, 2000. The topic was "Keeping Materials Out of the Waste Stream by Composting." The expert on this subject was Dr. Jim Hollyer of the University of Hawaii Department of Agricultural and Resource Economics. He is a resource and agricultural economist and fisheries biologist with ten years of experience in agricultural business, infrastructure development, and resource valuation. At the time of the seminar, he was the project manager for the Agricultural Development in the American Pacific Project at UH. There were nine participants in the teleconference representing Hawaii, Western Samoa, and American Samoa.

Dr. Hollyer's presentation covered three main areas, the definition of garden waste, what compost does and how it is produced. He then answered a number of questions from the participants on a wide range of subjects ranging from what will biodegrade to how to keep out certain pests. Another important concept covered in the conference was how to get people involved and the ways in which people can keep their organic wastes to themselves.

Green Hotels

The second teleconference was held May 25, 2000. The topic was "Ways to Cut Waste and Save Money in the Hotel Industry." The guest presenter was Ms. Patricia Griffin, president and founder of the Green Hotels Association. Ms. Griffin graduated from the University of Texas at Austin with a degree in business and is a member of Green Seal, Inc. and the Professional Association of Innkeepers International. There were 24 participants in this conference, including representatives from various hotels in Hawaii, American Samoa, and Palau, and EPA representatives from American Samoa, Guam and Palau.

The main topics she covered were recycling, water savings, energy savings, pest control and how to get a "green program" started at hotels and inns. Griffin also talked about the different services offered by the Green Hotels Association, their publications, and how hoteliers could become members. A number of questions from the participants focused on how smaller hotels might be able to save on cost through waste reduction. Griffin was able to suggest several ways to reduce waste even in small-scale operations.

Household Hazardous Wastes

The third teleconference was held on July 27, 2000. The subject of the teleconference was "The Substitution, Reduction and Proper Handling of Household Hazardous Wastes." The guest speaker was Mr. John Valera from the Hawaii State Department of Health. Valera is an Environmental Planner with the Office of Solid Waste Management. He was responsible for implementing the state of Hawaii's

Integrated Solid Waste Management Plan and its year 2000 revisions. He developed an enforcement procedures manual for the Office's enforcement team in 2000. There were 14 participants in the call, nine from various organizations in Hawaii, one from the Guam EPA and four from the American Samoa EPA.

Valera discussed the scope of the problem of household hazardous waste, which he characterized as small compared to industrial waste. The problem was improper disposal of toxic chemicals like paint thinners and pesticides in the residential waste stream from where it gets into the ground water. Valera talked about alternatives/substitutes for hazardous household chemicals and the manual that the Hawaii Department of Health has published on the topic. Betwin Alakoa from the Guam EPA, presented information on the household hazardous waste disposal program called "Hasso" in Guam. Much of the ensuing discussion focused on how to get household hazardous waste programs started on other islands.

Organic Farming

The final teleconference was held on September 21, 2000. The subject of the teleconference was "Farming According to the Organic Equation." The featured guest speaker was Mr. Jeff Rast of the Northwest Coalition for Alternatives to Pesticides. Rast was an Agricultural Extension Agent with the University of Idaho from 1988 to 1998. In 1996, he began operating a small-scale mixed vegetable, certified organic farm. He left the Cooperative Extension Service to consult on organic farming full-time in 1998. There were 14 participants from Hawaii, Guam, American Samoa and Western Samoa.

Rast covered six main topics in his presentation. These were: healthy soil, diverse flora, promoting floral diversity, promoting diverse fauna, creating a suitable microclimate and controlling pests according to the scale of aggression. Using Rast's formula, which he presented in his talk, farmers from small to large scale can substantially cut down on the amount of pesticides used. Rast's operations use no pesticides at all. Questions focused on whether his techniques could be used in tropical climates. Rast felt that his techniques were valid anywhere.

Evaluation of Teleconferences

The teleconferences were well attended and proved very popular with the Island P2 programs. Aside from personnel from the local EPAs, we had participation from the Land Grant Program at the American Samoa Community College and the South Pacific Regional Program (SPREP). Where applicable, industry representatives also participated in the teleconference. The conferences took a lot of planning and coordination to prepare. However, their popularity proved worth the effort. A second set of teleconferences was in the planning stages when funding for the P2 Center for Islands was ended.

EVALUATION AND RECOMMENDATIONS

In any project where the goal is to modify human behavior so as to prevent pollution and in so doing to improve the quality of the environment, one hopes that the efforts expended and positive accomplishments can be maintained beyond the life of the contract. Thus, in the interest of encouraging ever more efficient use of time and funding in the future, we have identified some of the more troublesome aspects of this project along with tasks which proved to be particularly successful. This will permit any subsequent work on P2 in the Pacific Islands to have the benefit of our experience in formulating any new studies.

Coordination of Communications

The PEACESAT connection does not extend to the east coast of the United States or to the islands of the Caribbean Sea, which made using that satellite impossible. The island groups, which were members of the Center's jurisdiction were spread over 10 different time zones making it difficult to coordinate schedules and choose a meeting time that all could attend. For most routine business we would have to conduct a conference call with the Pacific Island participants followed by a separate call to the Caribbean participants on another day to discuss the same topics. Fortunately, people were willing to expand their normal working hours to accommodate conference calls and we were able to conduct an all islands teleconference on two different occasions.

Another communication problem was language. Spanish is the main language spoken in Puerto Rico and Samoan is the primary language spoken in American Samoa, although English is spoken in both islands. The Director of the P2 program in Puerto Rico, Brenda Colon, was not comfortable speaking English and required a translator to facilitate teleconferences. The P2 Center for Islands hired a University of Hawaii student who was originally from Puerto Rico, to help with translating. The student returned to Puerto Rico at the end of year one and we were not able to find suitable replacements.

In retrospect it might have been better if the Caribbean islands could have been made part of another P2Rx Center closer to their islands such as the Waste Reduction Resource Center (WRRC) in North Carolina which covers much of the eastern seaboard and gulf coast. Their jurisdiction encompasses all of EPA regions 3 and 4 including Florida, which has a large Spanish-speaking minority. Puerto Rico and the U.S. Virgin Islands might have been better served by becoming a client of the WRRC program in North Carolina.

Diversity of Problems

The islands that made up the jurisdiction of the P2 Center for Islands shared many problems in common: limited land, growing populations, limited natural resources and an embrace of a disposal society and an economy largely based on the tourist industry. They had many of the same waste generators, large resort hotels, residential waste, small-scale

farming and cargo and cruise shipping. However, some of the islands had very different problems. Puerto Rico, for example has a number of manufacturing facilities for the electronic industry. American Samoa has only small hotels with problems quite different than the large resorts in other areas. In general, we did not have materials that were suitable for Puerto Rico's problems with their manufacturing sector nor could we find very much that addressed the problems of the American Samoan small tourist industry.

Staff Turnover

One problem that plagues the whole P2 effort both within the programs affiliated with the P2 Center for Islands and the P2Rx is the constant turnover of the staff people working on the programs. Both staffers at the Solid Waste Management Authority of Puerto Rico in charge of the P2 program, Samuel Caraballo and Ivette Perez left the program and were replaced by Brenda Colon and Diemary Miranda in the second year of the grant. Diemary left in the third year of the grant. Both the coordinator of the American Samoa P2 program, Nicholas King, and Guam P2 programs, Steve Bellrichard, left during the life of the Islands grant. The P2 coordinator from the Palau Republic, Pearl Marumoto, left for maternity leave shortly after the June 1999 P2 Center for Islands meeting in Saipan and was eventually replaced by a Peace Corps worker, Darren Sabom. Geoff Watson, our contact for the U.S. Virgin Islands left the islands without securing a replacement. Carrie McCabe, the Hawaii P2 coordinator, left the program at the end of the final year of the grant.

Change was the order of the day in the P2Rx program. Juan Maldonado left the Southwest P2 Information Center, Lisa Regenstein left NEWMOA, Lisa Merrifield and Jackie Peden left the Great Lakes Regional Pollution Prevention information Center, and Madeline Sten left the Northwest Pollution Prevention Center during the three years we participated in P2Rx. Juan's departure was crucial since we were working on plans to translate some Spanish language materials into English for use in our regions. Madeline and Lisa were two very experienced P2 center administrators and leaders of the P2Rx network. Lisa succeeded Madeline as head of P2Rx but she left a short time later.

Change is not always bad, but in our case it made it difficult to formulate long-term plans and projects. There is a learning curve when anyone new comes to a program and we were always trying to educate new people about the P2 Center for Islands. It was particularly difficult in our case because we could not travel to the various islands and meet the new people face-to-face. In Puerto Rico, Sam Carballo's replacement, Brenda Colon did not speak English fluently. It was difficult to deal with the changes on P2Rx level since trying to set up a cooperative agreement among nine independent centers required a certain amount of trust among the principals involved. Although the P2Rx replacements were often people who were familiar with the program, some time was always lost getting the replacements up to speed. The same cannot be said at the islands and territorial program level. Often, the new person filling in knew little about the P2 program and nothing about the P2 Center for Islands.

Recommendations

The P2 Center for Islands was far too small and underfunded to accomplish what it set out to do. We had only the equivalent of one full-time person working on the project and many commitments we had to honor. In the final year we made arrangements to merge with the Farm*A*Syst and Home*A*Syst (Farm Assessment System and Home Assessment System) programs of the Cooperative Extension Service which was doing similar work. This merger was to be formally implemented at the start of year four. By combining the two programs and the part-time positions that went with them, we could develop a full-time staff. However, our program failed to receive funding for the fourth year thereby eliminating the anticipated merger.

We attempted to have the P2 Center for Islands funded by the University of Hawaii. That was denied due to our multi-island mission. We believe that it would be difficult to fund a separate program for the Pacific Islands at a level that was needed to have a fully functional Center. However, a viable Center could be developed as part of an existing program at the University such as the Farm*A*Syst Program. It may also be feasible to have the Region 9 Center, WRPPN, develop a special program for the Pacific Islands.

Our efforts to serve Puerto Rico and the U.S. Virgin Islands were particularly frustrating. The time differences, distance and communication difficulties provided obstacles that could not be easily overcome. We recommend that these islands be served by a P2 regional center closer to the Caribbean. Either the Region 3 and 4 Center, which includes Florida or the Region 6 Center, which is headquartered in Texas would be better able to provide assistance in a timelier manner. The Region 6 Center also had Spanish-speaking staff, which is essential for effective communication with Puerto Rico.

Lastly, with regard to our web page development and monitoring of its use. Any successor organization should have its own dedicated server for mounting the database and web page. We were not able to get the University of Hawaii to record the kind of statistics we needed to measure the effectiveness of these two tools. A program needs to be able to control the size of the web page, what goes onto it, and how and what kind of statistics should be kept.

In summary, the educational benefits of the P2 for Islands program were appreciable. We were able to convey the P2 message to a wide assemblage of people, cultures, and geographic realms that extended more than half way around the world. The teleconferences were exceptionally well received and we were able to provide outstanding speakers on a variety of topics that had specific relevance to island environments. Based on comments received from our various island partners, there is a strong interest in pollution prevention, but except for Hawaii and Guam, the opportunity for education and communication via internet based information systems is still limited. Hence, P2 information for Islands requires a different approach than the internet media so effectively being promoted and used on the Mainland of the U.S. Future P2 Programs for

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Area Code for Hawaii (808)



MANAGING BOAT WASTES



A Guide For Hawai'i Boaters



UH Sea Grant College Program
School of Ocean and Earth Science and Technology
Office of Solid Waste Management, Department of Health
Division of Boating and Ocean Recreation
Department of Land and Natural Resources

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Alternatives to Toxic Products For Cleaning Your Boat

Bleach	Borax or hydrogen peroxide
Detergent & Soap	Vegetable- or citrus-based soaps instead of petroleum-based soaps and detergents
Scouring Powders	Baking soda
Floor Cleaner	1 cup of white vinegar in 2 gallons of water
Window Cleaner	1 cup of white vinegar in 1 quart of warm water, rinse and squeegee
General Cleanser	Bicarbonate of soda and vinegar; lemon juice combined with borax paste
Head Cleaner	Pour in baking soda and use brush
Shower Cleaner	Wet surface, sprinkle on baking soda, and scrub
Aluminum Cleaner	2 tablespoons of cream of tartar in 1 quart of hot water
Brass Cleaner	Worcestershire sauce or paste made of equal parts salt, vinegar, and water
Copper Cleaner	Lemon juice and salt
Chrome Cleaner/ Polish	Apple cider vinegar to clean/baby oil to polish
Fiberglass Stain	Baking soda paste
Drain Opener	Use boiling water and plumbers snake or disassemble; substances should not be used in a through-hull drain
Mildew Remover	Paste using equal parts of either lemon juice and salt or vinegar and salt
Furniture Polish	3 parts olive oil and 1 part white vinegar
Wood Polish	Almond or olive oil (interior wood only)
Hand Cleaner	Baby oil or margarine

Do:

- ✓ Use alternatives!! They work — and can save you money!

Don't:

- Do not allow hazardous household products to enter the water. These products may have the potential to cause explosions, may be corrosive, may catch fire, or may be poisonous to living things.

Bilge Water

It is not uncommon to see a small fuel sheen on the water surface near boats. Although it may only be a tiny amount from some boats, the longterm impacts can be damaging. Once in the marine environment, oils and fuels have a tendency to collect in the bottom sediments and concentrate in marine organisms. These harmful substances commonly enter the marine environment through bilge pumping, fueling and improper response to spills.

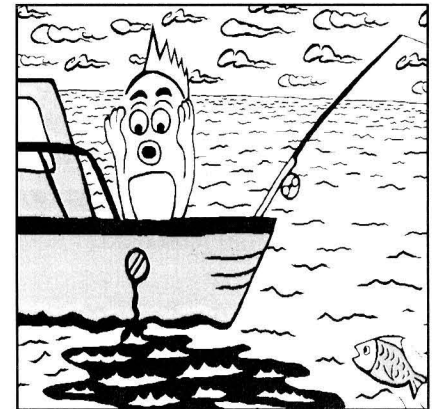
Many oil spills occur unintentionally when automatic float switches activate because of rain, slow seepage, or other causes of mild water ingress. To avoid these oil spills, raise the float switch a couple of inches. This will allow the bilge pump to discharge water, but keep the oil in the boat until it can be disposed of properly.

Do:

- ✓ Fix small leaks that allow oil to drip into the bilge.
- ✓ Take extra care when you change your oil.
- ✓ Use oil-absorbent pads to capture surface oil. Make sure the oil is completely absorbed. Dispose of used pads in trash.
- ✓ Raise the bilge pump automatic float switch enough to keep any oil-contaminated bilge water aboard until it can be pumped to a clean container.

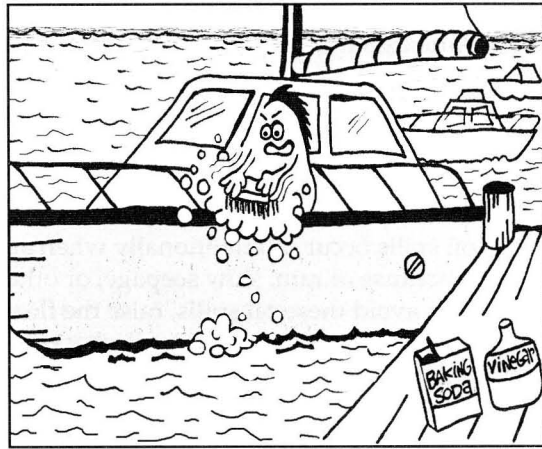
Don't:

- Don't ever drain engine oil into the bilge.
- Don't put off repairs to engine and fuel tank leaks.
- Don't disable automatic bilge pumps while doing engine repairs.
- Don't turn on bilge pumps before ensuring that the bilge is clean.
- Don't dispose of used oil except at an approved waste reception facility.
- Don't use dispersants such as dish soaps. Dispersants do not remove oil from the water, they only break it down into small, hard to see drops.
- Don't discharge bilge water if there is a sheen to it.



Boat and Deck Washing

Every time we wash our decks with soap, we contribute to water pollution. Many soaps and detergents still contain phosphates. Phosphates promote algae growth which, in turn, robs the water of essential oxygen. Without oxygen, fish cannot survive. In addition, algae growth prevents light from penetrating the water and limits aquatic photosynthesis. Many soaps and detergents also contain substances that bind to living tissue. When these substances bind to fish gills, the fish lose their ability to absorb oxygen and therefore suffocate. Detergents can also contain heavy metals that accumulate through the food chain.



Do:

- ✓ Rinse and scrub your boat with a brush after each use. The safest cleaning product available is good, old-fashioned "elbow grease."
- ✓ Try to buy alternative products that do not contain phosphates if you need to use cleaning agents.
- ✓ Use non-toxic biodegradable cleaners.
- ✓ Use hose nozzles that shut off when released and conserve water and reduce the runoff from boat washing.

Don't:

- Don't use cleaners that contain ammonia, sodium, chlorinated solvents, petroleum distillates, or lye.
- Don't clean the bottom of your vessel by scrapping or scrubbing it while it is still in the water.

Head Sewage

Human sewage from boats is a potentially dangerous source of water pollution that can contain disease-causing organisms that affect marine animals and plants.

The Federal Water Pollution Control Act requires that recreational boats with installed toilet facilities use Coast Guard certified Marine Sanitation Devices, or MSDs. MSDs include any equipment for installation on a vessel which is designed to receive, retain, treat, or discharge sewage, and any process to treat sewage. Marine Sanitation Devices are designed to prevent the overboard discharge of untreated sewage, and they come in three types:

1. Type I MSDs: A device that under test conditions produces an effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids.
2. Type II MSDs: A device that, under test conditions produces an effluent having a fecal coliform bacteria count not greater than 200 per 100 milligrams per liter.
3. Type III MSDs: A device that is designed to prevent the overboard discharge of treated or untreated sewage or any waste derived from sewage. The holding tank is equipped with piping to discharge waste when over three miles from shore or, preferably, into fixed or floating pump-out facilities.

Boats longer than 65 feet must use Type II or III, while boats less than 65 feet can use I, II, or III. All installed MSDs must be Coast Guard certified if the boat is to be in compliance. Boats without installed toilets should use a port-a-potty and:

1. Dispose of the sewage in the sanitary sewer on shore;
2. Use rest rooms/portable toilets ashore whenever possible. Holding tank additives: Type I and Type II MSDs require holding tank additives. They come in a variety of forms and chemical compositions — some of which may be harmful to parts of your toilet system as well as the environment. Read the label carefully to make sure that the products contain no formaldehyde, formalin, phenol derivatives, ammonia compounds, alcohol bases, or chlorine bleach.

All live-aboard vessels in the State of Hawai'i small boat harbors must have a Type I, II, or III MSD.

At the current time the following small boat harbors have pump out facilities: O'ahu: Ala Wai Small Boat Harbor, Wai'anae, Hale'iwa, He'eia Kea; Maui: Lahaina; and Kaua'i: Nāwiliwili.

Do:

- ✓ Know the MSD requirements.
- ✓ Use pump-out facilities. Hawai'i boaters are required to do so.

Don't:

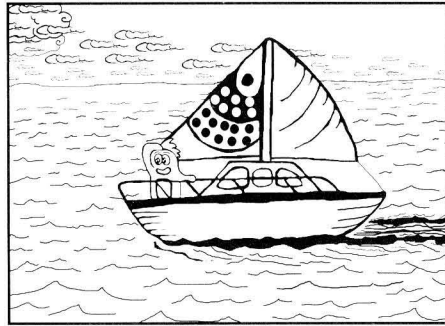
- Don't dispose of fats, solvents, oils, emulsifiers, disinfectants, paints, poisons, phosphates, diapers, or other similar products in MSDs.

Fuel

The best way to minimize the environmental impact of fuel is to use less! When possible, try to observe the following tips to reduce fuel consumption.

Do:

- ✓ Conserve.
- ✓ Have sails? Hoist them when winds are right.
- ✓ Balance your load. This enables your boat to get on plane quickly (only applicable for planing-type hulls) and reach the desired speed without plowing or porpoising.
- ✓ Watch the weather. Avoid false starts if prevailing air and sea conditions are questionable. Brisk winds and heavy chop siphons the fuel from the tanks.
- ✓ Check your propeller. A damaged prop will waste fuel. Keep propeller blades clean and in good condition. Replace props that have damaged blades. Also, adjust diameter and pitch to your vessel's design (Check with engine manufacturer).
- ✓ Avoid excess idling. Whenever you have to stop, turn off the ignition. A warm engine restarts easily without choking.
- ✓ Slow down. A wide open throttle can increase fuel consumption by 50 percent or more over mid-range speeds. As you "trim" the boat, maintain rpms at the level recommended by the manufacturer.
- ✓ Watch your weight. The lighter the boat and its load, the less horsepower you will need to propel it and the greater your fuel economy. Drain the bilges and holding tanks properly before departure. Store unneeded supplies and equipment ashore.



- ✓ Plan your trip. A true course is the shortest, the shortest distance not necessarily the shortest time, depending on sea conditions. Any reduction in running time saves fuel.
- ✓ Check the tides. Boating against the tide is like running against the wind — it takes more effort. Make the tides and currents work to your advantage. Reduce wind resistance by keeping canvas bow shelters and bimini tops down and furled until needed.
- ✓ Clean your hull. The less growth on your hull, the less underwater drag there will be on your boat and the less fuel you will use.
- ✓ Keep the engine tuned. Proper ignition timing and clean spark plugs assure extra mileage. Inspect the carburetor for proper float level, correct jetting, and smooth choke operation. Check the fuel and oil filters regularly. Alcohol-based fuel can cause loss of fuel by deteriorating fuel lines. Call your boat manufacturer to find out if your engine can take alcohol-based fuel. Part of engine maintenance should include an inspection of the fuel lines and carburetor gaskets. Replace bad lines with USCG Type A alcohol-resistant fuel line hose.
- ✓ Consider a 4-stroke! Small outboard 2-stroke engines pollute much, much more than the new 4-strokes.
- ✓ Listen to the filler pipe to anticipate when the tank is full and to avoid back-splash.
- ✓ Stop pumping at the first sign of fuel escape.
- ✓ Prevent spillage from tank vents, install a fuel/air separator or an air whistle in your tank's vent line.
- ✓ Install fuel tank vents high enough to prevent spills during fueling and rough weather.

Fuel Spills

The use of dispersing agents such as dishwashing liquids is more harmful to the environment than if the oil was left alone. Use of dispersing agents without the approval of the Captain of the Port is in violation of federal laws; the civil penalty is up to \$25,000.

Any fuel spill (gas, oil, diesel, etc.) that leaves a sheen on the water must be reported to the U.S. Coast Guard at 522-8260 (927-0830 after hours) 1-800-424-8802 (24 hrs) or the State's Hazard Evaluation and Emergency Response (HEER) office at 586-4249 or 226-3799 (after business hours). There is no lower limit to the amount of fuel spilled to trigger a call to the Coast Guard or HEER. You must call the Coast Guard to report a spill no matter how small.

Harbors	Sewage Pumpout	Oil Disposal Facility
O'ahu, Existing:		
Ala Wai Small Boat Harbor	x	
He'eia Kea Small Boat Harbor	x	
Kāne'ohe Bay Yacht Club	x	x
Ke'ehi Lagoon Small Boat Harbor	x	x
Wai'anae Small Boat Harbor	x	
Rainbow Bay Marina	x	x
O'ahu, Proposed:		
Ewa Marina	?	?
Kaua'i, Existing:		
Nāwiliwili Small Boat Harbor	x	
Port Allen Small Boat Harbor		x
Maui County, Existing:		
Lahaina Small Boat Harbor	x	x
Mā'alaea Small Boat Harbor		x
Hawai'i County (Big Island), Existing:		
Honokōhau Small Boat Harbor		x

Existing and proposed sewage and oily waste facilities in Hawai'i: Ewa Marina, a proposed private facility, is projected to have 1,400 berthing slips, ramps and 500 boats in dry storage. Kaneohe Yacht Club, also privately owned, currently berths 160 boats and holds 150 in dry storage with launch ramps. Rainbow Bay Marina, federally owned and located in Pearl Harbor, currently berths 83 boats, has 19 mooring spaces filled with 58 boats in dry storage and ramps for launching. Twenty-six liveaboards use this facility. Rainbow Bay Marina is expanding to 180 berthing spaces by July of 1998, when a sewage pumpout and oil disposal facility is also proposed. There are no facilities that have more than one sewage pumpout or oil disposal facility.

Lead Acid Batteries

Hawai'i Law (Hawai'i Revised Statutes 3421) prohibits the disposal of lead acid batteries in landfills or abandonment on public or private property. Batteries whose electrolyte has been removed will not be accepted for recycling. Lead Acid Batteries contain two hazards: lead and acid. When released into the environment, these materials can contaminate the air, water, and soil. Also, lead can be assimilated by animals and plants, and eventually find its way into the food chain and drinking water supply. When ingested or contacted by humans, lead and acid can cause both short- and longterm health problems.



Do:

- ✓ When you buy a new battery, return the old one to your vendor. The law requires the vendor to accept it.
- ✓ Store batteries upright in a secure place and check battery and caps often for leaks.

Contact the Department of Health, Office of Solid Waste Management, at 587-4240 to report vendors who don't comply. If you have an old battery, contact your local mechanic or parts store. Anyone who sells batteries in Hawai'i is required to take your old battery when you buy a new one.

Don't:

- Don't dispose of a battery in the garbage, at a landfill, or on public or private property.
- Don't break open the case and/or remove the acid or lead.
- Don't store batteries outside; the weather can damage them.

Marine Debris

The ocean is not a dump! Marine debris — plastic, nets, fishing lines, six-pack rings, Styrofoam, etc. — can kill marine life. When seabirds, whales, and other marine creatures ingest plastic they often become sick and die. They can also become entangled in nets or six-pack rings and drown. In 1987, the United States ratified an international treaty addressing the problem of ships dumping their garbage at sea. The treaty, known as Annex V of MARPOL (Marine Pollution Act):

1. Prohibits the disposal of plastics anywhere in the ocean;
2. Restricts the disposal of most other types of refuse materials depending on distance to shore.

In addition, the U.S. Coast Guard requires:

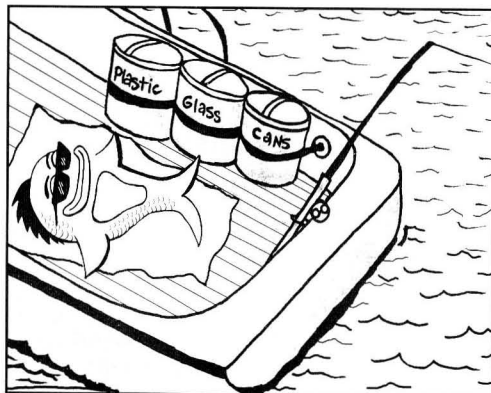
1. Vessels 26 feet and over to prominently display a placard to notify all passengers and crew of Annex V discharge rules and penalties;
2. Vessels 40 feet and over to display the discharge rules placard and prepare a written waste management plan.

Do:

- ✓ Keep all waste on board in proper receptacles. Separate plastics, cans, and glass for recycling. Properly manage your debris so that it will not be blown or washed overboard.
- ✓ Avoid expensive boat engine repairs — keep your trash out of the water! Boat engines can be damaged when propellers or cooling water intakes become entangled with nets and other marine debris.
- ✓ Contact the Coast Guard at 522-8260 (927-0830 after hours) to report violations.
- ✓ Choose reusable items rather than disposables.

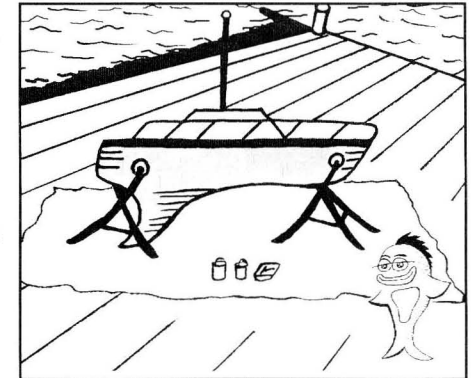
Don't:

- Don't discard any garbage overboard.
- Don't discard any plastic over the side.



Paints/Varnishes/Epoxies/Etc.

Paints come in two basic forms: water-based and oil-based. Water-based paints are considered less dangerous than oil-based paints, which contain carcinogenic solvents that if inhaled, ingested, or absorbed through the skin, can impact human health. The growth of marine organisms on hulls is a common problem faced by boaters. Many bottom paints are designed to self-slough, which means they shed their outer layer and carry away unwanted growth. In addition, many bottom paints contain anti-growth toxins which, when leached into the water, can accumulate in marine organisms. Eventually, these toxins find their way back to us in the fish that we eat.



Do:

- ✓ Buy only what you need! Mix only what you need! Prepare paints over a drop cloth on land, not on the dock.
- ✓ Use, or make sure your boat yard uses, the most environmentally friendly bottom paints available. Ask your vendor to stock "green" products.
- ✓ Scrape and paint your boat away from the water. Plug the scuppers and wipe up any spills or residues.
- ✓ Use drop cloths, pans, containment trays, etc. to catch paint scrapings and drippings. Dispose of wastes in the trash. Allow empty paint cans to dry out before throwing them away.
- ✓ Scrub the hull periodically to extend the useful life of the paint.

Don't:

- Don't scrub the hull periodically to try to extend the useful life of the paint while in the water. This is a "reportable" spill.

Solvents

Most solvents are hazardous because they are flammable and/or toxic. They are, however, commonly used in many boat maintenance products such as resin, paint, paint remover, varnish, shellac, and thinner. When working with solvents, avoid skin contact and ensure vapor inhalation.

Do:

- ✓ Use alternative products! Ask your vendor to stock environmentally friendly alternatives! Recycle your own solvent! Let the spent solvent settle until it clears. Decant the liquid portion through a filter. Dispose of the filter in the trash.
- ✓ Keep spent solvent in separate, labeled containers.

Don't:

- Don't mix solvents with used oil!
- Don't let solvents drain to septic tanks, storm drains, or sewers.



Used Oil

Hawai'i law 342 J (Hawai'i Revised Statutes 342 N) prohibits used oil from entering into streams, the ocean, storm drains, sewers, or the ground. Also, if used oil is contaminated with a hazardous waste, the whole mixture becomes a hazardous waste. If improperly managed, used oil is a dangerous pollutant. Just one quart of oil can contaminate 250,000 gallons of water, and can injure fish, birds, and other aquatic life. In addition, used oil contains toxic components that can cause cancer and other diseases in humans.



Do:

- ✓ Store your oil in a clean, air tight container.
- ✓ Use oil absorbent products to contain any accidental spills or when you change your oil.
- ✓ Bring your uncontaminated used oil to a collection facility or recycling center. Contaminated used oil will not be accepted.

Don't:

- Don't mix used oil with solvents, thinner, paint, anti-freeze, fuel or other hazardous substances.

Used Oil Filters

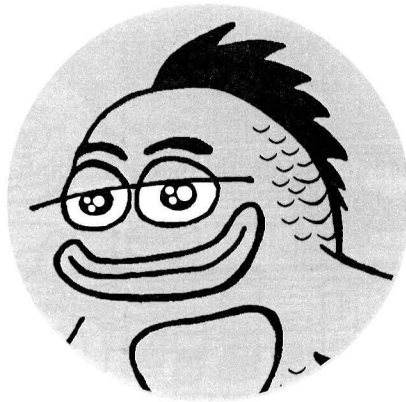
Used oil filters contain some waste oil. The oil may drain out and cause environmental contamination when disposed in landfills. Some local service stations recycle oil filters. If you can't find one that does, drain the filter into the used oil pan for 24 hours and place the filter in a plastic bag and put into the trash. Absorb the oil for disposal or recycle it with the greater volume.

Do:

- ✓ Drain filters into your used oil.
- ✓ Drain at an angle, for 24 hours, while oil is still hot.
- ✓ Dispose of empty oil filters in trash.

Don't:

- Don't throw away undrained filters — drain them first!



We wish to thank the following organizations for providing source material for this publication:

Baywatch: A Guide for Boaters (1991), published by The Environmental Health Coalition in San Diego (619-235-0281).

Soundwatch: An Environmental Guide for Boaters (1993), published by 48 North, The Sailing Magazine; The California Department of Boating and Waterways.

Managing Hazardous Wastes, produced by Thurston County Public Works in cooperation with the Washington State Department of Ecology.

Environmental Guide for New England Mariners (1989), produced by the Coalition for Buzzards Bay. Boaters Guide to Clean Water and Good Times (1988), published by Washington.

The Hawaii Guide to Alternatives & Disposal of Household Hazardous Wastes, produced by the State of Hawaii Department of Health, Environmental Health Administration, Office of Solid Waste Management.

What Boaters Can Do to be Environmentally Friendly, produced by West Maui Watershed Advisory Committee, Lahaina Harbor-Mala Wharf Advisory Committee and the Hawaii Department of Health Boating Clean & Green (1996), Marine County Hazardous and Solid Waste Management Authority, Office of Waste Management State Parks and Recreation Commission.

Rhode Island Sea Grant, Boater Fact Sheet Puget Soundkeeper: A Boater's Guide to Sound Information, published by The Puget Sound Alliance under a grant from the Municipality of Metropolitan Seattle (METRO) and the Washington State Department of Ecology.

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Kent Richards, U.S. Coast Guard District 14, Recreational Boating

Ray Pendleton, Mid Pacific Information

If you have any comments or questions, please contact the Department of Health, Office of Solid Waste Management, 586-4240.

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Useful Phone Numbers

O'ahu numbers given (unless otherwise noted).

Abandoned Boats/Boating Registration DLNR Div. of Boating & Ocean Recreation (DOBOR)

O'ahu: 587-1963
Kaua'i: 245-8028
Maui: 243-5824
Hawai'i: 329-4215
Moloka'i: 553-5105
Lāna'i: 264-0233

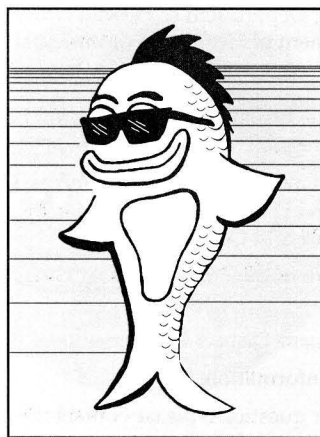
Boating Mishaps Involving Injury

Fire Dept: 911;

DLNR-Div. of Conservation & Resources Enforcement: 587-0077;

Channel 16 VHF

U.S. Coast Guard: 522-8260 (927-0830 after hours) or 1-800-424-8802 (24 hours)



Debris or Litter Issues

The Governor's Committee for a Beautiful Hawaii: 538-3166

EMERGENCY Hazardous Material Spill or Leak

Fire Dept: 911; U.S. Coast Guard-Marine Safety Office: 522-8260 (927-0830 after hours) or 1-800-424-8802 (24 hours)

Fuel and Oil Spills National Response Center: 1-800-424-8802

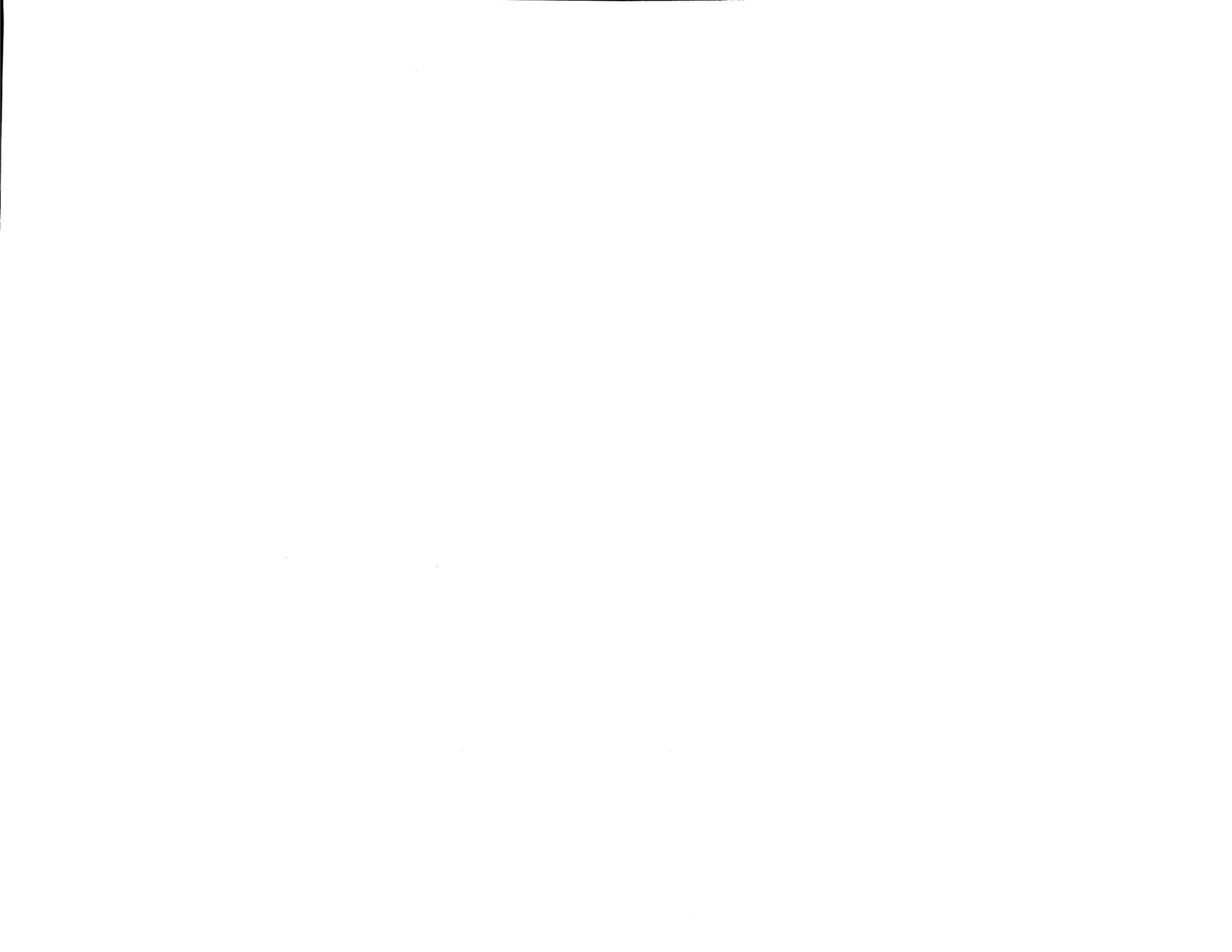
Hazards to Navigation U.S. Coast Guard: 522-8260

Injured/Stranded Marine Mammals, Sea Turtles, Sea Birds National Marine Fisheries Service (NMFS): 973-2987 (mammals), 943-1276 (turtles) Dept. of Land & Natural Resources (DLNR) Division of Conservation And Resource Enforcement (DOCARE): 587-0077; Ocean Dumping of Plastic, Garbage, Paper, and other marine debris U.S. Coast Guard: 522-8260

Sewage Spill/Infectious Waste

Sewage Spills, notify City & County of Honolulu Response
Environmental Services Department: 523-4423 (24 hrs) & County

Infectious Wastes or Other Spills, notify Department of Health-Hazard Evaluation and Emergency Response Office (HEER): 586-4249 or 247-2191(after hrs)



Islands P2 Center

Objective

To provide technical P2 information and training to state and local industrial service providers in Hawaii, Guam, American Samoa, U.S. Virgin Islands and Puerto Rico.

Organizational Structure

The Islands P2 Center is located at the University of Hawaii at Manoa in Honolulu. Funding for Islands P2 is provided by EPA Region IX. The Islands P2 Center has a staff of three part-time faculty members plus student support staff

Primary Service Area

Hawaii, Guam, American Samoa, U.S. Virgin Islands and Puerto Rico.

Primary Clients

State, local, and federal programs that provide P2 assistance to industry are the Island P2 Center's primary clients. Because technical assistance providers and the industries they serve have similar informational needs, our information clearinghouse may be useful to industrial users. Our resources and staff are available to users in industry, consulting, and universities.

Services

Web site:

<http://www2.hawaii.edu/~morav/IslandsP2.html>

Sector & Process Expertise:

Library Resources:

The Center maintains a small collection of materials focusing on P2 issues pertinent to our island environment. In addition we have access to the nationwide network of P2 information providers with their very extensive libraries of such information.

Contact Information

Jacquelin Miller or Peter Rappa

Pollution Prevention Information Center for Islands

University of Hawaii at Manoa

Environmental Center

Krauss Annex 19

Honolulu, HI 96822

Phone: (808) 956-7361

Fax: (808) 956-3980

Email: jackiem@hawaii.edu or rappa@hawaii.edu



P2 Links

The categories below will connect you to websites covering the topics on which the Islands P2 Center is concentrating its efforts.

General

Agricultural Pesticides

Household Hazardous Materials

Marinas and Boat Waste

Tourism and the Hospitality Industry

Fact Sheets

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<http://www.geocities.com/SiliconValley/6603/notice.htm>*



General Information

This page provides general P2 information arranged according to the geographic scale of the website's interest--from federal to local--and whether the organization is publicly- or privately-run. Links to some P2 news websites are also provided.

Federal Programs

- <http://www.epa.gov/opptintr/p2home/> **The EPA's P2 homepage**, a good place to get background information. Links to EPA's Pollution Prevention Information Clearinghouse.
- <http://www.epa.gov/smallbusiness/> **The EPA's Small Business Gateway** offers a centralized location from which to access a wide range of environmental information and technical assistance resources. The Frequently Asked Questions page covers such questions as obtaining permits, registering pesticides, and what do in the event of an environmental emergency. This site also provides links to contacts for compliance and technical assistance, to the laws and regulations affecting your business, and to environmental programs that can help you save money and improve profits.
- <http://es.epa.gov/oeca/mfacac.html> **Small Business Compliance Assistance Centers. EPA's Office of Enforcement and Compliance Assurance**, in partnership with industry, academic institutions, environmental groups, and other federal and state agencies, has established "virtual" national Compliance Assistance Centers for nine specific industry sectors heavily populated with small businesses and entities that face substantial federal regulation. The sectors include: printing, metal finishing, automotive services and repair, printed wiring boards, small chemical manufacturers and agriculture. The Centers are designed to serve as the first place that small businesses can go to find comprehensive compliance information on their industry sector.
- <http://www.eren.doe.gov/energytips/> **The U.S. Department of Energy's Energy Saving Tips for Small Businesses**. This informative site walks small businesses through the energy-efficient steps they can take to save money. In addition to quick tips, they have provided detailed information about how to implement your own long-term energy conservation efforts, where to turn for expert assistance, and a list of further references and sources.

<http://es.epa.gov/oeca/sector/index.html> **EPA's Office of Compliance** has developed a series of profiles or notebooks containing information on selected major industrial groups. These notebooks are downloadable from the site and include:

- * a comprehensive environmental profile
- * industrial process information
- * pollution prevention techniques
- * pollutant release data
- * regulatory requirements
- * compliance/enforcement history

- * government and industry partnerships
 - * innovative programs
 - * contact names
 - * bibliographic references
- <http://enviro.nfesc.navy.mil/p2library> **The Armed Services' Joint Military Service Pollution Prevention Technical Library** is a comprehensive on-line resource for information on technologies and management practices that eliminate or reduce pollutants at service installations. The library particularly promotes equipment changes, new technologies, and best management practices. The library is comprised of: (a) the Joint Service P2 Opportunity Handbook, (b) the Navy's P2 Equipment Book, (c) an Environmentally-Preferred Products Catalog, and (d) descriptions of the Joint Group on P2 and the Fleet Assistance Support and Technology Transfer Team.
 - <http://www.dscr.dla.mil/products/epa/eppcat.htm> **Defense Logistics Agency's** listing of environmentally friendly alternative products for cleaning your tank, battleship, fighter jet, etc.
 - <http://www.p2.org/> **National Pollution Prevention Roundtable**. Lots of contacts to P2 agencies around the United States.
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Regional Programs

- www.pprc.org **The Pacific Northwest Pollution Prevention Resource Center**. Very good, large, comprehensive site. Strong business assistance program. Large publications database.
- <http://www.rcac.org/states/> **The Rural Community Assistance Corporation**. RCAC serves the rural communities of 12 states: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Washington. This non-profit organization seeks to improve the capacity of local officials and community-based organizations to manage water, wastewater, and solid waste. Over 35 communities and agencies in Hawaii have been assisted by this organization.
- <http://www.epa.gov/region07/specinit/p2/GreenRhome.html> **The Green Rider, developed by EPA Region 7**. Information on this website is geared toward construction of any large building. Topics include material selection, energy and water conservation, construction debris recycling, and landscaping.
- <http://ourworld.compuserve.com/homepages/crf/homepage.htm> **The Caribbean Recycling Foundation, Inc.** A non-profit organization which seeks to promote recycling of solid waste via education and by offering recycling options to various industries. Offers activities, products, current values of recycling products, locations of recycling centers, recycling statistics, and a bi-monthly online journal. Coordinates the Green Hotelier award for 1400 hotels in the Caribbean, and the Foundation Hotel Environmental Award honoring hotels in Puerto Rico which provide examples of progressive recycling.
- [http://www.sidsnet.org/ir/sprep/whatsprep .htm](http://www.sidsnet.org/ir/sprep/whatsprep.htm) (there's a "_" after "whatsprep".) **The South Pacific Regional Environment Programme**, based in Apia, Samoa, serves all Pacific Island

countries and territories (including those under U.S. and French jurisdiction), plus Australia and New Zealand. Among its many programs, SPREP coordinates the Waste Management Education and Awareness Program initiated by the European Union, and a Pacific-wide pollution prevention and response program. Its online resources include publications covering pesticide use in the South Pacific, marine pollution prevention, recycling of waste oil, prevention of atmospheric pollution, international transfer and disposal of hazardous waste, and a land-based pollutant inventory.

- <http://www.islands.org/cii/ciipage1.htm> **Clean Islands International.** A non-profit, non-government organization with international members who are dedicated to providing educational and technical assistance to island communities for the sustainable development of solid waste handling processes. Cultivates individual and community awareness by supporting active participation of individuals, organizations, and businesses in planning, developing, and implementing programs such as litter prevention, recycling, and composting. Offers videos, hosts workshops, and provides a link to the **Wider Caribbean Solid Waste and Recycling Alliance**. Also operates the Virgin Islands Environmental Resource Station.

State-Level Programs--Mainland

- <http://www.arb.ca.gov/ba/ba.htm> **California Air Resources Board Business Assistance Program.** The Federal Clean Air Act Amendments of 1990 required that all states develop a program to assist small businesses in meeting the requirements of the Act. The California Air Resources Board (ARB) has developed a business assistance program to help all businesses understand air pollution requirements. The site offers business assistance materials as well as information on pollution prevention, information on their air pollution training courses, and compliance materials. Not only does this site aid California businesses, but it also provides a thorough listing of many other state Small Business Assistance Programs available on the Internet.
- http://www.dep.state.pa.us/dep/deputate/pollprev/pollution_prevention.html (there's a " " between the last two words). **Pennsylvania Department of Environmental Protection** pollution prevention and compliance assistance page. Frequently updated with lots of good stuff.

State-Level Programs--Hawaii

- <http://www.hawaii.gov/health/eh/eiwmsd02.htm> Information on how to acquire the *Directory of Waste Management Services in Hawai'i*, presented by the **Environmental Health Division of the Hawai'i Department of Health**. This helpful booklet contains information on a number of businesses that can assist with proper management, recycling, or disposal of a variety of wastes. It also contains information on consultants, a summary of hazardous waste regulations, and a list of government contacts for county, state and federal agencies.

<http://mano.icsd.hawaii.gov/doh/eh/eiswlit1.htm> **Hawai'i publications on solid waste handling available from the Environmental Health Division of the Hawai'i State Department of Health.** In addition to documents listed elsewhere on this page, this website lists several available publications, including:

* *The Backyard Composting Book* (City and County of Honolulu)

- * *The Hawai'i Guide to Alternatives and Disposal of Household Hazardous Wastes*
- * *How to Set Up a Local Program to Recycle Used Oil* (EPA)
- * *You Can Recycle on Oahu* (City and County of Honolulu)
- * *Managing Boat Wastes: A guide for Hawai'i Boaters* (Dept. of Health/SeaGrant)
- * *Alternatives to Household Products* (Hawai'i State Department of Health)
- * *Household Hazardous Waste: How to Reduce It and Safely Dispose of It* (City and County of Honolulu)

<http://www.hawaii.gov/health/eh/shwb/sw/index.html> Fact sheets on solid waste management available from the Solid Waste Division of the Hawai'i Department of Health, including (as of May 2000):

- * Hawai'i State Solid Waste Management Rules
 - * Lead Acid Battery Management
 - * Used Motor Vehicle Tire Management
 - * How to Prevent Illegal Dumping in Your Community
 - * Proper Disposal of Home Health Care Waste
 - * Reduce and Recycle Green Waste
 - * School Recycling Challenge 2000
 - * Christmas Tree Recycling Information
- **<http://www.hawaii.gov/dbedt/ert/chc/> **The Clean Hawai'i Center--a division of the Hawai'i Department of Business, Economic Development and Tourism.** CHC promotes the recycling and remanufacturing markets through the development of local end-use businesses, cooperative marketing and purchasing, and working with other agencies and organizations to divert recyclable materials from landfills and incinerators. The CHC offers statewide development assistance, workshops and seminars, publications (including the Hawai'i Industry Recycling Guide and a listing of local recycling businesses), and some direct financial assistance. Types of waste include paper, glass, plastics, metals, greenwaste, and construction and demolition materials.**
 - **<http://www.himex.org/> **The Hawai'i Materials Exchange, operated by the Maui Recycling Group.** HIMEX offers its services to help businesses, organizations, and individuals find alternatives to landfill disposal of recyclable materials, and facilitates no-cost trades of materials. Features an interactive database, guides to recycling in all four counties, and information on MRG's Restaurant Waste Minimization Project. (Specific guidelines developed by the restaurant program are available at <http://www.maui.net/~recyclemaui/restpp2.html> .)**
 - **<http://www.filesource.com/recyclehi/about.htm> **Recycle Hawai'i** is an organization that promotes recycling and resource awareness on the island of Hawai'i, via presentations and programs on composting, business recycling systems and opportunities, and hazardous waste minimization.**
 - **<http://www.hawaii.gov/dbedt/ert/ethanol/> **Ethanol Production in Hawai'i, available from the Hawai'i Department of Business, Economic Development and Tourism.** Downloadable report giving a comprehensive look at availability and costs of ethanol production from agricultural crops, organic waste, and solid waste. Includes a technology review and a discussion of markets for the product.**
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Programs in Other Island Areas

- <http://www.p2.adspr.net/> **The Puerto Rico Pollution Prevention Program (El Programa de Prevencion de Contamination de Puerto Rico).** *Available only in Spanish*, this site discusses the program's efforts--which are particularly directed at the island's small businesses. Technical and educational services are offered free to all clients.
 - <http://www.geocities.com/RainForest/Vines/9013/index.htm> **The Conservation Division of the Puerto Rico Department of Natural and Environmental Resources.** This office concentrates much of its efforts to educating Puerto Ricans about solid waste management, and to sponsoring cleanups of neighboring islands. Includes an online checklist of steps that individuals can take towards reducing marine pollution and conserving resources.
 - <http://www2.ite.net/usda/nrcspb/toc.htm> **The Pacific Basin Natural Resources Conservation Service.** This site offers contacts, links, and related programs for P2 and other conservation measures directed towards issues and activities in Guam, Saipan, American Samoa, Rota, and the Federated States of Micronesia.
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City-Level Programs

- <http://www.gvrd.bc.ca/waste/bro/wel.html> **The Greater Vancouver Regional District** has a 6-step program for businesses on how and where to start on a recycling program which is useful if you just don't know where to begin. A guide to the steps is downloadable as a PDF file.
 - <http://www.hawaii.gov/dbedt/ert/cc/> **The Honolulu Clean Cities Program, offered by the Hawai'i Department of Business, Economic Development and Tourism.** This program is part of a partnership with the US Department of Energy designed to achieve a cleaner environment in major US cities, and to stimulate local economies by increasing the use of alternative fuels and vehicles. Some 75 cities across North America have joined. Monthly meetings.
 - <http://lgean.org/html/p2-toc.cfm> **P2 in Local Governments, offered by the Local Government Environment Assistance Network.** Includes P2 strategies for building construction and maintenance; purchasing practices; and management of solid waste, wastewater, pesticides, water supply, and vehicles--all from the local government perspective. This informative site also includes several success stories from around the US, as well as a bibliography of other sources.
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Privately-Run Programs (nonlocal)

- <http://www.greenhotels.com/> **Green Hotels Association.** "Committed to encouraging, promoting, and supporting ecological consciousness in the hospitality industry."
- <http://www.bsr.org/resourcecenter/> **The Global Business Responsibility Resource Center.** Billed as a "comprehensive worldwide information resource on corporate responsibility," the Resource Center is provided by **Business for Social Responsibility (BSR)**, a US-based global organization for companies seeking to sustain their commercial success in ways that demonstrate

respect for ethical values, people, communities, and the environment. BSR assists its members by providing expert help as companies address the full range of corporate responsibility issues. Their online Resource Center can provide the necessary information for businesses to understand and implement more responsible policies and practices, and to promote increased knowledge and collaboration among other companies and other sectors. Find reports on the impacts of responsible business practices; steps companies can take to implement these practices; news about recent developments and trends; national and international standards established by public-interest organizations and business groups; exemplary company practices and policies; award and recognition programs that honor leadership companies; and additional information about nonprofit and public-sector organizations, web sites, publications, and other helpful resources around the world. The Resource Center is open to all users without charge. However, to use it, you must go through the brief registration process to obtain a password.

- <http://www.ccar-greenlink.org/> **CCAR Greenlink - a service of the Coordinating Committee For Automotive Repair.** "Helping automotive professionals save time and protect the environment."



News

- <http://clean.rti.org/resguide/> **Research Triangle Institute P2 Measurement Resource Guide.** Tools to measure the success of your P2 efforts.
- <http://tecweb.com/wlibrary/index.html> **Recycling World's Online Magazine of Recycling.** Article Archive.
- <http://greenradio.com/> **GreenWave Radio.** A weekly, sixty minute radio program that brings you the good news of how people are working towards an environmentally sustainable future. Earlier programs are archived here too (you'll need [RealAudio](#) to hear GreenWave).

Back to the Islands P2 Webpage

Agricultural Pollution

Agriculture is a broad term which can be divided into farming, forestry, livestock, aquaculture, and other operations. In addition, even in Hawaii, farms can range from large-scale operations covering thousands of acres to small operations run out of a family home. Thus, the range of P2 options and opportunities must cover this range of scales for various geographic areas.

General

- <http://www.wisc.edu/farmasyst/> **The national Farm*A*Syst/Home*A*Syst home page.** This site enables individuals to reduce or prevent pollution from farms, ranches, and homes (both urban and rural), using confidential environmental assessments. Has several slideshow training manuals for reducing pollution from drinking water wells, petroleum storage tanks, pesticides and fertilizers, household wastewater treatment, and other topics. Also links to state-level programs in all 50 states plus Guam, Puerto Rico and the U.S. Virgin Islands.
 - <http://es.epa.gov/oeca/ag/> **The EPA Agriculture Compliance Assistance Center.** A good "first stop" for information about reducing pollution from agricultural land and making good use of the latest pollution prevention technologies. Topics include air pollution, animal waste, composting, drinking water wells, fertilizers, forestry, nurseries and greenhouses, pesticides, petroleum storage tanks, and vehicle maintenance.
 - <http://enterprise.newcomm.net/agricult/efpi/> **The Atlantic Environmental Farm Plan (EFP) Initiative.** A joint project whose objective is to help farm families in Canada's Atlantic provinces develop a practical plan for operating their farms in an environmentally-responsible manner.
 - <http://www.pyr.ec.gc.ca/ec/frap/abate.html> **Publications of the Fraser River Action Plan, British Columbia.** Includes technical and non-technical documents on best management practices for general agricultural waste, general livestock waste, fruit and vegetable processing, dairy processing, poultry manure, fish processing, and forestry products.
 - <http://pasture.ecn.purdue.edu/~epados/cttpp/> **Center for Technology Transfer and Pollution Prevention (CT2P2).** Agricultural waste management information provided by Purdue University and EPA Region 5. Provides a set of computer-based P2 and technology transfer applications. Among these free, downloadable programs are ones providing guidance on water-efficient landscaping; on-farm storage of fertilizer, fuel, pesticides, and manure; livestock yard management; and agricultural best management practices for protecting groundwater.
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Livestock

- <http://www.dqacenter.org/environmental.htm> **The Milk and Dairy Beef Quality Insurance Center's environmental stewardship campaign.** Provides access to a variety of

resources--including the *DQA Stewards of the Land* Program, which focuses on positive initiatives that dairy producers can do on their own as a voluntary program.

- <http://www.dqacenter.org/agstar.htm> **The federal AgSTAR methane recovery program.** A voluntary federal program that encourages the use of effective technologies to capture methane gas from animal waste for use as an energy source. Especially for farms with over 300 animals.
 - <http://tn.nrcs.usda.gov/pwqc/index.htm> **The Poultry Water Quality Consortium.** A joint effort by the poultry industry and several government agencies to promote better environmental management by the poultry industry. Encourages the use of poultry byproducts as a resource rather than letting them become a pollution source. Facilitates the development and transfer of new technologies designed to protect water quality.
 - <http://res2.agr.ca/london/gp/efp/efpmenu.html> **The Ontario Agriculture Green Plan.** This site contains more information on EFPs, particularly regarding livestock manure and drinking water wells.
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Integrated Pest Management (IPM)

- <http://plantprotection.org/nipmn/menu.html> **The National IPM Network.** Allows you to search for information by commodity (crop, animal, etc.), by pest, by state/region, or by pest control tactic. Includes databases, and tools and software for assessing options.
- <http://www.wcpa.org/> **The Western Crop Protection Association.** A non-profit trade association. Site includes a good introductory essay on IPM, plus information on best management practices (BMPs), agricultural container recycling, water quality protection, and hazardous material education programs. For those times when pesticides must be applied, information is supplied on reducing spray drift.
- <http://www.ipmnet.org/knowledge.html> **The Consortium for International Crop Protection.** Provides links to a number of IPM-related sites, including ones dedicated to Africa, aquatic plants, California, Chesapeake Bay, Europe, Florida, the FAO, mulch, pheromones, traditional agriculture, tropical pests, USAID, USDA, U.S. EPA, and weeds. Allows you to search for information on specific crops, pests, or geographic areas.
- <http://ipmwww.ncsu.edu/biocontrol/biocontrol.html> **the Biological Control Virtual Information Center.** Provides specific information regarding the use of one organism to suppress another. A quick and useful guide.



Household Wastes

Most of us don't own farms, ranches, power plants, or hotels. What can the average homeowner do to prevent pollution, and in the process make the home environment a healthier and safer place? These websites provide information on a variety of household waste sources, in a number of formats--organized according to geographic location and scale of the organization's interest. Every little bit helps!!

National and Mainland US

- <http://www.uwex.edu/homeasyst/> **The national Home*A*Syst home page.** This site helps you investigate and take action to reduce home pollution and make your home environment more healthy. Among its offerings are a free downloadable booklet, *Help Yourself to a Healthy Home: Protect Your Children's Health* (24 pp.). More detailed information is available in the *Environmental Risk-Assessment Guide for the Home*; topics include hazardous household products, yard and garden, household waste, fuel storage, septic systems, heating and cooling, lead, drinking water, stormwater, and indoor air. There's also a video available, as well as links to state-level programs in all 50 states plus Guam, Puerto Rico, and the U.S. Virgin Islands.
- <http://www.epa.gov/glnpo/seahome/hwaste.html> **Household Waste Management. Downloadable HTML program from the EPA.** Teaches the user how to safely manage waste--particularly hazardous waste--in the home. Users can visit a 'virtual house' and choose extended discussions of the many products they might encounter there. Includes safe homemade alternatives, an enormous state-by-state database of contacts, and many activities for K-12 students.
- <http://www.edf.org/> **Environmental Defense (formerly the Environmental Defense Fund) website.** Contains information on a wide range of household P2 topics, including lawns and gardens ([/Want2Help/d_lawn.html](#)), solid waste ([/clickable_gcan/](#) and [/pubs/Brochures/BuySmart/](#)), composting ([/heap/](#) and [/pubs/Reports/compost.html](#)), and an interactive guide to reducing home energy usage ([/programs/Energy/green_power/x_calculator.html](#)). Also includes a description of ED's Pollution Prevention Alliance, which unites nearly 250 local, state, regional, and tribal organizations to promote P2 and sustainable communities in the Great Lakes region ([/programs/PPA/](#)).
- <http://www.ag.ohio-state.edu/~ohioline/hyg-fact/2000/2205.html> **Integrated pest management for the home vegetable garden. Presented by Ohio State University.**
- <http://spectre.ag.uiuc.edu/~vista/abstracts/alawnipm.html> **Integrated pest management for home lawns.** Downloadable PDF document from the University of Illinois.
- <http://www.panna.org/resources/advisor.html> **The Pesticide Advisor is offered by the Pesticide Action Network of North America.** Contains a set of PDF documents and links to help

reduce the use of hazardous pesticides for treatment of home and garden pests. Also provides information on finding food and organic by-products produced without pesticides, and what to do if someone is using pesticides nearby.

Hawai'i

<http://mano.icsd.hawaii.gov/doh/eh/eiswlit1.htm> Hawai'i publications on solid waste handling. In addition to documents listed elsewhere on this page, this website lists several publications available from the **Hawai'i State Department of Health**, including:

- * *The Backyard Composting Book* (City and County of Honolulu)
- * *The Hawai'i Guide to Alternatives and Disposal of Household Hazardous Wastes*
- * *How to Set Up a Local Program to Recycle Used Oil* (EPA)
- * *You Can Recycle on Oahu* (City and County of Honolulu)
- * *Managing Boat Wastes: A Guide for Hawai'i Boaters* (Dept. of Health/SeaGrant)
- * *Alternatives to Household Products* (Dept. of Health)
- * *Household Hazardous Waste: How to Reduce It and Safely Dispose of It* (City and County of Honolulu)

<http://www.hawaii.gov/health/eh/shwb/sw/index.html> Fact sheets on solid waste management in Hawai'i, including (as of March 2000):

- * Hawai'i State Solid Waste Management Rules
 - * Lead Acid Battery Management
 - * Used Motor Vehicle Tire Management
 - * How to Prevent Illegal Dumping in Your Community
 - * Proper Disposal of Home Health Care Waste
 - * Reduce and Recycle Green Waste
 - * School Recycling Challenge 2000
 - * Christmas Tree Recycling Information
- **<http://www.himex.org/> The Hawai'i Materials Exchange, operated by the Maui Recycling Group.** HIMEX offers its services to help businesses, organizations, and individuals find alternatives to landfill disposal of recyclable materials, and facilitates no-cost trades of materials. Features an interactive database, guides to recycling in all four counties, and information on MRG's Restaurant Waste Minimization Project. (Specific guidelines developed by the restaurant program are available at <http://www.maui.net/~recyclemaui/restpp2.html>.)
 - **http://www2.ctahr.hawaii.edu/wq/hifashas_main.asp (There's a "_" before "main" there.) Hawai'i's Pollution Prevention Information (HAPPI) website.** Materials for assessing the pollution risks around your home, school, farm, or watershed, and for reducing those risks. Part of the national Farm*A*Syst/Home*A*Syst Program.



Marinas and Small Boat Harbors

Marinas and small boat harbors can be significant sources of point source and nonpoint source pollution into coastal areas. While these have traditionally been largely ignored in favor of regulating larger operations such as shipyards and major ports, attention has recently turned to these smaller and less-regulated operations. Managing marinas and small boat harbors requires cooperation from a number of entities, in particular private boat owners and operators.

Nationwide Campaigns

- <http://www.epa.gov/OWOW/NPS/marinas.html> **EPA Office of Water links to EPA marina P2 guides and fact sheets.** Includes documents on marine engine emissions control and on success stories.
 - <http://www.p2pays.org/ref/03/02274.htm> **The 1999 National Clean Boating Campaign, presented by the North Carolina Department of Environment and Natural Resources.** Directed at managers and staff of marinas, boat yards, and yacht clubs. Includes tips on organizing on-site P2 training, recycling programs, and public recognition of successful measures. Also has links to success stories and other references.
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Regional and State Campaigns

- <http://commserv.ucdavis.edu/cesandiego/seagrant/coastour.htm> **University of California Sea Grant documents on clean boating and harbors.** Contains a Clean Boating Guide, and tips on topics such as selecting a hull paint, hull cleaning best management practices, and severe weather planning. Displays a clean boating poster available for ordering.
- <http://www.co.broward.fl.us/ppi00400.htm> **Pollution Prevention and Best Management Practices for Marine Facilities, presented by Broward County, Florida.** Comprehensive list of BMPs, covering topics such as sewage discharge, bilge water, petroleum products, paints, batteries, paint removal, boat maintenance, and hurricane preparedness.
- <http://www.dnr.state.md.us/boating/cleanmarina/> **The Maryland Department of Natural Resources' Clean Marina Initiative.** A progressive new program including marina operators and boaters in Maryland P2 efforts, including Chesapeake Bay. Includes a downloadable, PDF format guidebook, which is applicable to all marinas everywhere. Guidebook topics include siting considerations for new or expanding marinas, marina design and maintenance, stormwater management, waste containment and disposal, and control of petroleum and sewage.
- <http://mano.icsd.hawaii.gov/doh/eh/eiswlit1.htm> **Publications on solid waste handling available from the Environmental Health Branch of the Hawai'i Department of Health.** Lists

a number of publications, including:

- * *Managing Boat Wastes: A guide for Hawai'i Boaters* (Dept. of Health/SeaGrant)
 - * *You Can Recycle on Oahu* (City and County of Honolulu)
 - * *The Hawai'i Guide to Alternatives and Disposal of Household Hazardous Wastes*
 - * *Alternatives to Household Products* (Hawai'i Department of Health)
 - * *Household Hazardous Waste: How to Reduce It and Safely Dispose of It* (City and County of Honolulu)
 - * *How to Set Up a Local Program to Recycle Used Oil* (EPA)
- <http://h2osparc.wq.ncsu.edu/descprob/boatmrna.html> **Marina P2 information from North Carolina State University's Water Quality Group.** Covers boat operation, liquid waste and fuel handling, sewage disposal, and solid waste.
 - <http://www.epa.ohio.gov/opp/fact30.html> **An overview of marina P2, presented by the Ohio Environmental Protection Agency's Pollution Prevention Office.** Topics include engine repair and maintenance, fuel station activities, and boater education.
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Other Countries

- <http://www.sepa.org.uk/guidance/ppg/ppg14aug98.htm> **Pollution Prevention Guidelines for Marinas and Watercraft, presented by the Scottish Environment Protection Agency.** While directed to citizens of the UK, this well-organized document provides detailed information on reducing pollution from oil, boat hull cleaning and antifouling, and litter.
 - <http://www.pyr.ec.gc.ca/ec/frap/abate.html> **Fraser River Action Plan Pollution Abatement Reports.** Includes PDF documents on best management practices for marinas and small boatyards, and on BMPs for the ship building and repair industry. Topics include chemical and petroleum products storage, yard maintenance, spill prevention and control, training, and record keeping. Specific to British Columbia, but applicable anywhere.
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Shipyards

- <http://www.pprc.org/pprc/sbap/ship.html> **Shipbuilding and Repair Industry Resources.** Prepared by the Pollution Prevention Resource Center, EPA Region 5. While directed mainly at larger port operations, this site also contains valuable information relevant to marinas and small boat harbors. Includes reports and fact sheets--plus links to technical and regulatory information, shipyard industry environmental associations, and P2 research projects.

Tourism and the Hospitality Industry

Of all commercial buildings, hotels are the largest consumers of energy and water and the largest producers of waste per person, according to the International Hotel Environment Initiative. Yet tourists are increasingly concerned about their impact on the environment. Thus, the tourism sector needs to develop a new orientation towards waste reduction in general and pollution prevention in particular. Here are some of the more useful websites we've found on this topic.



General

- <http://www.greenhotels.com/> **Green Hotels Association.** "Committed to encouraging, promoting, and supporting ecological consciousness in the hospitality industry." Includes a free meeting planner's questionnaire.
- <http://www.pprc.org/pprc/pubs/topics/hosptlty.html> A good set of hospitality sector links, offered by the **Pacific Northwest Pollution Prevention Resource Center (EPA Region 10)**. Includes the following topics: Building commissioning, ecotourism, golf courses, restaurants, energy efficiency (e.g. lighting), and water efficiency. Includes several case studies. Some materials must be ordered.
- <http://outreach.missouri.edu/polsol/hotel.htm> **Pollution Solutions for Hotels and Motels, offered by the Outreach and Extension Office of the University of Missouri.** A searchable list of specific recommendations grouped under topics such as maintenance, purchase and inventory, landscaping, equipment changes, material substitution, and recycling. Includes guidance on developing a P2 plan, on environmental laws, and on funding sources. Also has a list of info resources and contacts.
- <http://atlenv.bed.ns.ec.gc.ca/g7/gg1.html> **The Green Globe Program** is an international initiative designed to address sustainable development issues in the global tourism industry. Its *long-term* program is available to hotels, gift shops and other tourism operations on a voluntary basis. Offers advice covering overall policy and development, energy conservation, recycling, and limiting the use of wasteful products. Little info is available right on the website, however.
- <http://195.212.4.4/> **EcoNETT is associated with the European Union's World Travel and Tourism Council.** This searchable site has an amazing number of links to other sites, in particular a list of case studies in green tourism practices.
- <http://www.ihei.org/main.htm> **The International Hotels Environment Initiative** is a nonprofit entity representing more than 8,000 hotels around the world, with a council including CEOs of the Hilton, Holiday Inn, Marriott, Sheraton, and Radisson chains. Publishes a quarterly magazine (*Green Hotelier*) and provides educational material such as an environmental action pack and "Going Green Makes Cent\$".

- http://www.dnr.state.wi.us/org/caer/cea/publications/pubs/co_074.htm **Greening the Lodging Industry, presented by the Office of Cooperative Environmental Assistance within the Wisconsin Department of Natural Resources.** Although specific to Wisconsin, this website gives useful tips for any lodging operation interested in waste reduction. Topics include recycling programs, employee training, guest education, energy and water conservation, and solid and hazardous waste reduction. The site finishes off with a list of publications and contacts available across the US.
 - <http://www.irf.org/> **The Island Resources Foundation.** A non-profit organization which provides information and educational resources specific to the Caribbean--but applicable to other island and coastal areas as well. Resources include downloadable reports promoting sustainable tourism programs for small tropical islands and best management practices for tourism in the Wider Caribbean. Reports include extensive, up-to-date bibliographies.
 - <http://www.club-mgmt.com/manager/9906/green.html> **Taking it to the Green is offered by the Virtual Clubhouse, the online companion to Club Management Magazine.** This webpage is a guide to establishing green programs for **country clubs**. Includes information on management of clubhouses (i.e., food and beverages), grounds, water, energy, solid waste, tennis courts, and swimming pools.
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Landscaping

- <http://www.stpete.org/wwwlands.htm> **Water Wise Landscapes, presented by the City of St. Petersburg, Florida.** Although specific to Florida, this site has information relevant to any landscaping operations. Includes information on planning, mulching, fertilizing, irrigation, and native plant use. Offers free mulch (within St. Petersburg area) and free equipment such as rain gauges and rain shutoff switches for sprinklers.
- <http://skyways.lib.ks.us/kansas/central/extension/lawn.html> **Extension Publications on Lawn and Groundcovers, presented by the Kansas State Library.** Unfortunately, many of the links on this comprehensive site are currently outdated. However, it is included here in the hopes that it will soon be updated with the correct links. Topics include irrigation, energy conservation, fertilization, seeding and sodding, weed control, and integrated pest management (IPM). If the link you want is unavailable, let them know.
- <http://www.epa.gov/glnpo/greenacres/> **Green Landscaping with Native Plants, presented by the EPA Region 5 office.** Provides detailed information on use of native plants for landscaping, including several case studies and information about workshops.
- <http://scrtec.rtec.org/track/tracks/t01297.html> **Landscaping to Save Energy, presented by the TrackStar Organization.** Consists of a list of links to sites covering such topics as landscaping plans, plant selection, planting procedures, and fertilization.
- <http://www.muextension.missouri.edu/xplor/agguides/hort/g06910.htm> **Landscape Plantings**

for Energy Savings. Department of Horticulture, University of Missouri. Provides visual and written guidance on placement of plantings for windbreaks, shading, and creation of dead air space. Also available as a PDF download.

- <http://aggie-horticulture.tamu.edu/extension/homelandscape/energy/energy.html> **Landscaping for Energy Conservation. Texas Agricultural Extension Service.** Same as above, but includes information (including plant species) more specific to Texas and surrounding areas.
 - <http://www.aces.edu/department/ipm/mulches.htm> **Mulches for the Landscape. Auburn University.** Although this is a short document with information specific to Alabama, it provides detailed information on several types of mulch which can be applied anywhere.
 - <http://es.epa.gov/oeca/ag/tcop.html> **Information on composting from the EPA.** Includes a list of publications.
 - http://net.indra.com/~topsoil/Compost_Bibliography.html **Composting Resource List compiled by Eric S. Johnson, a resident of Boulder, Colorado.** Includes a list of relevant publications and links to several good composting sites.
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Golf Courses

- <http://www.usga.org/green/> **The US Golf Association's Green Section** has an impressive website providing technical and management recommendations for golf courses, covering such topics as water resources, pesticides, fertilizers, wildlife, floods, alternative turfgrasses, and public involvement. A component of this program is the Audubon Cooperative Sanctuary Program for Golf Courses, which certifies courses as being environmentally managed. The program has fully certified a number of golf courses across the country (but only one in Hawaii!).
- <http://c2p2.sarnia.com/hot/turf-management/guides/greening.html> **The Canadian Centre for Pollution Prevention** presents the document, *Greening your B.C. Golf Course: A Guide to Environmental Management*, as a PDF download.
- <http://www.ces.ncsu.edu/TurfFiles/pubs/wqwm154.html> **Water Quality and Golf Course Superintendents**, published by the North Carolina Cooperative Extension Service. An 18-page document giving specific guidance on erosion, wetlands, turfgrass selection, fertilizers, irrigation, mowing, IPM, pesticides, and storage tanks.
- <http://www.naturgolf.com/superint.htm> **The NaturGolf Company** offers a free software program which enables golf course superintendents to efficiently develop an environmental program for their courses.
- <http://www.p2pays.org/ref/01/00210.htm> **Tips for golfers themselves**, compiled by the North Carolina Department of Environment and Natural Resources. Topics include eschewing golf carts, buying biodegradable golf tees, accepting occasional browning of the fairways, and urging

golf courses to start recycling programs.

Laundries

- <http://www.pprc.org/pprc/sbap/laundry.html> **Business Assistance for Industrial Laundry Resources.** Offered by the Pacific Northwest Pollution Prevention Resource Center (EPA Region 10). Includes several online fact sheets for laundry operators, plus excellent links for technical, regulatory, and research information.
 - <http://es.epa.gov/techinfo/facts/dryclean.html> **The EnviroSense Industry Overview of Drycleaning and Laundry Facilities,** offered by the EPA. Provides information on specific techniques, equipment, and chemicals used by or available to laundries and drycleaners.
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Restaurants

- <http://www.maui.net/~recyclemaui/restpp2.html> **The Maui Recycling Group's Restaurant Waste Minimization Project.** Specific guidelines for waste reduction from restaurant operations.
 - <http://www.gvrd.bc.ca/waste/bro/swcafe.html> **Waste Reduction in the Restaurant Industry.** Presented by the Greater Vancouver Regional District, this guide is based on a program implemented by Vancouver restaurants, which achieved up to 50% reductions in waste generation. Available in PDF format.
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Recycling

- <http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/RECYCLE/Tips/Hotels.htm> **Recycling tips and steps for hotels and motels,** presented by the Pennsylvania Department of Environmental Protection.
- <http://www.himex.org/> **The Hawai'i Materials Exchange,** operated by the Maui Recycling Group. HIMEX offers its services to help businesses, organizations, and individuals find alternatives to landfill disposal of recyclable materials, and facilitates no-cost trades of materials. Features an interactive database, guides to recycling in all four counties, and information on MRG's Restaurant Waste Minimization Project.
- <http://ourworld.compuserve.com/homepages/crf/homepage.htm> **The Caribbean Recycling Foundation, Inc.** A non-profit organization which seeks to promote recycling of solid waste via education and by offering recycling options to various industries. Offers activities, products,

current values of recycling products, locations of recycling centers, recycling statistics, and a bi-monthly online journal. Coordinates the Green Hotelier award for 1400 hotels in the Caribbean, and the Foundation Hotel Environmental Award honoring hotels in Puerto Rico which provide examples of progressive recycling.

Energy and Water Efficiency

- http://www.idrc.ca/industry/jamaica_e7.html (There's a " _ " between jamaica and e7). **Energy Efficiency and Tourism: Focus on the Caribbean.** Discussion Paper prepared for the **Roundtable on Energy Efficiency--Tourism Sector**, held in Jamaica in 1997, under the auspices of the **The Inter-American Program for Environmental Technology Cooperation in Key Industry Sectors**. This excellent, 19-page paper discusses options and opportunities for increased efficiency in use of both energy and water by the tourism industry in Jamaica and the Caribbean.
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Ecotourism

Ecotourism is a fairly vague term; thus, all of the websites in this section also apply to varying degrees to more traditional tourism operations.

- <http://www.tourism.gov.au/publications/BPE/Start.html> **The Australian Office of National Tourism's Best Practice Ecotourism Site.** A searchable guide to energy and waste minimization for tourism operations in general. Covers--briefly--a wide variety of topics including transportation, energy and water conservation, laundries, equipment, solid waste, building materials, and food and garden materials. Also gives guidance on cost/benefit analysis, self-audits, marketing, and (Australia-specific) contacts.
 - <http://planet-hawaii.com/hea/> **The Hawaii Ecotourism Association.** Provides information on ecotourism issues, links to other sites, a directory of members, and a guide to activities which promote the conservation of Hawaii's natural and cultural heritage. Has a quarterly newsletter.
 - <http://www.cba.hawaii.edu/pbcp/ecokit.htm> **The Ecotourism Planning Kit, developed by the University of Hawaii's Pacific Business Center.** Designed specifically for ecotourism operators on Pacific islands. Includes a checklist, instruction on securing funding and developing environmental impact statements, a list of US suppliers of ecotourism products and services, and several case studies. Available for downloading in PDF format.
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Case Studies

- <http://www.kingfisherbay.com/> **A hotel in Queensland, Australia.**
- <http://www.whitepoint.com/wpenver.htm> **A hotel in Nova Scotia, Canada.**



Fact Sheets

Here is a sampling of fact sheets geared specifically toward pollution prevention in Hawaii. Many of the ideas are applicable elsewhere, however--especially to other island areas. More fact sheets will be added to this page in the future.

General and Household P2

Greenwaste

Alternatives to Household Hazardous Materials

Nonpoint Source Pollution

GreenCycling: Tips for Less Waste and Greener Yards

Department of Public Works
Division of Refuse Collection and Disposal
City and County of Honolulu

"Grasscycling"

Leave grass clippings on your lawn to return nutrients to the soil. Grasscycling also will reduce time spent raking and bagging, and will help you save on trash bag expenses.

Do-It-Yourself

Compost grass clippings, leaves and yard trimmings in your backyard. Learn how to turn your yard waste into valuable soil amendments at community workshops. Get an up-close look at various pre-made and do-it-yourself composting bins. Details below.

Drop-Off

Take your yard waste to Refuse Convenience Centers or Transfer Stations in Waimanalo, Waipahu, Ewa, Wahiawa, Laie, Kailua (Kapaa) and Honolulu (Keehi). Yard waste is separately collected at these sites and processed into mulch or compost. Look for additional Christmas Treecycle sites at selected parks and schools during the first two weekends after New Year's Day. For more information, call 527-5335.

Use Mulch

Organic mulch holds in moisture, controls weeds and reduces soil erosion, saving energy and resources. Mulch can be used around plants in the garden or as soft "paving" for garden paths. Mulch (and compost) can be purchased at local garden shops or directly from Oahu composting companies. Mulch is also available free from the City. For more information, call 527-5335.

Curbside Pickup

In automated refuse collection neighborhoods, yard waste is collected separately at the curb twice per month. This special yard waste collection truck delivers the material to a composting site. Today, most of Oahu's neighborhoods are serviced with automated refuse collection.

- You are encouraged to recycle your yard waste. Yard waste includes leaves, branches, hedge trimmings, tree trimmings, grass clippings, and Christmas trees (no ornaments, tinsel or flocking, please).
- Keep yard waste separate from your household rubbish. Bag, bundle or use collection containers no larger than 35 gallons. Do not use your automated pickup container. Your yard waste collection days are indicated on the sticker placed on your rubbish container.
- If your yard waste collection schedule coincides with your regular rubbish collection days, place your yard waste at least five feet from the automated pickup container and any other obstruction. If

this schedule does not coincide with your regular rubbish collection days, place your yard waste at the curb where you normally place your container.

- Yard waste should be securely bagged or cut into three-foot lengths and bundled.
- ONLY YARD WASTE, please. This material is taken to a composting facility. Yard waste mixed with household rubbish will not be collected.
- Neighborhoods still serviced with manual collection can participate in other greencycling options listed below.

Backyard Composting Workshops

You can compost in your own backyard. Your yard trimmings and kitchen scraps can be turned into humus, a soil enricher for your lawn and garden. You can learn how at community workshops held at these locations.

<p>The Hawaii Nature Center 2131 Makiki Heights Drive Honolulu, HI 96822 \$3 for members, \$5 for non-members</p>	<p>The Honolulu Zoo 151 Kapahulu Avenue Honolulu, HI 96815 \$4 entry fee to Zoo</p>
<p>The Pearl City Urban Garden Center 962 Second Street Pearl City, HI 96782 All workshops are free</p>	<p>Hoomaluhia Botanical Garden 45-680 Luluku Road Kaneohe, HI 96744 All workshops are free</p>

Workshops are held on Saturday mornings from 9:30 to 11:00 a.m.
To register, call the City's Recycling Office at 527-5335.

For more information on recycling, call 527-5335.

For collection information, call your neighborhood collection yard:

Aiea-Pearl City-Ewa.....	455-9644
Haleiwa-Waiialua.....	637-4795
Honolulu.....	523-4424
Laie.....	293-5657
Kaneohe-Kailua-Waimanalo.....	262-7298
Wahiawa-Mililani.....	621-5241
Waianae.....	696-3421

Alternatives to Household Hazardous Products

Hawai'i Department of Health
Pollution Prevention Program

Aerosol Cans

The Problem: In an attempt to replace freon, a new generation of propellants has come into use. Isobutane, propane and butane don't destroy the earth's ozone shield, but studies of animals find that they are toxic to the heart and central nervous system. Aerosols may also contain solvents including ethanol, isopropyl alcohol and propylene glycol that are "volatile organic compounds." VOC's contribute to global warming and can contaminate ground and surface waters.

Alternative: Aerosol sprays are often no more effective than using liquid products in non-aerosol containers. Purchase products in pump spray, roll-on, liquid, or non-aerosol spray.

Dishwashing Detergent

The Problem: Detergents are derived from scarce petroleum, are non-biodegradable and usually contain chemical additives such as artificial fragrances and colors. Detergents cause more child poisonings than any other household product. Automatic dishwashing powder contains harsh detergents with high concentrations of phosphates. Released into streams and storm drains, phosphates kill fish and other aquatic life.

Alternative: Hand washing: Use castile, glycerine-based, vegetable-oil based, or other naturally-derived liquid soap. For dishwashers: In soft water, use 50% borax and 50% washing soda. Add additional borax for harder water, or choose a low-phosphate detergent and dilute with baking soda.

Drain Openers

The Problem: The lye, hydrochloric acid and sulfuric acids found in drain cleaners can burn human tissue, causing permanent damage. If not used precisely according to instructions, some products can explode. These products are particularly dangerous around children.

Alternative: Always use a drain basket. To maintain clean drains: mix 1/2 cup of salt and 1/8 cup cream of tartar. Pour mixture down the drain and rinse with hot water (mixture not effective if stored). Drains can also be kept free of build-up with bacterial or enzyme-based cleaners. To clear clogs: use 1/4 cup baking soda followed by 1/2 cup vinegar; cover until fizzling stops, then flush with hot water. For persistent clogs, use a metal drain snake.

Furniture and Floor Polishes

The Problem: Furniture polishes contain petroleum distillates, which are flammable and very dangerous if swallowed. Avoid contact with skin and work in well-ventilated areas. Most wood polishes contain phenol, which causes cancer in lab animals. Residual vapors contaminate your home long after application. Wood polish can also cause severe skin irritation.

Alternative: Polish unvarnished wood with almond, walnut or olive oil; wipe off excess oil. Use a mild vegetable oil soap on varnished wood. For vinyl tile and linoleum, mix 1/4 cup white vinegar, 1/4 cup washing soda, and 1 gallon warm water, and apply with a damp mop. Scrub scuff marks with toothpaste. For wood floors, use a mixture of mild vegetable oil soap and water and dry immediately.

Glass Cleaners

The Problem: Glass cleaners emit ammonia mist, which you can inhale.

Alternative: Use rubbing alcohol for first application only to remove the residual wax from commercial glass cleaners. Then clean with a mixture of 50% white vinegar and 50% water. Use newspaper or a squeegee to avoid streaking.

Laundry Products

The Problem: Most laundry products are non-biodegradable detergents made from petroleum. Even phosphate-free, biodegradable detergents contribute to water pollution.

Alternative: Use laundry soap and add a water softener like borax, washing soda, or baking soda to prevent soap residue. Soak heavily-soiled items in warm water with 1/2 cup washing soda for 30 minutes. Look for laundry disks; they eliminate the need for detergent and fabric softener.

Metal Polishes

The Problem: The fumes from phosphoric and sulfuric acids and ammonia contained in metal polishes pollute the air in your home.

Alternative: Boil silver flatware in 2 quarts of water with 1 teaspoon baking soda, 1 teaspoon salt, and a piece of aluminum foil. Polish silver and stainless steel with a paste of baking soda and water. For brass,

use equal parts of salt and flour with a little vinegar. For copper, use lemon juice or hot vinegar and salt. For chrome, use rubbing alcohol or white flour on a dry rag. For aluminum, dip a cloth in lemon juice, polish, then rinse with warm water.

Mold and Mildew Cleaners

The Problem: Mold and mildew cleaners contain pesticides. Chemicals for killing mold and mildew may cause eye and skin irritation and lung damage.

Alternative: Wash bath and sink grout often so that mold can't get established, then seal with water sealer. To inhibit mold and mildew, wash area with 1/2 cup borax and 1 gallon hot water. Scrub mildew spots with borax/water mix and a nylon scouring pad. To clean mildew from a plastic shower curtain, wash with vinegar full strength or use 1/2 cup borax to 1 gallon hot water.

Flea Control

The Problem: These products are pesticides that are not only harmful to unwanted pests, but to humans and pets as well. Avoid using conventional flea collars because they expose your pets to constant low levels of toxic materials. If you must use them, limit use to periods of serious infestation. The key is to control infestations through a combination of alternatives. Never spray your animal outdoors where the wind can carry the pesticide to your neighbors' lawns and homes.

Alternative: Vacuum homes frequently. Remove, seal and dispose of vacuum bag outside the home and away from pet. Clean pet bedding regularly. Steam clean the carpet; it kills adult fleas, larvae and some eggs. Vacuum shortly after carpet is dry. Apply a dusting of silica gel to pet bedding and carpet to dehydrate adults. Lower toxicity pesticides include "IGRs," insect growth regulators. Use a flea comb on your pet, and wash pet with mild soap and water. Feed your pet Brewer's yeast and vitamin B; this can also ward off fleas.

Oven Cleaners

The Problem: These products contain lye, hydrochloric acid and sulfuric acid--which can burn human tissues, causing permanent damage. If not used precisely according to instructions, some products can explode. They are very poisonous to children and adults.

Alternative: Protect oven floor from spills with aluminum foil. Clean stains by mixing 2 tablespoons liquid dish soap, 2 teaspoons borax, and 2 cups of warm water; apply and let sit for 20 minutes, then scrub with steel wool and non-chlorine scouring powder. Rub very dirty areas with a stick of pumice. For fresh spills, pour on lots of salt and scrape off after the oven cools.

Surface Cleaners

The Problem: Household cleaners and personal products include a wide range of products found in the home, and a wide range of environmental health risks. Ammonia and chlorine are found in many all-purpose cleaners. Ammonia may irritate your lungs, causing coughing or shortness of breath. Chlorine forms cancer-causing compounds when released into the environment. Mixed together, they form deadly chloramine gas.

Alternative: For general cleaning, use 1/2 cup of washing soda or borax per bucket of hot water. For scouring, use a paste of baking soda and warm water. Scrub with a damp cloth or scrubbing pad.

Toilet Cleaners

The Problem: These products contain chlorine and hydrochloric acid, which can burn your skin and eyes. Swallowing these products can cause death. Manufacturer's warning labels tell you not to breathe the product that you are using!

Alternative: Clean and deodorize toilets with 1/2 cup borax and 1 gallon warm water. Pour in 1 cup of borax and let it sit overnight. To remove stains, coat with paste of lemon juice and borax, let sit about 20 minutes and scrub with bowl brush.

Note: Most supermarkets and drugstores offer packaged products which are less dangerous and polluting than typical cleaning products. Search these out and make use of them.

For information on household hazardous waste disposal and recycling, please call your county Department of Public Works at (area code 808):

City and County of Honolulu, Household Hazardous Waste Program	527-5358
County of Maui	243-7875
County of Kaua'i	245-3602
County of Hawai'i	961-8338

For information about disposal to county sewer systems, please call your county Wastewater Department at:

City and County of Honolulu	527-5363
County of Maui	243-7417
County of Kaua'i	241-6616
County of Hawai'i	961-8338

To report *illegal discharges* to storm drains and sewer systems on Oahu, call 527-5091.

For *poison control*, call 941-4411 (toll-free from all islands).

Department of Health *Environmental Hotline*: 586-4350

To order *copies of this pamphlet*, call the Environmental Planning Office at 586-4337.

Nonpoint Source Pollution

Nonpoint Source Pollution Management Program
Environmental Planning Office
Hawai'i Department of Health

Questions and Answers

Q: Why do our lakes, streams, and ocean water turn red with mud after a heavy rain?

A: Largely because of a type of pollution called "nonpoint source pollution." Since the early 1970s, federal and state governments have focused on controlling discharges from sewage treatment and industrial plants. Now that we've made progress in controlling these sources, we are concentrating on the serious water quality problems associated with nonpoint source pollution.

Q: What is nonpoint source pollution?

A: Unlike pollution from industrial and sewage treatment plants, nonpoint source pollution comes from many diffuse sources. Nonpoint source pollution is caused by rainfall moving over and through the ground. As the runoff moves, it picks up and carries away natural and manmade pollutants, finally depositing them into our streams, wetlands, coastal waters, and even our underground sources of drinking water. These pollutants include:

- Excess fertilizers and pesticides from fields and gardens;
- Oil, grease, and toxic chemicals from urban and industrial areas;
- Sediment from construction sites, crop and forest lands, and eroding stream banks; and
- Bacteria and nutrients from livestock, pet wastes, and faulty septic systems and cesspools.

Q: What are the effects of these pollutants?"

A: We know that these pollutants may have harmful effects on drinking water supplies, recreation, fisheries, and wildlife.

Q: What causes nonpoint source pollution?

A: We all play a part. Each of us can contribute to the problem without even realizing it.

Q: What can we do about nonpoint source pollution?

A: We can all work together to reduce and prevent nonpoint source pollution. The federal government is responsible for managing federal lands to control soil erosion. The state government has developed legislation governing groundwater protection and water quality standards. The counties administer zoning and grading ordinances. Each individual can plan an important role by practicing conservation and by changing everyday habits.

What You Can Do

Urban Stormwater Runoff

- Keep trash, pet waste, leaves, and debris out of street gutters and storm drains. These flow directly to streams and the ocean.
- Apply lawn and garden chemicals sparingly.
- Dispose of used oil, paints, and other household chemicals properly, not in storm drains or down the sink. Call the Department of Health for disposal information.
- Do not hose spilled brake fluid, oil, and grease into the street where they can eventually enter storm drains. Apply absorbent clay-based kitty litter or newspaper to the spill, then dispose in a trash bag.
- Control soil erosion on your property by planting ground cover.

Agriculture

- Minimize use of fertilizers and pesticides.
- Reduce soil erosion with ground covers, residues, contour planting, and other practices.
- Use rotational grazing systems on pasture and rangeland.
- Dispose of pesticides, containers, and tank rinse in accordance with the pesticide label.

Forest Land Management

- Prevent forest fires. Fires destroy vegetation causing erosion, flooding, and the introduction of weedy plants.
- Do not release pets into the wild. They will degrade watershed quality.
- Obtain proper permits for harvesting forest vegetation.

For more information, please contact:

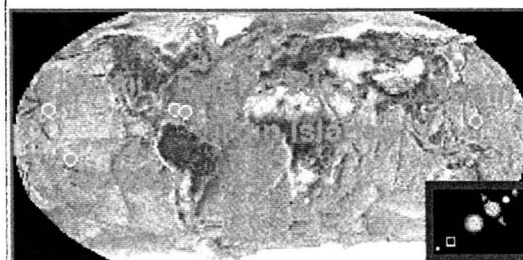
Nonpoint Source Pollution Management Program
Environmental Planning Office
Department of Health
919 ala Moana Boulevard, Room 304
Honolulu, Hawai'i 96814-4912
Phone: (808) 586-7550; or call toll-free from Neighbor Islands:
(808) 468-4644, extension 67550

Pollution Prevention Information Center for Islands

En Espanol

<p>What is it?</p>	<p>The Pollution Prevention Information Center for Islands is being developed to serve as a resource for agencies, businesses, and individuals in Hawaii, Guam, American Samoa, Puerto Rico, and the US Virgin Islands who wish to learn more about minimizing waste and pollution and how to operate in an environmentally friendly way while maximizing efficiency.</p>
<p>Why is it?</p>	<p>Small tropical islands are particularly vulnerable to environmental damage. Given our limited water and land resources (and range of economic opportunities) we can ill-afford to misuse our fragile environments. For many of us the beauty of our islands' surroundings is our most marketable resource. Tourism is the primary source of revenue and jobs for many islands. We must protect what we have.</p> <p>Pollution and waste prevention strategies can be economically advantageous to those who follow them. In many cases businesses and individuals can save money \$\$ as well as resources. It is the aim of this program to help people find ways to avoid waste.</p> <p>We further hope to help businesses understand and comply with the sometimes confusing array of environmental regulations that they face today.</p>
<p>Who is it?</p>	<p>Several agencies on islands in the Pacific and Caribbean will be participating in the Pollution Prevention Information Center for Islands; these include the following :</p>

[University of Hawaii Environmental Center](#)
[University of Hawaii Sea Grant](#)
[University of Hawaii Water Resources Research Center](#)
[The State of Hawaii Department of Health \(Contact number for pollution prevention services in Hawaii is 586-4240\)](#)
[Puerto Rico P2 Center](#)
[Guam EPA office](#)
[American Samoa EPA](#)
[American Virgin Islands EPA](#)



P2 Resource Specialists...

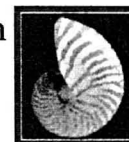


We are developing our capacity to provide P2 information, gathering materials and information for our island clients. In the meantime we depend heavily on resources developed in the other states. The Pollution Prevention Center for Islands is a member of the Pollution Prevention Resource Exchange, P2Rx, a national network of regional pollution prevention information centers. Through P2Rx, we can provide information retrieval services from experts around the United States.

You can also visit the National Pollution Prevention Roundtable's expertise yellow pages at http://www.p2.org/inforesources/nppr_yps.html#about for more information and assistance.



In our webpages we will initially be focusing on issues that are of special concern on the islands. We have identified the following topics as being especially pertinent to the Pacific and Caribbean islands:



- Waste minimization for hotels and resorts
- Shipboard disposal of waste for boat operators
- Household hazardous waste
- Small scale agricultural operations
- Automotive repair and maintenance operations

Click [here](#) to see some links we've identified as useful if you are looking for ways to minimize waste and pollution at *your* operation.

OR

Click [here](#) to learn more about the background to EPA's Pollution Prevention (P2) Program

**For more information please contact Jacquelin Miller or Peter
Rappa at:**



**University of Hawaii at Manoa
Environmental Center
Krauss Annex 19
Honolulu, HI 96822
Phone: (808) 956-7361
Fax: (808) 956-3980
Email: jackiem@hawaii.edu
rappa@hawaii.edu**

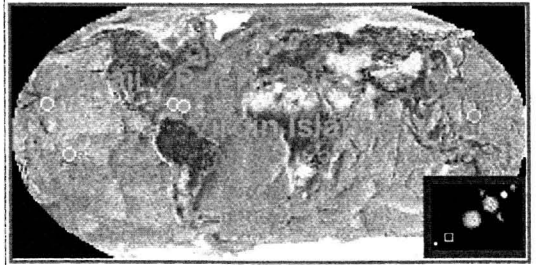


Centro de Prevencion de Contaminacion Para las Islas

In English

<p>Que Es?</p>	<p>El centro de prevencion de contaminacion para las Islas esta siendo desarrollado para servir como recurso a agencias, empresas y ciudadanos en Hawaii, Guam, Samoa Americano, Puerto Rico y las Islas Virgen, quienes desean aprender mas sobre la reduccion de desperdicios y contaminacion. De igual manera provee sugerencias sobre como operar de forma ambientalmente saludable sin sacrificar la eficiencia de las operaciones.</p>
<p>Porque Existe?</p>	<p>Las pequenas islas tropicales son particularmente vulnerables a danos ambientales. Debido a nuestros recursos limitados de agua, terreno y oportunidades economicas, no nos podemos dar el lujo de hacer mal uso de nuestro fragil ambiente. Para muchos de nosotros, la belleza de las islas que nos rodean es nuestro recurso mas valioso en el mercado. En muchas de las islas, no hay industrias que prevalezcan o dominen mas que la industria turistica. Debemos proteger lo que poseemos.</p> <p>La prevencion de la contaminacion y la reduccion en la generacion de desperdicios pueden ser economicamente ventajosas para aquellos que se rigen por ellas. En muchas ocasiones, empresas y ciudadanos pueden ahorrar tanto dinero como recursos. Es nuestro empeno a traves de este programa ayudar a evitar desperdicio. Tambien nos proponemos ayudar a las empresas a comprender y cumplir con las vasta lista de reglamentaciones, muchas veces confusas que confrontan a diario.</p>
<p>Quienes Somos?</p>	<p>Un sinumero de agencias de diferentes islas estaran participando en el Programa de Prevencion de la Contaminacion para las Islas. Dichas incluyen:</p>

Centro Ambiental de la Universidad de Hawaii
Universidad de Hawaii "Sea Grant"
Centro de Investigacion de Recursos de Agua de la
Universidad de Hawaii
Departamento de Salud del Estado de Hawaii (numero para
informacion de prevencion de la contaminacion en Hawaii:
586-4240)
Programa de Prevencion de Contaminacion de Puerto Rico
Proteccion Ambiental para los territorio de Guam
Proteccion Ambiental para los territorio de Samoa
Americano
Proteccion Ambiental para los territorio de las Islas Virgen
Americano



P2 Especialista En Recursos...

Estamos avanzando en nuestra capacidad de proveer informacion P2 y reuniendo materiales e informacion para nuestras Islas clientes, mientras tanto dependemos fuertemente del desarrollo de recursos en otros estados.



El centro de prevencion de la contaminacion para las Islas es miembro del Intercambio de Recursos para la Prevencion de la Contaminacion, P2Rx, una cadena Nacional de centros de informacion regional para la prevencion de la contaminacion. A traves del P2Rx, podemos proveer informacion y obtener servicios de expertos al rededor de los Estados Unidos.

En estas paginas estaremos prestandole mayor atencion a asuntos que son de mayor importancia para las Islas. Hemos identificado los siguientes topicos; topicos que creemos pertinentes a las Islas del Pacifico y el Caribe:



- Reduccion de desperdicios en los hoteles y otras hospederias
- Disposicion de desperdicios abordo de embarcaciones
(Oprima [aqui](#) si desea ver la pagina de Hawaii para el manejo de desperdicios en los botes)
- Disposicion de desperdicio domestico peligroso

- Operaciones de agricultura en menor escala
- Operaciones de reparacion y mantenimiento automotriz

Oprima [aqui](#) para ver algunos enlaces que hemos identificado y que le seran de utilidad si esta buscando formas de reducir desperdicios y contaminacion dentro de nuestras areas geograficas.

Oprima [aqui](#) para conocer mas sobre el transfondo del programa para la prevencion de la contaminacion de la Agencia Federal de Proteccion Ambiental.

Para mas informacion comunicarse con Jacquelin Miller/Peter Rappa a:



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- <http://www.epa.gov/smallbusiness/> La EPA abre sus puertas a las pequeñas empresas ofreciendo una ubicación centralizada desde la cual es posible acceder a un amplio rango de información ambiental así como asistencia técnica de los recursos. Las preguntas que frecuentemente se responden cubren inquietudes tales como la obtención de permisos, registro de pesticidas y que hacer en caso de una emergencia ambiental. Este sitio también provee enlaces a contactos y asistencia técnica hacia leyes y regulaciones que afectan su empresa y hacia programas ambientales que le pueden ayudar a ahorrar dinero y a mejorar sus ingresos.
- <http://es.epa.gov/oeca/mfcac.html> Centros de Asistencia para Regular Pequeñas Empresas. EPA's Oficina de Promesa de Cumplimiento y Aplicación, en asociación con la industria, las instituciones académicas, grupos ambientales y otras agencias federales y estatales, han establecido Centros "virtuales" de Asistencia nacional de Cumplimiento para nueve sectores específicos de la industria fuertemente poblada por entidades y pequeños negocios que enfrentan regulaciones federales considerables. Los sectores incluyen: la impresión, el metal terminando, servicios automotores y reparación, placas impresas de cableado, fabricantes químicos pequeños y agricultura. Los Centros están diseñados para servir como el primer lugar donde las pequeñas empresas pueden ir a encontrar información acerca del cumplimiento de regulaciones que se ajusten al sector de su industria.
- <http://www.eren.doe.gov/energytips/> Consejos a las Pequeñas Empresas acerca del Ahorro de Energía Esta página del departamento de Energía de los Estados Unidos, encamina a las pequeñas empresas a dar pasos de eficiencia energética que les permitan ahorrar dinero, además de los pequeños consejos, se provee información detallada acerca de cómo implementar sus propios esfuerzos a largo plazo para la conservación de la energía, hacia dónde dirigirse en caso de necesitar asistencia de expertos y una lista de futuras referencias y fuentes.
- <http://www.arb.ca.gov/ba/ba.htm> Junta directiva de recursos ambientales de California, el programa federal de limpieza ambiental, ley de enmienda de 1990 estableció que todos los estados desarrollaran un programa de asistencia a pequeñas empresas. Con el propósito de cumplir los requerimientos de la ley, la junta directiva de recursos ambientales de California ha desarrollado un programa de asistencia para ayudar a todas las empresas a entender los requerimientos de contaminación ambiental. Esta página ofrece tanto materiales de asistencia a las empresas como información acerca de los cursos de entrenamiento en contaminación ambiental y materiales de acatamiento. Además no solo asiste a empresas en California sino que también provee una minuciosa lista de muchos otros estados en los cuales se encuentran disponibles en el internet los programas de asistencia a las pequeñas empresas.
- <http://www.bsr.org/resourcecenter/> El centro de recursos de responsabilidad global empresarial conocido como un "amplio recurso de información a nivel mundial en responsabilidad corporativa," el centro de recursos es proveído por Compañías por Responsabilidad Social (BSR), una junta directiva en E.U.- como organización global para compañías que buscan sostener su éxito comercial utilizando medios que demuestren respeto por valores éticos, gente, comunidades y el medio ambiente. La BSR asiste a sus miembros brindándoles ayuda experta a medida que ellos abordan por completo los ámbitos de la responsabilidad corporativa. Su Centro de Recursos en línea puede proveer la información necesaria para que las empresas entiendan e implementen más políticas y hechos responsables y para promocionar el aumento de conocimiento y colaborar entre otras compañías y otros sectores. Al encontrar reportes en las prácticas de compañías responsables; las empresas que siguen estos pasos pueden implementarlos en sus propias prácticas; noticias acerca de los últimos desarrollos e innovaciones; parámetros nacionales e internacionales

establecidos por organizaciones de interes publico y grupos de empresas; practicas y politicas de companias ejemplares; premios y programas de reconocimiento que honran companias de liderazgo; e informacion adicional acerca de organizaciones publicas y sin animo de lucro, paginas de internet, publicaciones, y otros recursos de ayuda al rededor del mundo. El Centro de Recursos esta abierto a todos los usuarios sin ningun costo. Sinembargo, para usarlo usted debe pasar a traves de un breve proceso de registro para obtener una clave.

- <http://www.epa.gov/opptintr/p2home/> La pagina del EPA's P2, es un buen lugar para conseguir informacion de referencia. Vincula a EPA's Clearinghouse de Informacion de Prevencion de Contaminacion.
- <http://pprc.pnl.gov/pprc/> Pacifico Noroeste P2 website - es una pagina muy buena y extensa. Un programa de ayuda fuerte de negocio. Una base de datos amplia de publicaciones.
- <http://www.dscr.dla.mil/products/epa/eppcat.htm> Listado de la agencia de defensa logistica de productos alternativos con respecto a un medio ambiente saludable para limpiar su tanque, acorazado, jet de combate, etc.
- <http://www.p2.org/> La prevencion nacional de contaminacion en mesa redonda . Una gran cantidad de contactos par a las agencias P2 alrededor los Estados Unidos.
- http://www.dep.state.pa.us/dep/deputate/pollprev/pollution_prevention.html El Departamento de Pensilvania de prevencion de la contaminacion Ambiental y la pagina de asistencia de cumplimiento. Frecuentemente actualizada con una gran cantidad de buen material.
- <http://www.ccar-greenlink.org/> CCAR Greenlink - un servicio del ComitÈ Coordinador Para la Reparacion Automotor. " Ayudando a Los profesionales automotores a ahorrn tiempo y proteger el ambiente."
- <http://greenradio.com/> GreenWave Transmite - un programa semanal de sesenta minutos de radio que le trae a usted buenas noticias acerca de como la gente trabaja hacia un futuro ecologicamente sostenible. Los programas anteriores son archivados aqui tambien (usted necesitar un RealAudio para oir GreenWave).
- El Distrito Mayor Regional De Vancouver tiene un programa que contiene 6 pasos utiles para los negocios sobre como y donde comenzar un programa de reciclaje, el cual es TMtil si usted simplemente no sabe donde comenzar. Es posible descargar una guia de los pasos como archivo de Acrobat de Adobe en: <http://www.gvrd.bc.ca/waste/bro/wel.html>
- <http://clean.rti.org/resguide/> Institucion de Investigacion Tri-ngulo P2 Recurso Guia de Medida - Herramientas para medir el exito de sus esfuerzos en P2
- Reciclaje mundial En Linea Revista de Reciclaje - Articulo de Archivo.
<http://tecweb.com/wlibrary/index.html>
- <http://www.greenhotels.com/> La Asociacion de Hoteles Verdes "Comprometido a alentar, promover, y apoyar conocimiento ecologico en la industria de la hospitalidad."
- Diseno, Construccion Y ubicacion integral al Hotel del Futuro

<http://whhttp://www.hospitalitynet.nl/news/article/15716008.htm>

- <http://es.epa.gov/oeca/sector/index.html> EPA's la Oficina de Cumplimiento ha desarrollado una serie de perfiles o cuadernos que contienen informacion sobre selectos grupos industriales importantes . Estos cuadernos son descargables desde el sitio e incluyen:
 - Un perfil ambiental comprensivo
 - Informacion industrial de procesos
 - Tecnicas de prevencion de contaminacion
 - Datos acerca de contaminacion liberada
 - Requerimientos reguladores
 - Historia de fallos en el cumplimiento
 - Asociaciones de industria y gobierno
 - Programas innovadores
 - Contactos
 - Referencias bibliograficas
 - Descripcion de la metodologia de investigacion

[Regrese a la pagina de P2](#)

For P2 informationon Guam please contact:

Conchita Taitano
USEPA Office
P.O. Box 397
Agana, Guam
93487

telephone: 324 976-9734

email: taitano@kuentos.guam.net

For P2 information in American Samoa please contact:

Nick King
American Samoa Environmental Protection Agency
P.O. Box 397
Pago Pago, American Samoa
96989

Phone: (684) 633-2304

Fax: (684) 633-5801

email: samoankid@hotmail.com

For P2 information in the Virgin Islands please contact:

Jim Casey
Virgin Islands Coordinator
U.S. Environmental Protection Agency Region 2
Federal Building & Courthouse
550 Veterans Drive, Room 142
St. Thomas, VI 00802
(340) 714-2333
fax (340) 714-2332

APPENDIX D: NOTES FROM COMPOSTING TELECONFERENCE

COMPOSTING TELECONFERENCE

Thursday, April 13, 2000

Participants:

<u>Name:</u>	<u>Affiliation:</u>
Jacquelin Miller	P2 Information Center for Islands, University of Hawaii
Peter Rappa	P2 Information Center For Islands, University of Hawaii
Louisa Castro	College of Tropical Agriculture and Human Resources (CTAHR), University of Hawaii
Nicholas King	American Samoa Environmental Protection Agency
Josh Craig	American Samoa Environmental Protection Agency
John Duffy	Land Grant Program, American Samoa Community College
Ignacio	Land Grant Program, American Samoa Community College
Sherri Mann	Land Grant Program, American Samoa Community College
Nofo Te'o	Land Grant Program, American Samoa Community College

Presenter:

Jim Hollyer -- College of Tropical Agriculture and Human Resources, Department of Agricultural and Resource Economics, Agricultural Development in the American Pacific (ADAP) program, University of Hawaii. Resource and agricultural economist and fisheries biologist with 10 years of experience in agricultural business and infrastructure development, and resource valuation.

Notes from Teleconference:

- ❖ Garden waste (thrown away green trimmings)
- ❖ What does compost do?
 1. Makes soil workable
 2. Improves soil structure
 3. Increases nutrient uptake of soil
 4. Aids in water filtration and improves penetration
 5. Controls erosion
 6. Reduces run-off
 7. Binds chemicals and keeps them out of the waterways
 - Acts as a "sponge"
 8. Increases the level of beneficial organisms
 9. Increases availability of plant nutrients
 - NPNK
 - Not fertilizer
 10. Less pesticides

❖ How is compost produced?

1. Collect food waste and garden rubbish
2. Decide on pile type
 - Two types of piles
 - a. Wind row (half-moon shape, long row)
 - b. Pile
3. Confined or not confined
 - Confined by:
 - a. Fence (chicken wire with ½-inch mesh)
 - b. Pallets
 - c. Bins
4. Reduce size of materials to about 1-2 inches
 - Larger materials-chips
 - Smaller materials-cut up
5. Start piles with carbonaceous materials
 - Wood chops (allows good water drainage)
 - Allows for more “critters”
6. Next add nitrogenous materials
 - Left over food
 - Green clippings
 - To prevent rats from pile: keep out animal fat
7. Add water
8. Add carbonaceous materials again
9. Continue with pattern
10. Materials should be in a ration of about 60-70% carbon to 30% Nitrogen
11. Mix up pile
 - Fuel up pile for “critters”
 - Temperature can reach up to 150-160°F inside pile
12. When done, pile will reduce in size by about 70%
13. It can be sifted with chicken wire
14. Let sit a few weeks before use
15. Blend with potting soil 2-3 days before planting

❖ Questions

1. How can you deal with the wetness of the environment?
 - Cover pile to insulate heat
2. Composting vs. burning?
 - Burning ok, unless illegal
 - Even rich soil can use compost
3. Will oil and petroleum products break down in soil?
 - Petroleum can be composted
 - Only certain chemicals can be composted
4. Is run-off possible when green or mulch?
 - Mulch is better, but both will help drain water down

- Compost is better than mulch at keeping soil in place
- 5. What can you do to keep the rhinoceros beetle out of compost piles?
 - Don't use coconut fronds because they are attracted to them
 - Use a tarp cover
- 6. Is there any way to biodegrade coconut husks?
 - Find out from the University of Florida
 - Accelerate decomposition
- 7. Would concrete under pile, above water, affect the pile?
 - No, it acts as an insulator
 - More water than normal needs to be added

Nofo: Environmental Quality Incentive Program

- Educates farmers about mixing dry materials with manure
- Better quality products using less fertilizer and more compost

Josh: Do not build on concrete block

- Allows for neater situation, but not necessary
- Used as a barrier when bioremediating

❖ Ways people keep organics to themselves

1. Grass cycling
 - Cut grass and leave it on the ground
 - Aerates ground surface
2. Composting
 - Green trimmings and food
3. Mulch
 - Big form of compost
 - Chips
 - Creates heat
 - Inhibits the growth of weed seeds
 - Reduces amount of sun hitting soil
4. Vericomposting
 - Worms

❖ How to get people involved

1. Need to show them what's in it for them
 - Healthier soil
2. Provide bins
3. Charging for trash pick-up
4. Volunteers and outreach outlet
 - Workshops, demonstrations, TV
5. Create a demonstration sight
 - "Seeing is believing"
6. Create media attention

❖ Questions

1. Can diapers be composted?
 - Plastic will not breakdown
 - Unsanitary
2. What does the compost look like when done?
 - Can stick your hand in it
 - Smells earthy, crumbly, moist, not hot
 - To check, dig into center
3. How often should the pile be turned?
 - Every couple weeks
 - Throw water on while turning
4. Should leafy and woody plants be treated differently?
 - No, they can go in the same pile
 - It just depends whether more carbon or nitrogen is necessary
5. Can any type of manure be used?
 - Human, cat and dog should be avoided
6. Are there places where there is municipal composting?
 - There is some kind in almost all places on the mainland and in Hawai'i.
 - Three sites on Oahu alone
7. Is it cost effective?
 - Marginal-weight cost of pick up to cost of landfill
8. How do you incorporate potting soil with compost?
 - Mix soil with 30-40% compost

JAMES R. HOLLYER

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and Resource Economics
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dba Resource Research and Evaluation

PROFESSIONAL SYNOPSIS

Resource and agricultural economist and fisheries biologist with 10 years of experience in agricultural business and infrastructure development, and resource valuation. Skills include research, instruction, facilitation, computers, staff supervision, project development and management, and evaluation of domestic and international projects.

EDUCATION

- M.S. Agricultural and Resource Economics: Natural Resource Economics
The University of Hawaii, Honolulu, Hawaii (1987).
- B.S. Zoology: Fisheries
Western Michigan University, Kalamazoo, Michigan (1980).

ADDITIONAL TRAINING

- March 1995 Mediation and Impasse Resolution Training (20 hours), San Francisco, California.
- February 1995 Collaborative Negotiation Training (20 hours), San Francisco, California.
- April 1990 University of Hawaii, Honolulu, Hawaii.
Facilitator Training (16 hours).
- January 1984- University of California, Yokohama Branch, Japan.
April 1984 Computer course in BASIC programming.
- August 1981- U.S. Peace Corps in-country training, Apia, Western Samoa.
September 1983 Comprehensive training program to develop Samoan language and cross-cultural skills.
- May 1981- U.S. Peace Corps state-side training, University of Oklahoma, Norman, Oklahoma.
August 1981 Intensive 10 week training program in fresh water fish culture. Emphasis on pond management, artificial spawning, disease control, pond and sluice construction, rural development extension, brain storming, and problem solving.

PROFESSIONAL EMPLOYMENT

- March 1998- Project Manager, Agricultural Development in the American Pacific (ADAP) Project,
present University of Hawaii, Honolulu, Hawaii.
Providing overall leadership of this \$530,000 a year USDA-sponsored international program under the direction of a board of directors and a principle investigator. Developed more efficient ways to operate program including a new fiscal management system and call for proposals mechanism. Developed and maintained project website. Created new opportunities for collaboration with other US institutions and international programs. Managed the daily operations of office with a staff of three.
- June 1996- Assistant Specialist, Department of Agricultural and Resource Economics,
present University of Hawaii, Honolulu, Hawaii.
Developing programs to expand the opportunities for Hawaii's agribusinesses. Developing a new internet server/site for Hawaii agribusiness at www.hawaiiag.org, including page design and information development. Completed the *Hawaii Plant Source Guide 1998-1999* with 23 cooperators. Developing a handbook for the production and business of Hawaiian lei products with 23 cooperators. Worked on a team for a Western SARE project that created live educational programs on composting.

AWARDS AND RECOGNITION

Agricultural Communicators in Education. 1999. Pioneer Award.

Gamma Sigma Delta. 1998. Outstanding Teacher, Researcher or Extension Person Award.

Epsilon Sigma Phi. 1998. State Award of Leadership.

The Composting Council. 1996. Award in Recognition of Outstanding Commitment to Composting Research and Demonstration Projects Nationwide.

Farm Bureau Poster Selection. 1995. Conference poster selected as one of 10 from a field of 157 by the Hawaii Farm Bureau Federation as "an excellent example of communicating CTAHR's mission and effort to the public," at the CTAHR Hawaii Agriculture: Positioning for Growth conference at the Student Center, University of Hawaii, Honolulu, Hawaii, April 5-6, 1995.

Governor's Turn of the Year Award for "The White Taro Demonstration Project" 1994.

Governor's Turn of the Year Award for "AgCamp™ – Strival Training™" 1994.

Sigma Gamma Delta award for "Most Outstanding Contribution to Agriculture Development in Hawaii" 1993.

PROFESSIONAL ASSOCIATIONS

Agriculture Communicators in Education. 1988-. National organization based out of the University of Florida, Gainesville, Florida.

Epsilon Sigma Phi, The National Honorary Extension Fraternity. 1997-. College of Tropical Agriculture and Human Resources, University of Hawaii, Honolulu, Hawaii.

Gamma Sigma Delta, The Honor Society of Agriculture. 1992-. College of Tropical Agriculture and Human Resources, University of Hawaii, Honolulu, Hawaii.

SERVICE

College-wide

Meeting facilitator for the Hawaii Agricultural Education Conference, Kapiolani Community College, Honolulu, Hawaii, March 25, 1998.

Meeting facilitator for the two days of the National Food Science Administrators Conference, Ala Moana Hotel, Honolulu, Hawaii, December 12-13, 1996.

Logistics coordinator and meeting facilitator for the PBAG/CBAG conference Enhancing the Role of Value Added Agriculture in Tropical Island Economies, Kailua-Kona, Hawaii, June 2-5, 1996.

Lead facilitator for CTAHR's reorganization plan. Facilitated over 12 large meetings, provided meeting memory, and helped draft CTAHR's five year strategic plan, 1996-1998.

Facilitated break-out session at the Marketing for Profit in Agriculture conference, Kona, Hawaii, March 24-25, 1995.

Facilitated a planning session for the CTAHR Environmental Planning Conference, Sept. 13-14, 1994.

Provided facilitation and strategic planning service to the Agriculture Development in the American Pacific (ADAP) project, a USAID funded project based at the University of Hawaii, August, 1992.

Provided facilitation service to the 3R's and Beyond: A Conference on Integrated Solid Waste Management, sponsored by the UH College of Tropical Agriculture and Human Resources, Honolulu, Hawaii, July 7, 1992.

University-wide

Facilitator for the University of Hawaii Alumni Association strategic planning sessions, September 12-13, 1997.

Community

Provided facilitation services for the Hawaii Air Cargo Symposium September 16, October 14, 1998.

Provided facilitation services for a Pew Charitable Trust project at the Hawaii Community Foundation, January 5, 1998.

National

Provided facilitation service for the Composting Council's all-state association strategic planning sessions, Cleveland, OH, October 22, 1998.

Provided facilitation and strategic planning service for the Composting Council's strategic planning sessions, Alexandria, VA, June & August, 1994.

Provided facilitation service for the first planning session of the National Backyard Composting Program at the National Recycling Coalition's annual meeting in Nashville, TN, October 12, 1993.

Provided facilitation service for the joining of S.C.O.R. with the Composting Council, Alexandria, VA, July, 1993.

Provided facilitation and strategic planning service for the formation of the Source-separated Compost and Organic Recycling Association (S.C.O.R.), Minneapolis, MN, May, 1993.

Provided facilitation service at the National Recycling Coalition's Source Separated Composting Symposium, St. Louis, MO, February 25-26, 1993.

International

Provided facilitation service to American Samoa Community College Land Grant Program for the 5-year strategic plan, March 9-11, 1999.

Provided *pro bono* facilitation service to the National Hospital of Saipan during the formulation of a paper for a 1992 WHO Conference. January, 1992.

APPENDIX E: NOTES FROM "GREEN" HOTELS TELECONFERENCE

GREEN HOTELS TELECONFERENCE

May 25, 2000

Participants:

<u>Name:</u>	<u>Affiliation:</u>
Jill Lankford	School of Travel Industry Mgmt., University of Hawaii
Noel Ludwig	P2 Information Center for Islands, University of Hawaii
Jacquelin Miller	P2 Information Center for Islands, University of Hawaii
Peter Rappa	P2 Information Center for Islands, University of Hawaii
Marlyn Aguilar	State Department of Health, Hawaii
Bruce Prehul	Hilton Hawaiian Village, Hawaii
Mark Miller	Ala Moana Hotel, Hawaii
Nick King	American Samoa Environmental Protection Agency
Alice Malepeai	American Samoa Chamber of Commerce
Will Sili	American Samoa Department of Commerce
Malelaga Tuiolosega	American Samoa Department of Commerce
Irene	Rainmaker Hotel in American Samoa
Tisa	Tisa's Barefoot Bar in American Samoa
Betwin Alokoa	Guam Environmental Protection Agency
Catherine Castro	Guam Chamber of Commerce
Conchita Taitano	Guam Environmental Protection Agency
David Tydingco	Guam Hotel and Restaurant Association
Yoursau Belf	West Plaza, Palau
Marie Kisigawa	Carp Hotel, Palau
Floribel Lagaspi	Palau Pacific Resort
Darren Sabom	Palau Environmental Protection Agency
Partifirio Yalap	Palau Visitors Bureau
Cliff Perry	South Pacific Regional Environmental Program
Francois Martel	South Pacific Regional Environmental Program

Presenter:

Patricia Griffin is the President and founder of the Green Hotels Association. The Green Hotel Associations is committed to encouraging, promoting and supporting ecological consciousness in the hospitality industry. The Association has devoted itself to the task

of seeking out and researching ideas and techniques the hoteliers can use to conserve water and energy and reduce solid waste.

Ms. Griffin is a native Texan, a graduate of the University of Texas at Austin with a degree in Business Administration, and owns a farm in Central Texas. She tells me she loves to travel and visits hotels all over the country. Maybe she'll be visiting your area soon.

After Patricia makes her opening statements, we will cut to questions and answers. I'll be moderating to ask questions in order. I want to thank you all for being here, and turn the program over to Patricia Griffin.

Presentation

Patricia: I'm tickled to be here. Good morning and good afternoon to all of you. Nothing would please me more to visit all of you. I am a self-appointed cheerleader for green hotels. Cheering hotels that are reducing their water and energy uses and lowering their utility bills at the same time. I'm certainly cheering hotels that are as aware of our environment as they are of their own bottom line. And of course I am cheering hotels that are implementing environmentally in-tune practices and saving money. I'm sure you'll all be glad to know you won't have to watch me do any leaps or splits with this cheerleading.

I want to thank you for giving me your most valuable asset, your time. I plan to give you full value and I hope you will find your time well spent. I'm talking to you today to encourage you and to offer you some interesting ways to conserve. I really, really do believe that anyone, any individual, any homeowner, any business owner can use the ideas we will be talking about today. But certainly hoteliers and restaurant owners.

Remember first of all if you are reusing anything, you are conserving. If you are reusing a bucket or a bottle to wash floors or windows, you are conserving. If you are reusing ice that was left over from a banquet to water plants, you are conserving. If you collect and return dry cleaner bags, you are conserving.

I think we can all agree that hoteliers are often fearful of insulting even one guest. Hoteliers are often so fearful that they are not willing to make any changes environmentally. We found that guests love being involved in conservation programs. They love helping a property conserve and save because they know that they are helping to protect that beautiful vacation or business destination. In a survey, 8 out of 10 people claim to be environmentalists.

One of the most important things that we always tell hoteliers is that you must remember that very few people come to a hotel because of the hotel itself. They come to a hotel because of what is nearby. In your cases certainly beaches and golf courses and beautiful

places to rest and certainly meetings as well. The hoteliers must care for and protect the reason that their guests come. We think it's certainly important that you let your guests get involved in your conservation program. You know hoteliers usually do these things behind doors they don't want their guests to know about it, but we think it's very important that you let them get involved. Guests can get involved in the recycling program, if you have recycling baskets in the guest rooms, they can participate in your towel and sheet program, if you offer them the option.

Let's talk about how hotels can conserve, save money, and increase business. I'm going to talk about recycling first, and I'll stop after each one of these sections and Peter says we'll see if there are any questions. We'll talk about recycling first and I'll tell you a true story about recycling and hotels.

I hope you can imagine, there's a photograph of a small, red, brick building. Probably ten windows across, two stories, red brick. That was the very first hotel that Conrad Hilton ever owned. The building is still standing in Cisco, Texas, which is just west of Dallas. Conrad has been in the banking business with his father in New Mexico. He came to Cisco to buy a bank, well, the bank deal didn't work out, so he ended up buying this hotel. But at that point, Cisco was a cow town that actually had gone crazy over oil and it was rolling out like a freight train if you can imagine. The sound of drilling rigs pumping 24 hours a day. It was in the 1920's, he was 33 years old. He did not rent these rooms by the day, but this was the only hotel in the area. He rented these rooms for 8 hours, so every day he rented every room 3 times. Occupancy rate, 300%. That was the ultimate in recycling hotel guest rooms, but you have to wonder, how often do you imagine they changed those linens? I'm sure it wasn't often enough, and that's certainly one version of recycling that we don't want.

But in recycling today, you find almost instantly what a savings it is. Even small properties in remote areas can pay for new vacuum cleaners each year just by recycling aluminum. I've got a couple of wonderful success stories about hotels and recycling. The first is about the 482 Intercontinental Hotel in New Orleans. They started a recycling program in 1993 and they decided they would do it behind the doors. They hired separators to work in their basement and sort these materials. Well, management was absolutely astonished because the separators were pulling a thousand dollars a month of hotel property out of the waste room. Knives, forks, spoons, napkins, tablecloths, towels, washcloths, everything. But they found out and obviously it had all been discarded prior to recycling. So then after that they earning 600 a month by selling their recyclables and in their second year they were saving \$79,000 in recycling.

The second success story on recycling is the Chicago Hyatt. They are a huge convention hotel, 2,019 rooms, and they started their recycling program in 1989, and they had exactly the same experience except they were pulling 3-10 thousand dollars of hotel property out of the waste room. They're shocking numbers. Anyway, I had assumed it was a hotel guest who were doing that and the housekeeper was missing it and so forth. I interviewed the gentleman at the Hyatt who is one of the recycling executives and he said no, you

know what I really think is that when a hotel has to change so quickly from a lunch, to a meeting, to a dinner, to whatever. They sweep up the whole tablecloth and everything on it and just pitch it. So it looks like the blame for this might be on employees.

Nevertheless, it's still a savings to look for when you start recycling. The Chicago Hyatt has gone on to reduce their waste hauling cost by 80%. I hope when you go back to your hotel, you pull out your waste hauling cost and multiply that by 20% and see what it's possible for your waste hauling cost to be reduced to. At any rate, if a hotel can reduce the number of times that the dumpsters are picked up or reduce the number and size of dumpsters, a lot of money can be saved with a waste dumpster company. I realize that you are in different situations on islands, on this recycling issue, but still, this is all I know. I don't know how you have to deal with at any rate.

We think that money should be made by selling the aluminum, glass, and cardboard that is hauled away. Food scraps can of course be given away or sold to pig farmers. Soap scraps should be sold to grade schools or day care. Little bars of soap are the perfect size for children's small hands. Soap scraps should be able to be given back or sold to manufacturers to be melted down and used again. But most important of all, I suggest is asking guests to take that soap home. We just did a press release on that and a lot of the ideas on what to do with all these bars soap is ask your guests to take them home, use it themselves. Pallets can be given to companies that can use them. Mattresses and all furniture, of course can be given to a local charity. Hotels can require that all vendors, but especially food and beverage vendors to supply food in minimal packaging. Food and beverage vendors can be required to drop off food one day and pick up that packaging the next day.

Recycling is a lot of work, I think we all know that. Cardboard boxes need to be broken down, tin cans need to have the ends removed and flattened, and of course aluminum cans need to be crushed. But I really believe that you'll find it is worth the trouble. Be practical start with one item. Aluminum is probably the easiest, cardboard will save the most money. Those are the two big products for hotels, aluminum and cardboard. They are the best to begin your recycling program with probably.

Any of you smart hoteliers can take a serious look at the dumpsters on the property, do an audit to find out exactly what fills your dump fee each week. The size of the dumpsters or the number of pick ups can be reduced. I'm briefly going to tell you how to do an audit. When you're doing an audit, although it sounds very serious, it's very simple. You're going to the dumpster, just before it's picked up. With a pen and a pad, you probably do this for a month and you will first determine how full the dumpster is. Is it 80% full, is it 110% full and so forth, and then you will estimate what percentage each of the products that you might recycle are in there. You might say there's 35% cardboard, there's 10% newspaper, there's 20% aluminum, and so forth. And so that will tell you where to start your recycling program. But you say, if that's the case, 35-40% cardboard, you would start with that, so you would get that out of your waste stream and so now you're recycling cardboard, so then you'll go back and do it. You'll do your audit s again. You will determine by the value of the product, say aluminum may be worth more than

plastics, then even though it's a smaller quantity, you may want to go with aluminum next.

But any rate, other hotel recycling ideas include making guest room laundry bags, retired pillow cases or sheets, stained table cloths of course can be recycled into napkins or aprons for the chef. And at Intercontinental, by the way, they saved more than \$2000 a year by recycling their kitchen linen.

So Peter, that is recycling, so if anybody have any questions or discussion

Jill: Have you done any research in recycling or composting vegetation coming off the property? It wouldn't work for more urban oriented properties, but for more resort oriented properties.

Patricia: It's ideal to compost. In fact, one of our member properties in the Caribbean composts the seaweed. I just read this week that seaweed shouldn't even be moved because it builds the sand dunes. I'm sure you all have to be aware of those things, but composting is ideal.

Alice: Peter, just general comments. Will all the participants be able to get a list of all the names and contact numbers of the organizations after this conference call?

Peter: Yes

Alice: As well as some of the case studies on the data that you've been giving out Patricia, because I'm sitting here listening instead of writing down everything you said. People would like to know what the numbers are and evaluate it further and if they had any questions, to contact you, how exactly did they arrive at these numbers? So we can have a copy of your minutes, that would be great.

Patricia: Sure, of course. If there are any of you that want a package from Green Hotels Association, if you want to let Peter know, I'll be more than glad to mail them to you.

Alice: I bet all of us would like a copy of the package, what do you say?

Chorus: I agree.

Patricia: Okay, it's done, we'll get those addresses and names and so forth from Peter and we'll get those off to you. Also, if you want to look at our web site, we're at greenhotels.com on the web. Most of the information is there, but...

Peter: That also reminded me that we are recording this session and you will get a transcript, everyone who participates, will get a transcript.

Tisa: Thank you very much for this wonderful information that you have shared with us. I, Tisa, am starting from scratch and I appreciate everything you're sharing. There are some things that I have questions as far as the profit. I own the barefoot bar and the barefoot bar's philosophy is environment first and later for the profit. It seems to have worked all these years, but we have to use plastic cups, that's the only problems that I find in this point in my progress of ten years. I don't know, I may need to go something solar because I refuse to go to the glass because it means that I have to extra work in the cleansing and all that. And also stop of spreading of any germs because we have a big problem here with the tropical climate. You know a lot of people get sick easily so I guess using it is really not good, it is one of the areas I have a problem with. The only recyclable bottle on the island as far as beer, it is Vailima beer. The rest of all the bottles on the island are not recyclable so those problems obviously are endearing with the old problems because there is no help in that direction as far as this island and all its trash because I recycle, I reuse everything I can, but I'm stuck in my program because there is no place I can recycle Coors Light or again we have to completely go into cans instead of bottles that are counting as more trash.

Patricia: Have you talked to your distributor?

Tisa: Well, I haven't addressed it, I'm about it address it in the near future, but not at this very minute because all of a sudden you came into our lives, especially mine, and I appreciate it. Because now I'm looking at the big picture and there's a lot that can be offered. Like yesterday I was hiking in my back yard and I saw 3 toilets, you know those long drop kind. And they belong to World War II, the military so all of a sudden we have 3 long drops were right in the jungle where I'm doing my eco lodge. Isn't it wild, and I can reuse that, you know things like this we are finding in our own address, but the only thing again is the plastic.

Patricia: Tisa, are you saying that you use disposable cups?

Tisa: Yes, I'm using the plastic, disposable cup. It was my only way to lessen the worries about sterilization and stuff. I don't know if that makes sense, but I don't have glass itself.

Patricia: There's some very good plastic that's washable of course. I mean, have you tried that? Or did that not work either?

Tisa: I'm trying to find another solution. I was hoping that you'd have one.

Patricia: Well, I'll tell you what, let's email one another about that because there are a lot of options on drinking glasses, if you're washing. There's a lot of options about glasses that last longer and do not slip and show all those marks on them.

Patricia: Water and energy. First of all when you talk about water, you know it's been written that a family of 4 will use 51 thousand gallons of water for showering, so I

wonder if we should try and figure out how much water hotel guest use. Well, I guess we won't do that. Well, the good news is that almost all conservation methods save money for hotels. Let's talk about the bottom line and water conservation in hotel guest rooms, maintenance is everything. Every hotel spigots should be monitored monthly for leaks and drips and of course repairs should be made.

In the hotel guest rooms the three areas we're going to talk about are the sink, the toilet, and the bathtub/shower. In order to find out where water can be saved, we first have to find out where water is being used. We're going to do a water audit. Again, a water audit is a very simple thing to do, all you need is a bucket or container or bowl that will fit under a sink or faucet. You need a watch with a second hand and a pen or a pad. You go to a sink and put this container under there and you're going to turn the water on full blast for 15 seconds. You will measure that water you can pour it into an empty milk jug or whatever, then multiply it times four, and that is going to give you the gpm or gallons per minute fluid of that particular sink.

Patricia Griffin
President and Founder
"Green" Hotels Association®

Patricia is an avid traveler, and is a lover of all hotels. She has worked for a Howard Johnson Hotel in the back office, and for a Hilton Hotel at the front desk. She is most enthusiastic about protecting our environment (especially through simple, good practice methods). She is particularly interested in encouraging the greening of the hospitality industry by informing not only hoteliers, but also travel agents, meeting planners, facility managers, tour guides, business and pleasure travelers and government agencies. Ms. Griffin is a native Texan, owns a farm in Central Texas and is a graduate of The University of Texas at Austin with a Business degree.

Patricia is a member of Green Seal, Inc. and the Professional Association of Innkeepers International. She was active for 5 years as a coach for the Women Business Owners Roundtable program at Houston's SBDC (Small Business Development Center). For over 10 years she has been active, through her church, with helping the less fortunate at the Texas/Mexico border.

"Green" Hotels Association® brings together hoteliers interested in saving water and energy, reducing solid waste and protecting the beautiful destinations we all love to visit.

Patricia and "Green" Hotels Association® have been featured on a CNN telecast, a U. S. Information Agency "Assignment Earth" program shown worldwide, and a number of national and international radio broadcasts. Newspaper and print media attention have been exceptional.

Ms. Griffin is a frequent speaker, and has a very important message to share with hoteliers, meeting planners and environmental groups in particular. Among other destinations, she has traveled to Florida, Washington, the Dominican Republic, Hawaii, Minnesota, Delaware and Wisconsin to speak on conserving and saving within the hospitality industry.

"Green" Hotels Association®, founded in 1993, is committed to encouraging, promoting and supporting ecological consciousness in the hospitality industry. The association urges hoteliers to "green up" with small measures such as serving drinking water on request only as well as with major renovations to all-fluorescent lighting and by every measure in between. "Green" Hotels Association® has devoted itself to the task of seeking out and researching ideas and techniques that hoteliers can use to conserve water and energy and reduce solid waste.

APPENDIX F: NOTES FROM HOUSEHOLD HAZARDOUS WASTE TELECONFERENCE

HOUSEHOLD HAZARDOUS WASTE TELECONFERENCE

July 27, 2000

Participants:

<u>Name:</u>	<u>Affiliation:</u>
Sherri Hiraoka	P2 for Islands Information Center, University of Hawaii
Jacquelin Miller	P2 Information Center for Islands, University of Hawaii
Peter Rappa	P2 Information Center for Islands, University of Hawaii
Marlyn Aguila	State Department of Health, Hawaii
Jack Hindeman	U.S. Air Force, Hickam, Hawaii
Suzanne Jones	City & County of Honolulu Recycling Program, Hawaii
John Lee	Environmental Serv., City & County of Honolulu, Hawaii
Hana Steel	Maui County Recycling Program, Hawaii
Betwin Alaloka	Guam Environmental Protection Agency
Nick King	American Samoa Environmental Protection Agency
Luani Luuga	American Samoa Environmental Protection Agency
William Sili	American Samoa Environmental Protection Agency
Andrew Sunia	American Samoa Environmental Protection Agency

Presenter:

John Valera – Hawaii Department of Health, Solid Waste Management (3-1/2 years).
BA in Public Policy, University of Southern California; MA Urban and Regional
Planning, University of Hawaii.

Scope of Problem:

- I. Household Hazardous Wastes are not regulated, and are exempt from EPA regulations because residents don't have access to the degree of toxic and concentrated chemicals as industries. Residents generate small amounts, but still need to be aware that what they are handling is hazardous.
 - A. Some wastes are reactive
 1. They can explode
 2. Lighter fluid, aerosol cans
 - B. Corrosive
 1. Dissolve things
 2. Acids from car batteries, photographic chemicals
 - C. Ignitable
 1. Can catch fire and burn
 2. Paint thinner, engine oil, kerosene

3. Story in news in Hawaii about a house that burned down because they had prolonged storage of engine oil and pesticides in garage
- D. Toxic
 1. Poison living creatures
- II. Can damage cesspools and cause contamination of groundwater, inland waters or the ocean
 - A. Chemicals are being dumped into storm drains
 1. Illegal
 2. Impact ocean, fish and other living things

Substitutes to Household Chemicals

- I. Yellow book – Alternatives to Household Hazardous Wastes
 - A. Brief problem statements
 1. Where they are used (kitchen, bathroom, garage, storage closet, etc.) and how they can be disposed
- II. Most wastes are handled by the City and County
- III. Goals of program
 - A. Need to promote and encourage residents to reduce the need to dispose of hazardous waste by suggesting that they:
 1. Buy only what they need
 2. Give away what they don't need
 3. Look for non-hazardous substitutes
 4. Learn how to handle hazardous waste
- IV. Options for handling hazardous waste
 - A. Should be aware
 1. Call local wastewater departments for lists of household hazardous wastes or cleaners that can be safely washed down drains
 - a. List is specific to each county wastewater system
 - i) Wastewater management, solid waste approves list to be sure that systems can handle waste
 - ii) What can be disposed is different depending on what the machinery and system can process
 2. Visit the household hazardous waste guide on our website
 - a. Develop a list of fact sheets that deal with different forms of hazardous wastes
 3. Ask counties
 4. Call regional household hazardous waste line to schedule drop off appointment for wastes that require special handling (gas, kerosene, car batteries, antifreeze, etc.)
 - a. City and County of Honolulu operates line, (808) 523-4774
 - b. If feasible for outer islands

5. Take items to selected locations on household hazardous waste collection day administered by City and County
 - a. Get involved on permitting end
 - b. Environmental controls
 - i) Secure
 - ii) Adequate means to prevent harborage of vectors and odors

Programs to Collect Waste (Betwyn Alaloka – Guam)

- I. Hasso Guam
 - A. Conchita Tatiano waste program started in 1988
 - B. Solid waste collection program on Guam
 - C. Before that there were companies that collected waste, but not for residents
 - D. Turnout was low to begin with
 1. Residents didn't know about program
 2. U.S. EPA helped with trust fund from consolidated grant
 - E. Collection was done four times last year instead of once
 1. Donations from petroleum companies, fast food companies, military helped, village mayors provide sites
 2. Media used to inform public
 - a. Month prior to collection, information was sent out in newspaper, radio and TV ads about where to bring wastes
 - F. Held in 3 villages – Yigo, Berrigada, Inarajan
 - G. Haven't started this year (2001) yet
 - H. Collected on January 31, 2000:
 1. 2180 gallons of used oil
 2. 926 gallons of paint thinner
 3. 1991 car batteries
 4. 66 gallons of antifreeze
 5. 1071 fluorescent light bulbs
 - I. Our staff estimates that 80% of waste is still out there
- II. Some items are not allowed into Guam and disposal charges are applied to some products
 - A. Most wastes are generated from off island
 1. Looking at starting a deposit fee
 2. NABA collects batteries for free when a new battery is purchased
 - a. HMS recycling company collects batteries and tires for a fee
- III. In Hawaii (Marlyn Aguilar and John Lee)
 - A. Advanced disposal fee for tires and glass containers and oil tax for each barrel
 1. \$1 per tire surcharge for each tire imported into the state
 2. \$0.01 per barrel of oil imported

3. Disposal fee for car batteries and tires included in price of product
 - a. Reasonable way to get funds to support programs because businesses should be responsible for their wastes
- B. Some companies pick up tires from general public without the need to purchase a new tire
- C. Retailers only need to take back as many tires as they sell
 1. Car batteries not as big a problem as tires because of space restraints
- D. On Maui (Dr. Hanna Steel)
 1. Law that states that when a battery is sold the retailer must take one back
 - a. Grant agreement with Community Work Day and will go around island to retailers and post signs that say that retailer must take battery back when one is sold
 - b. Batteries will be taken back by retailer, for a fee, even if one is not sold
 - c. Battery collection will be done on upcoming Earth Day
 - d. Tires are taken back at time of purchase
 - i) Shipped to Oahu to make TDF (Tire Derived Fuel)
- E. Hickam Air Force Base Hawaii (Jack Hydamen)
 1. Collect recyclable materials, which includes household hazardous waste (batteries, paint thinner, etc.)
 2. Have storage that is available for public that is free

Questions and Comments

1. Description of household hazardous waste program in Hawaii with list of what can be disposed of where – <http://www.opala.org>
2. Chlorodane Termicide – was banned, but there is suspicion that people have gallons of it in storage for when it may possibly be legal again
 - Call household hazardous waste line to get more information and what to do with it and special handling
3. How to improve public awareness?
4. List of collection items by Hasso Guam
 - E-mailed to Nick King in American Samoa
5. Company names that will accept tires
 - Unatire, Unitech Solvent Services
 - Contact: Blaine at Unitech, (808) 366-1920
6. Crumbed-rubber is used under playground equipment
 - Unitech can make crumbed rubber
 - Of the 1 million tires generated annually, there are only so many playgrounds
 - There are no reuse programs like that on Guam

JOHN S. VALERA

EDUCATION: Master of Urban & Regional Planning December 1996
University of Hawaii at Manoa

BS Public Administration & Planning August 1992
University of Southern California

SKILLS: IBM/PC, WordPerfect, Microsoft Word, Excel, Access, Powerpoint,
trained by U.S. EPA in meeting facilitation, public speaking

Additional skills acquired through graduate course work include:
Planning Theory, Land Use Planning, Infrastructure Planning, Social
Planning, Planning Methods and Models, Program Evaluation, and
Urban Economics

EXPERIENCE: Environmental Planner, 2/97-Present
Department of Health, Office of Solid Waste Management, Honolulu,
Hawaii'i

-Implemented the 1991 Integrated Solid Waste Management Plan (Plan) and
its subsequent 2000 Revision; performed planning work in the development
and completion of the 2000 Revised Plan; responsible for development of a
penalty policy and an enforcement procedures manual for the Office's
enforcement teams; responsible for a Report to the Legislature on the
feasibility of developing a roofing materials recycling program.

Administrator, 8/92-12/96
City Gate Church, Honolulu, Hawaii'i

-Managed the financial resources of the church; received and counted
offerings; applied for and received IRS non-profit status; developed
membership class and job descriptions for volunteer teams.

Graduate Assistantship, 1/93-6/94

University of Hawaii at Manoa, Department of Urban & Regional
Planning, Honolulu, Hawaii'i

-Evaluated integrity of databases for federal Department of Transportation
traffic safety study; assisted in development of statistical models to explain
accident behavior; completed supporting documentation for databases.

Administrative Intern, 9/91-6/92

Housing Authority of the City of Los Angeles, Section 8 Department,
Los Angeles, California

-Assessed impacts of federal guidelines on Section 8 program procedures;
conducted surveys on existing utility allowances, unit inspections and rental
adjustments; proposed and received approval for raising rental subsidies to
low-income recipients.

ACTIVITIES: Member, American Planning Association, 1999-Present
Member, American Institute of Certified Planners, 2001-Present
Teaching Pastor, City Gate Church, 2001-Present
Life Member, General Alumni Association, University of Southern California

REFERENCES: Available upon request

APPENDIX G: NOTES FROM ORGANIC FARMING TELECONFERENCE

FARMING ACCORDING TO THE ORGANIC EQUATION

September 28, 2000

Participants:

<u>Name:</u>	<u>Affiliation:</u>
Sherri Hiraoka	P2 Information Center for Islands, University of Hawaii
Jacquelin Miller	P2 Information Center for Islands, University of Hawaii
Peter Rappa	P2 Information Center for Islands, University of Hawaii
Marlyn Aguilar	State Department of Health, Hawaii
Bob Midkiff	State Department of Agriculture (DOA), Hawaii
John Duffy	American Samoa, Land Grant Program
Nicholas King	American Samoa Environmental Protection Agency
Ike Malelega	American Samoa Environmental Protection Agency
Bernard Matatumua	Land Grant Program, American Samoa Community College
Alfred Peters	Land Grant Program, American Samoa Community College
Faaiga Tuiolosega	American Samoa National Parks
Anwar Karim	Guam, Natural Resources Conservation Service (NRCS)

Presenter:

John Rast – Northwest Coalition for Alternatives to Pesticides (NCAP). He is currently a Sustainable Ag Program Association with NCAP and a small-scale farmer. He attained both his Bachelor's and Master's of Science in plant science at the University of Idaho.

Healthy Soil + Diverse Flora + Diverse Fauna + Suitable Microclimate = Delicious, Optimum Yields

- I. Healthy Soil
 - A. Needs to be managed well (in order of importance)
 1. Organic matter (pilth)
 - a. create a soil that's biologically alive with micro and macro organisms
 - b. makes soil more able to reduce pest pressure
 - c. test sites in Indiana on corn earworm, 18x higher yield than conventional site because of simpler components
 2. Microflora and microfauna
 3. pH
 - a. dictate what kind of life can be inside
 - b. NPK level

- B. Questions
1. Does organic matter tends to move pH towards neutral?
 - a. Yes, especially matter like humus that is broken down
 - b. You want to achieve as close to neutral pH as possible
 - c. Test pH by kit (sold in extension centers or some garden centers) or with electronic probe
 2. Are plants grown in properly managed soil less susceptible to different insects because of wider spectrum of nutrients?
 - a. Yes. Insects prey on weakest individuals (simple compounds, sugars) first
 - b. Whether or not products taste better is subjective
 3. How long does it take to get soil to "Organic" level?
 - a. Potato fields took 6-8 years, on Rast's farm it took 3 years
- II. Diverse ground flowers
- A. Provides habitat for beneficial insects
 - B. Helps slow down the spread of plant diseases
 - C. Avoids mono-cropping
 1. Raising any crop on a scale that's large enough and long enough that it would require increased levels of input to maintain yields is considered "mono-cropping".
 2. No habitat for beneficial species
 3. Suggests breaking up in time frame or create rotation of crops
 4. Questions
 - a. How can you tell if you're mono-cropping (how many plants?)
 - i. Defined by pest pressures you have wherever you are
 - ii. Subjective and something you need to watch
 - b. Would you mix in non-food items (i.e. ornamental)?
 - i. Yes, some friends using flowers that draw in pollinators and plants that draw in parasitic wasps and some plants that have pest repellent qualities
- III. Diverse fauna
- A. No habitat for beneficial insects or hawks and other raptors that would prey on pests
- IV. Microclimate – climate from the plant's viewpoint
- V. Control pests according to scale of aggression
- A. Use of force relative to aggression exerted by pest
 1. Only use force necessary while guarding against using too much
 - B. Use of excessive force is frequently done in pest control. In pest control, using more force than necessary frequently blows the problem out of proportion

1. As the number of pesticides used increased, the economic damage also rose 40%
 2. Creates an unbalanced situation
- C. Control does not mean extermination
1. No need to take such drastic measures
 2. Low levels of pest populations are desirable in most situations because they provide the food needed to keep the beneficial species around
 - a. If you destroy the pest, they will be gone for a little while, but it will take longer to bring the beneficials back
- D. IPM (Integrated Pest Management)
1. Clearly identify problem you're facing
 - a. Accurately define problem pest before deciding or taking any measures
 2. Exclude or trap
 - a. i.e. - Pheromone traps, planting pest repellents
 3. Biological controls
 - a. Most common is BT (*Bacillus thuringiensis*)
 - i. Kills larvae of pests
 - ii. Plants that are genetically modified with BT are not deemed organic
Spraying, may also create BT immune pests
- E. Questions
1. Concern of effect of BT on non-target species
 - a. Effects on non-target species (i.e.-monarch butterfly) are not really known. Will eventually start killing beneficials and creates a pollen drift problem
 2. Where can you get pheromone traps?
 - a. In several catalogs. Do a search on Internet for biological controls or pheromone traps and it should bring up plenty of sources
 3. Are you allowed to bring in microbes to islands where certain animals are not allowed?
 - a. Biological control organisms are tested to make sure that they will only attack certain species
 - b. Samoa – It's up to the Director of Agriculture on a case by case basis
 - c. Hawaii – Not sure, but thinks that regulations are pretty strict and you would probably have to get a permit from the Department of Agriculture.
 - d. Bioremediation company created a product that would kill grasshoppers, but cannot get approval from the EPA because EPA does not have a rule about a cocktail for macro-organisms
- F. Using predatory and parasitic insects
1. In a biologically diverse area those species are already present

2. Take a count of species that are beneficial and try to create an environment that is receptive to them
3. In augmentation, when you bring other species in, you really need to understand the species and how it interacts with the environment

G. Use of botanical poisons

1. Toxins derived from plants
2. Most toxins with exception of nicotine are approved by organic organizations (i.e.-pyrethrum)
 - a. Check with OMRI (Organic Materials Review Institute) and local certifying agencies to ensure organic status
3. Just because they are derived naturally, does not mean that they are safe
5. Organic pesticides break down much more quickly than synthetic pesticides
6. On scale of toxicity (starting from least)
 - a. Least toxic botanical pesticide is Ryania
 - i. Safe to warm blooded animals
 - ii. Best used on caterpillars
 - iii. Makes the insect sick, doesn't kill
 - b. Savadia is a little more toxic than Ryania
 - i. Used effectively against caterpillars, grasshoppers, aphids, beetles and some true bugs
 - ii. Can irritate mucus membranes
 - c. Pyrethrum
 - i. There are some synthetic and mixed kinds
 - ii. Works on most insects by paralyzing
 - d. Rotenone
 - i. Most potent of the botanical poisons
 - ii. Breaks down in 3-7 days
 - iii. Can be stronger than synthetic pesticides
 - iv. Deadly to fish and should not be used around waterways
 - e. Neem
 - i. kills grasshoppers and other pests
 - ii. Used in bioremediation

VI. Conclusion

- A. Need to reduce the "want to spray" approach.

VII. **Questions and Comments**

- A. What pests is rotenone useful against?
 1. It will control a broad spectrum of species, broader affectability than many of the other toxins

- B. In India, we have heard of leaves of Neem being boiled and flour sacks subsequently dipped in the Neem/water solution as the main pesticide control for sacked grains.
 - 1. Has not heard of that
- C. When do you know when you're at the last resort to use botanical toxins?
 - 1. Population growth with cyclic insects (like grasshoppers)
 - 2. Be monitoring early and when you can see significant damage and the other options are not able to keep it below an economic threshold, do spot spraying
- D. Predatory insects just released?
 - 1. Need to do good research about insect and what it does to environment
 - 2. Need patience for the beneficials to come in on time
- E. How can one contact OMRI?
 - 1. website – <http://www.omri.org>
 - a. Download list of approved materials and unapproved materials, propose materials for review
 - b. Do not discuss biological agents
- F. Do you have references for treatment of household pests?
 - 1. NCAP – <http://www.pesticide.org> - has some materials that can be ordered

Jeff Rast

Sustainable Agriculture Program Associate
Northwest Coalition for Alternatives to Pesticides



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WORK HISTORY

*Sustainable Ag Program Associate, Northwest Coalition
For Alternatives to Pesticides (NCAP, 1.0 FTE)* *1998-Present*

I develop and implement educational programs and research/demonstration projects related to alternative farming methods which help to reduce pesticide and fertilizer use while enhancing farm productivity and the environment of each farm.

Small Scale Farmer *1996- Present*
Together with my wife and children, I own and operate a small-scale mixed vegetable, certified organic farm for various direct marketing avenues.

Private Educator *1996- 1999*
I operated my own business, The Center for Small Acreage Farming, to teach people about small-scale farming with a strong emphasis on agricultural sustainability.

Extension Educator, University of Idaho *1988- 1998*
As UI Extension Educator based in Camas County, I conducted informal research and education programs primarily in sustainable agriculture, but also on youth issues and certain environmental issues.

EDUCATION

M. S., Plant Science, University of Idaho, 1991
B. S., Plant Science, University of Idaho, 1979

PUBLICATIONS

I write a monthly column on organic farming for the Ag Weekly published by the Times-News in Twin Falls, Idaho.

(The following is a brief list of some of the articles I published in the newsletter, *Small Acreage Farming*)

Farming According to the Organic Equation, Volume 3, Numbers 1-3, May through October of 1998.

Organic Weed Control Principles and Practices, Volume 1, Number 12 and Volume 2, Numbers 1 & 2, April through June of 1998.

Tracking and Taming the Elusive Cost Per Unit, Volume 2, Number 5, September 1997.

Averting the Next Farm Crisis, Volume 1, Number 12, April, 1997.

Giving Your Land a Rest, Volume 1, Number 8, December, 1996.

Equipping Your Small Farm, Volume 1, Numbers 7 through 11, November 1996 through March 1997.

Potatoes, Nematodes and the Power of "Why?", Volume 1, Number 5, September 1996.

(I also published a production article on different crop enterprises in each issue)

Speaker's Notes

FARMING ACCORDING TO THE ORGANIC EQUATION

Jeff J. Rast

Truly organic farming is an active farming system. *It is a holistic, integrated approach to farming that strives for a healthy, sustainable balance among all ecosystem factors of the local area.* It focuses on living systems and the promotion of vigorous balance among all living entities within and around the farm.

In my studies over the years, I've distilled from many truly organic farming systems an equation common to them all. Simply enough, the equation reads as follows:

$$\text{Healthy Soil} + \text{Diverse Flora} + \text{Diverse Fauna} + \text{Suitable Microclimate} = \text{Delicious, Optimum Yields}$$

Let's take a closer look at each part of the equation.

I. HEALTHY SOIL

Proper soil management is at least half the battle in farming organically. The following characteristics must be managed to ensure vigorous performance:

- A. **Organic matter**
- B. **Microflora and microfauna**
- C. **pH**
- D. **CEC**
- E. **Moisture.**
- F. **Available nutrients.**

II. DIVERSE FLORA

Diversity in the plant life on your farm promotes balance and productivity through several ways.

- A. First, it offers habitat for beneficial insects to build their own populations on your farm.
- B. Plant diversity also helps control crop diseases.

III. PROMOTING FLORAL DIVERSITY

In its simplest form, the strategy to promote a diverse flora is to plant numerous plant species. Depending on where you live, you may enjoy the blessing of beginning with quite a bit of diversity. Your main strategy, then, is to maintain as many desirable (those that are not terribly invasive) species as possible. If your farm is one which had been managed for minimal diversity, then you'll need to set yourself to the task of bringing in new species.

Whatever you do, AVOID MONOCROPPING, especially of annual crops. Monocropping is raising any crop on a scale large enough and/or timeframe long enough that it requires increased levels of inputs to maintain yields.

IV. PROMOTING DIVERSE FAUNA

A farm with a diverse flora and diverse fauna, founded on a healthy soil is like a stage set for biological and ecological productivity – for the long haul. It's one which will create cycles of regeneration because balance is achieved biologically rather than via harsh chemicals and industrial manipulations. Creating such a farm based on the organic equation takes a lot of time, planning and alertness. But it pays dividends for untold generations.

V. CREATE A SUITABLE MICROCLIMATE

Microclimate is the climate from the plant's perspective. It affects plant performance far more than does macroclimate. Microclimate involves the temperature, humidity and light exposure that immediately surrounds the plant.

VI. CONTROL PESTS ACCORDING TO THE SCALE OF AGGRESSION.

Before describing the Scale of Aggression, let me point out that your best pest control measure is to get the organic equation right. Healthy plants in a diverse and balanced ecosystem can usually hold their own quite well.

But sometimes, cyclical pest pressures can overwhelm even the sturdiest of crops. Then you'll need to bring in extra force. Using too much force, though, tends to be counterproductive. You need to temper your response the way police officers are trained to control theirs. Use the Scale of Aggression.

Neglecting the scale of aggression leads to the use of excessive force, in which case the ecological situation of a farm or garden is blown out of balance. The deadlier the toxin used, the higher the mortality among the beneficial species. The higher the mortality among the beneficials, the less natural pest control one has available which makes it easier for the pests to make a come-back. Use only the force necessary to control the situation and no more.

And remember that "control" does not mean "extermination." Low levels of pest populations are actually desirable in most situations because it provides food needed to keep beneficial species around. Extermination is not an ecologically sound goal. Never has been and never will be.

So how does one control pests according to the Scale of Aggression?

Use biological controls. The most common biological control used on organic farms and gardens is Bt or Bacillus thuringiensis, a bacterial pathogen that sickens and kills the larvae of certain insect pests such as lepidopteran species which includes butterflies and moths (the caterpillars), Colorado Potato Beetle, mosquitoes, and Black fly. There are several species/strains of Bt used for these different insect pests. Be sure to use the correct one. *A WORD OF CAUTION: plants which have been genetically modified with Bt or in any other way are not permitted under any organic certification systems and for good reason. Crops genetically modified to include Bt promote Bt-resistant pest populations very rapidly and undermine the usefulness of Bt in the long-run.* Many other microbial controls exist.

Other biological control measures include the use of predatory and parasitic insects and other species. Ladybugs and Preying Mantids are common predators while various species of tiny wasps are used to parasitize other insects. Certain kinds of beetles, moths and flies live parasitically off of certain plants, such as the knapweeds.

The organic category of last resort on the Scale of Aggression is the use of botanical poisons. Most of these toxins are approved by organic certification agencies. However, just because they are natural toxins does not mean they are safe. The main advantage of using a botanical toxin over a synthetic toxin of similar potency is that the botanicals are much less persistent in the environment. In other words, they break down to benign byproducts much more readily. Organically approved botanical toxins include:

pyrethrum, a derivative of the pyrethrum flower, kin to the chrysanthemum

rotenone which is derived from several species of tropical plants.

neem derived from the neem tree in India

sabadilla derived from a number of plants in South and Central America

*Healthy crops growing on healthy soils
can perform remarkably well in the face of pest pressures.
Farming according to the organic equation promotes healthy,
regenerative and productive farms and foods.*

