

Attachment F

Best Management Practices (BMP's)

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Community Education, Outreach and Training Program

The storm water management education, outreach and training program should develop best management practices which gets the Integrated Pest Management message out to the target audience – the people who buy and use pesticides. The focus of the educational outreach should be providing information about pesticide-related toxicity, reducing diazinon use, targeting the manner in which diazinon is used to eliminate significant pathways of water contamination, and utilizing less-toxic and non-toxic methods for pest control (IPM). Also the educational program should disburse educational materials to the community so as to prevent the improper disposal of pesticides, including diazinon. Steps should be taken to provide the community with information on how to dispose of pesticides legally (e.g., a diazinon return center).

Information should be provided by many diverse avenues of communication and include the “World Wide Web”, point of sale information, “University of California IPM Master Gardener” program, seminars, public service announcements, public signage, continuing education programs and so on. Many of the following avenues of communication are already being utilized or could be expanded, others may be new and could be incorporated into the public outreach program. It should be noted that communication methods are not limited to the above mechanisms, other means should also be utilized. Improving access to and making information on alternatives to pesticides readily available will enable watershed residents to reduce dependence on pesticides and reduce the adverse effects of pesticides on water quality. Since people generally purchase a pesticide to deal with a specific pest problem they are having, providing alternatives that are specific to a pest allows people to deal with their problem in a more focused and less toxic manner.

Where possible, businesses would need to be discouraged from advertising and otherwise promoting pesticide products (e.g., diazinon) which significantly increase the toxicity of runoff from urban areas. Business incentive programs in which businesses are recognized for following pollution prevention guidelines or providing pollution prevention educational materials to their customers can be effective ways of educating business owners and the community about environmental issues.

School programs should be used to create awareness in children which they can then pass on to their parents. IPM can be encouraged at schools through the DPR’s School IPM program (see Appendix B - Healthy Schools Act of 2000).

World Wide Web. The World Wide Web (www) can be used to provide information about pesticide alternatives and information about integrated pest management. Also, the www can be used to create links on the web to information that watershed residents can read to learn more about alternatives to pesticides and how to reduce the adverse effects of pesticides on water quality. The following sites may be helpful, but are by no means the only sites that provide information on least toxic alternatives to pesticides for specific pest problems and/or other mechanisms to reduce adverse effects of pesticides on water quality. An IPM web site could be

developed with links could be provided to these sites and/or with information similar to these web sites adapted to the San Diego Region.

- The Central Contra Costa Sanitary District has information and tips about how to achieve a less toxic home and garden. The site is entitled, "*Our Water, Our World program*" at <<http://www.centrialsan.org>>.
- The Department of Pesticide Regulation has a guide which focuses on consumer education in using pesticides in homes and gardens entitled, "*H₂O Home to Ocean Workbook*" <<http://www.home2ocean.org>>. This information was developed for public outreach programs on how to reduce adverse effects of pesticides on water quality.
- The US EPA's Office of Pesticide Programs has a variety of information about pesticides and integrated pest management (IPM) at <<http://www.epa.gov/pesticides/>>.
- The PAN pesticide database brings together a diverse array of information on pesticides from many different sources. Where data are available, it provides the following information for each chemical: basic information, including uses and chemical classifications (with representative chemical structures), related chemicals, CAS Registry number, U.S. EPA PC Code and California Department of Pesticide Regulation Chemical Code; information from U.S. EPA and California DPR on more than 100,000 formulated pesticide products registered by U.S. EPA and California DPR; toxicity characteristics, including the World Health Organization (WHO) hazard rating and National Toxicology Program (NTP) acute toxicity information, cancer ratings from U.S. EPA, International Agency for Research on Cancer (IARC), U.S. National Institutes of Health (NIH) and the State of California, as well as other chronic toxicity information on reproductive and developmental toxicity (from California's Proposition 65 list), and suspected endocrine disruption. It can be found at <<http://www.pesticideinfo.org>>.
- The City of Sacramento, Stormwater Management Program has Water Wise information cards which explain how to reduce pest problems at <<http://www.sacstormwater.org/waterwise/>>.
- The Bio-Integral Resource Center (BIRC) found at <<http://www.igc.apc.org/birc/>>.
- The U.C. Master Gardeners found at <<http://www.mastergardeners.org/>>.
- The Biological Control Virtula Information Center found at <<http://ipmwww.ncsu.edu/biocontrol/>>.
- The University of California, Davis has an Integrated Pest Management (IPM) web site at <<http://www.ipm.ucdavis.edu>>.

Fact Sheets. In order to approach people about reducing diazinon use, it will be important to develop and distribute a one-page fact sheet to increase community understanding about why we are concerned with this pesticide, what people can do to help, and where to find more information about diazinon. (Factsheets are available through BASMAA and UC IPM.) A simple one page brochure or handout on water quality effects of diazinon could be prepared by UC IPM and adapted for various audiences. The fact sheets can be distributed as inserts to other mailings.



Water Wise Pest Control cards. The University of California Cooperative Extension and the Sacramento Water Wise Pest Control Program has developed water wise pest control cards for ants, fleas, aphids, lawn insects, spiders and other pests. These cards can be revised to fit the San Diego area and distributed at point of sale or other venues. These cards are ideal for distribution to residential audiences through Master Gardeners and retail nurseries.

Appendix __ contains samples.

The Master Gardener Program. The University of California Cooperative Extension, San Diego office has a very active Master Gardener program. The Master Gardener program would be an excellent forum for encouraging integrated pest management and voluntary “point of sale” non-toxic alternatives and least toxic alternatives to organophosphate pesticides and other toxic pesticide products. Trained Master Gardeners can give presentations to garden clubs, Parent Teacher Associations (PTAs), home owner associations and other community groups (e.g., garden shows, landscape expositions, retail nurseries and many other venues).

A water quality training program developed for Master Gardeners in Sacramento County could readily be improved and adapted for training San Diego Master Gardeners. The training could be designed based upon the experience and knowledge in the implementation of IPM gained by UC Cooperative Extension (UCCE) and Central Contra Coast Sanitation District (CentralSan) as well other experts.

Water Quality training for Master Gardeners is a major program for the University of California ANR Urban Horticulture Workgroup this year and a training program is scheduled for May 2001. To successfully implement the Master Gardener program will require funding of an assistant for the county Master Gardener coordinator.

Environmentally Friendly, Non-Toxic Lawn Care and Sustainable Landscape. Lawn care might be a topic which could be covered by as part of the Master Gardener Program and/or through the University of California Horticultural Advisors in their presentations. The University of California IPM program has publications on healthy lawns that could be distributed or modified for distribution.

In the Seattle area, the joint King County and Seattle Public Utilities Natural Lawn Care Campaign is beginning to successfully move the lawn care ethic toward natural lawn care and an eventually sustainable landscape (The Frause Group, et al. 1999). A variety of techniques are being used to raise citizen awareness and focus on changing target behaviors and encourage residents to use environmentally friendly lawn care practices. When the program was first conceived, the various agencies involved (e.g., Seattle Water, Seattle Solid Waste, King County Water and Land Resources Division and the King County Hazardous Waste Management Program) had been conducting their own individual outreach activities targeting singular behaviors related to lawn care (pesticide and fertilizer use, water quality issues, water use, and mulch mowing or grasscycling). The agencies decided to pool their resources and create a

campaign that packaged these behaviors as “natural lawn care” and later invited other local agencies to join the campaign and contribute to the funding effort.

At first, the information was designed to be motivational and communicate “why” natural lawn care practices are important. Some of the initial outreach techniques included the following: television and radio advertising, media relations and door hangers to targeted neighborhoods. Later, when that concept was successfully communicated, the outreach was designed to explain “how” to practice the targeted behavior. Thus the program took on a new direction and the focus shifted from overall consumer and citizen awareness to an effort to change people’s habits. The assumption was that advertising and media relations are important in increasing awareness and helping people to question current assumptions and motivations, however in order for people to actually change their behavior, a more intensive interaction is required. Thus the campaign focused on providing personal contact and building relationships to help citizens commit to a change in their lawn care practices. Some of the techniques used include neighborhood meetings and a habit change kit.

Neighborhood Meetings – Meetings provided a friendly, non-government-looking format for listening to real people dealing with real lawn care questions. It provided an opportunity to hear practical comments about what they would- and would not – consider as first steps in changing their behavior. Also, the meetings allowed citizens to come up with great ideas on how to successfully change behaviors concerning lawn care in their neighborhoods.

Habit Change Kit - A habit change kit was successfully utilized to move the lawn care ethic toward natural lawn care and eventually sustainable landscape. The habit change kit was prepared for distribution at neighborhood meetings, brown bags, and public events. It was also used as a follow-up to homeowners who requested more information as a result of the neighborhood meeting telephone recruiting. The kit included: an envelope packet with environmental mascot; natural lawn care handbook, a “*Grow Smart, Grow Safe*” booklet, diazinon brochure, natural lawn care resource guide, green business directory, yard sign order form, natural lawn care campaign comment card and other related materials.

Storm Water Pollution Abatement Campaign “Think Blue”. The City of San Diego, the County of San Diego, the Port of San Diego, and CalTrans are partners in the “Think Blue” effort. This public education campaign is designed to elevate awareness of the concerns associated with storm water pollution. This campaign should be expanded to include increasing the public’s awareness of pesticide pollution and making information on alternatives to pesticides readily available.

The campaign utilizes media advertising, a “Think Blue” kit of educational materials, a hotline, outreach events and community education. To reinforce individual responsibility “Think Blue” has adopted the slogan, “You are the solution to storm drain pollution”. The public can download and print storm water information flyers directly from their computer at the “Think Blue” web-site at <<http://www.thinkblue.org>>. Integrated Pest Management information and Fact sheets could also be made available for download.

The “Think Blue” information number (1-888-Think-Blue) provides a means for people to call in to request a “Think Blue” kit or to report illegal dumping into storm drains throughout San Diego county. The information numbers for information on Integrated Pest Management could also be made available.

People were polled by telephone on September 13 and 14, 1999 and resurveyed on March 2, 2000 to determine the level of knowledge and awareness with regards to storm drain pollution and the “Think Blue” campaign (Storm Water Pollution Prevention Program, City of San Diego, 2000). The results of the survey indicate that public knowledge is increasing, and that there is need for further education (Table __). The “Think Blue” campaign could be encouraged to expand and thereby increase public awareness of how to improve water quality and remedy stormwater pollution.

Table __. “Think Blue Survey”

Think Blue Survey Question	9/99	3/00
Knowledgeable about where water goes once it enters a storm drain.	56%	69%
Aware that storm water flows untreated from storm drain to bays, creeks and beaches.	63%	69%
Aware of the Think Blue campaign	13%	31%

Storm Drain Inlet Stenciling and Plaques. All developers and contractors within the City of San Diego are now required to mark every newly constructed or modified storm drain inlet with a storm drain tile, stencil or concrete stamp stating “*No Dumping – I Live Down Stream*”. These requirements are included in the City of San Diego standard specifications and a development requirement for private developers. Installation of these plaques, stencil, or concrete stamp is monitored by City of San Diego resident engineers and inspectors (Storm Water Pollution Prevention Program, City of San Diego, 2000).

Citizen Water Quality Monitoring. Monitoring for sources of toxicity could be done by citizen and school groups (e.g., utilizing a simplified acute toxicity testing protocol with *Ceriodaphnia dubia* (Katznelson, R.1997). Involvement of citizen and school groups could result in greater public awareness of the water quality effects of diazinon, as well as providing additional water quality information.

Water Bill Message. During the 1999-2000 period, the following message was printed at the bottom of the City water bills that were mailed out on a bi-monthly cycle to approximately 272,00 residents and businesses. The message stated, “Dumping or washing paint, oil, construction debris, or other pollutants into the street or down a storm drain is harmful to the environment and against the law. To report illegal discharges into the street, call the storm water pollution hotline at (619) 533-3793. If it’s not rain water, it doesn’t belong in the gutter.” (Storm Water Pollution Prevention Program, City of San Diego, 2000). The message should be continued and expanded to include information and news about IPM, and promotion of resource efficient landscape practices (e.g., drought tolerant native vegetation to minimize the need for pesticides).

Establish a Recognition Program for Successful IPM Implementation. Provide businesses with official acknowledgement of successful IPM efforts. This would encourage businesses to continue implementing IPM and provide positive recognition for their efforts.

Kindergarten through College Education Program on Stormwater Pollution and Integrated Pest Management. Provide information and materials to schools, teachers, and students about stormwater pollution including: (1) water quality effects of pesticides (e.g., diazinon), (2) how to reduce toxics (e.g., diazinon) in runoff, (3) how to properly dispose of toxics and other pesticides (e.g. diazinon), and (4) and less toxic alternatives to pesticides (e.g., IPM).

Encourage Cooperative Partnership Programs (e.g., US EPA's Pesticide Environmental Stewardship Program). Encourage those individuals and/or businesses with pest control needs to develop cooperative and/or partnership programs with others to reduce the environmental and human health risk associated with pesticides. One such program is the US EPA's Pesticide Environmental Stewardship Program (PESP). This is a voluntary private/ public partnership program through the US EPA which is dedicated to protecting human health and preserving the environment by reducing risks associated with pesticide use. By joining the program, members agree to work toward pesticide practices that reduce risk to humans and the environment. Members develop a strategic approach to pesticide risk reduction by implementing specific, measurable risk reduction activities. Information about the Environmental Stewardship Program can be found at <http://www.epa.gov/oppbppd1/PESP/>.

Develop and implement an IPM partnership program. In 1997-98 a pilot "IPM Partnership" was cosponsored by the Central Contra Costa Sanitary District and the Regional Water Quality Control Plant. This is a point-of-sale promotion about less-toxic pest control products and Integrated Pest Management (IPM) approaches to home and garden pest control. The program has the following goals:

- To develop partnerships with leading retailers who can help to spread the word about water quality problems related to residential pesticide use;
- To identify effective vehicles for educating the public about the value of IPM approaches to pest control and about safe use and disposal of, when used, without delivering negative messages about any products; and
- To create a program that will have broad appeal to other Bay Area stores.
- In the city of Palo Alto, a partnership developed with a locally owned Palo Alto Hardware, which is a Ace-affiliated hardware store. The pilot program included:
- Development of a list of less-toxic alternatives to manage pests typically controlled by use of organophosphate pesticides, specifically diazinon and chlorpyrifos.
- Development of a training curriculum to prepare hardware store/garden center employees to recommend effective alternative products to customers with specific pest problems.
- Development of a program logo ("Our Water, Our World") and a system of store display materials identifying recommended products.
- Development of four pest-specific fact sheets ("Ants", "Fleas", "Aphids", and "White Grubs") and a booklet about IPM, for distribution to customers.
- Development of a newspaper display ad (placed by Palo Alto Hardware) and a movie slide (placed by the Regional Water Quality Control Plant) promoting the program.

The owner of the store, Larry Hassett, was very pleased with the results of the program from several aspects:

- Store employees liked the training, and have a sense they could confidently recommend environmentally friendly products that will work for customers.
- The store gained good will from customers, as it was perceived as actively trying to help the environment.
- Reductions in sales of traditional chemical pesticides were more than offset by sales of less toxic alternatives.

This type of IPM partnership program should/could be extended to other hardware stores and garden centers throughout California. The Chollas Creek watershed would be a prime candidate.

Reduce discharges of diazinon resulting from the use of diazinon-containing products sold over-the-counter. Researchers investigating organophosphate (OP) pesticides have indicated that the OPs may be possible to use effectively where sound environmental safeguards are assured (Zalom, F.G. et. al., 1999). Such safeguards include use only in areas where there is typically no surface runoff, where spray and associated drift has no potential for contaminating surface waters, and/or where various other best management practices (BMPs) offer high assurance of OPs being retained on site (Zalom, F. G. et al., 1999). Selecting pest control options that reduce the aquatic concentrations of OPs sufficiently to prevent toxicity may prevent regulatory action to restrict or eliminate the use of these materials (Zalom, F.G. et. al, 1999).

Work with the Department of Pesticide Regulation and the County Department of Agriculture, Weights & Measures to reduce discharges of diazinon resulting from use of diazinon-containing products sold over-the-counter. Specific steps could include the following:

- Identify the locations of businesses in and near the Chollas Creek watershed (e.g., the San Diego Region) where diazinon is sold over-the-counter.
- Post a map of diazinon levels and toxicity test results at stores.
- Post an electronic billboard reporting diazinon levels in Chollas Creek.
- Explain the water quality effects of diazinon to appropriate personnel of such businesses.
- Provide such businesses with information on Best Management Practices (BMPs) to reduce diazinon in runoff and request that such information be displayed with pesticides for sale and made readily available to customers.
- Provide such businesses with information on alternative pest management measures that would reduce diazinon use by substitution of less persistent, less toxic substances and request that such information be displayed with pesticides for sale and made readily available to customers. Also request that alternative “environmentally friendly” substitutes be sold instead of (or at least in addition to) diazinon.
- Request that such businesses not advertise or otherwise promote the sale or use of diazinon.

Education and outreach – Expand education and training program in commercial pesticide application businesses. Work with the Department of Pesticide Regulation and the County Department of Agriculture, Weights and Measures to reduce discharges of diazinon resulting from diazinon use by commercial pesticide application businesses (including landscape maintenance businesses).

The steps needed would likely include but should not be limited to the following:

- Identify industrial, commercial, and institutional sites and facilities in the Chollas Creek watershed that are known or likely to use diazinon, with special attention to the identification of all commercial pesticide application businesses in and near the Chollas Creek watershed.
- Design and implement programs for residential and commercial pesticide users and pest control operators which explains the water quality effects of diazinon to operators of such businesses.
- These programs shall provide targeted information concerning proper pesticide use and disposal, potential adverse impacts on water quality, and alternative, least toxic methods of pest prevention and control, including integrated pest management (IPM).
- The agricultural commissioners can provide information and training when they issue restricted materials permits, and operator identification numbers, or register structural and agricultural pest control operators, maintenance gardeners, and pest control advisors (CEPA, 1997).
- Inspect commercial pesticide application businesses in and near the Chollas Creek watershed (i.e., the San Diego Region) to ensure that onsite and offsite activities do not contribute diazinon to runoff.
- Inspect and evaluate pesticide disposal practices and locations used by such businesses.
- Provide IPM marketing workshop to Pest Control Advisors, Pest Control Operators, Pest Control Applicators, and pest control businesses (e.g., workshop by the Central Contra Costa Sanitary District and the Contra Costa Clean Water Program entitled “IPM- You know how to do it, now how do you make money at it?”). This would include information on how to explain the benefits of IPM, how to make IPM a reasonable and viable option for customers, how to explain the benefits of IPM, and how to explain the consequences of using pesticides. The idea is to make IPM alternatives a viable option for control of pests so that customers of pest control businesses have available the choice of non-toxic and less-toxic pest control methods.

Distribute an information sheet to community residents about how to work with Pest Control Operators to use non-toxic and less toxic pest control methods. Since many community residents use Pest Control Operators to control pests, the publication of an information sheet about ways community residents can work with the people they hire to use non-toxic and less-toxic methods and manage pesticide applications as safely as possible may be of value.

Education and outreach – Expand outreach and education for facilities managers of sites where pesticides are applied. Facilities managers of corporate sites, small businesses, and apartment complexes often have control or influence over the pesticide products used on their properties. Educating these people about pesticides (i.e., diazinon) will help get the message out that the city wishes to encourage the use of non-toxic pest control alternatives and/or environmentally friendly pest control application methods/products to control pests. The education should cover non-toxic pest control alternatives and environmental concerns with pesticides; information about non-toxic landscape maintenance and how to choose landscape plants suited to southern California soils, weather and climate, including how to design landscapes and/or choose landscape plants with low maintenance needs for pest control. If a pest

control applicator must be utilized, the education should explain how to use common sense in choosing an pest control business and/or applicator which utilizes proper IPM measures, reduces risk to public health, and utilizes proper measures to protect to the environment.

Develop and implement Integrated Pest Management (IPM) programs. IPM programs use a range of methods and disciplines to assure pest control while minimizing risks to humans, animals, plants and the environment. Initial education and outreach training on *“Implementing and Adopting IPM Programs”* has begun within the watershed. The University of California Cooperative Extension and Port of San Diego conducted a workshop on May 2, 2000 for the IPM Task Force. The IPM task force was composed of staff from the San Diego Port District, City of San Diego Department of Environmental Health, County Department of Agriculture, Regional Water Quality Control Board, and the Environmental Health Coalition.

Future efforts should include requiring and facilitating the development, implementation, and adherence to IPM Plans. Each storm water co-permittee should develop and implement an IPM plan. The IPM plan should cover all pest control activities conducted by and for each permittee, including those conducted by commercial pesticide application businesses. Regular audits of businesses within the watershed should be conducted to ensure onsite and offsite activities do not contribute pesticides (e.g., diazinon) to runoff.

UC IPM has a guide for “Establishing Integrated Pest Management Policies and Programs” that can be updated to provide step-by-step guidance for permittees. The guide would appear on the IPM website and be available to other agencies.