# Advancing Alternatives

## Successful least-toxic pest management programs in California's urban settings

by
**Elisa Lynch, Pesticide Watch Education Fund**
**Gregg Small, Pesticide Watch Education Fund**
**with Amy S. Cohen, Pesticide Action Network**
**Kelly Jerkins, Pesticide Watch Education Fund**
**Susan Kegley, Pesticide Action Network, and**
**Matthew Shaffer, Pesticide Watch Education Fund**


One in a series of reports by Californians for Pesticide Reform

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### Californians for Pesticide Reform

Californians for Pesticide Reform (CPR) is a coalition of over 130 public interest organizations committed to protecting public health and the environment from pesticide proliferation. CPR's mission is to 1) educate Californians about environmental and health risks posed by pesticides; 2) eliminate use of the most dangerous pesticides in California and reduce overall pesticide use; 3) promote sustainable pest control solutions for our farms, communities, forests, homes and yards; and 4) hold government agencies accountable for protecting public health and Californians' right to know about pesticide use and exposure.

For more information on pesticides and how you can work to reduce pesticide use and protect your health and environment, contact CPR:
49 Powell Street, Suite 530
San Francisco, CA 94102
Phone: (415) 981-3939, 888-CPR-4880 (in Calif.)
Fax: (415) 981-2727
Email: pests@igc.org
Website: www.igc.org/cpr

### Pesticide Watch Education Fund

Pesticide Watch Education Fund is a nonprofit organization dedicated to fighting dangerous pesticide use in California communities by providing people with the tools they need to protect themselves and the environment from the hazards of pesticides. Staff provide a wide range of assistance for community groups and individuals, including 1) information about pesticides and the problems associated with their use; 2) information about alternatives to pesticide use; 3) organizing and strategy assistance for successful local campaigns; 4) connections to other grassroots pesticide reform activists; and 5) referrals to technical experts.

450 Geary Street, Suite 500
San Francisco, CA 94102
Phone: 415-292-1486
Fax: 415-292-1497
Email: info@pesticidewatch.org
Website: www.pesticidewatch.org

### Pesticide Action Network

Founded in 1982, Pesticide Action Network is an international coalition of over 400 citizen groups in more than 60 countries working to oppose the misuse of pesticides and to promote sustainable agriculture and ecologically sound pest management.

49 Powell Street, Suite 500
San Francisco, CA 94102
Phone: 415-981-1771
Fax: 415-981-1991
Email: panna@panna.org
Website: www.panna.org

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*Fields of Poison: California Farmworkers and Pesticides,* Pesticide Action Network, United Farm Workers of America, AFL-CIO, California Rural Legal Assistance Foundation, 1999.

*Toxics on Tap: Pesticides in California Drinking Water Sources,* California Public Interest Research Group Charitable Trust, 1999.

*Hooked on Poison: Pesticide Use in California, 1991–1998,* Pesticide Action Network, 2000.

*"P" is for Poison: Update on Pesticide Use in California Schools,* California Public Interest Research Group Charitable Trust, 2000.

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# Executive Summary

Over the last 50 years, pesticide use has risen dramatically. Pesticides are now a nearly ubiquitous global contaminant, found in rain, snow, soil, surface and ground water, and even in our bodies.[1] In California, the reported volume of applied pesticides continues to rise. 215 million pounds of active ingredients were used in 1998 alone.[2] Analysis of sales data shows that unreported use by those that apply pesticides without the assistance of pest control advisors—including consumers, industry and numerous institutions such as schools, cities and counties—adds another 50–70% to this figure.[3]

Although many people believe that pesticides are just a problem in agriculture, in fact, many dangerous pesticides are used in urban settings—in our schools, homes, workplaces, parks, and on golf courses and roadsides. In 1998, 10.9 million pounds of pesticides were applied to landscapes, roadsides and buildings in California to treat weeds and indoor pests such as termites, cockroaches, ants, fleas and wood rot (as reported by licensed pest control advisors). Many of these were particularly toxic California "bad actor" pesticides—those that have high acute toxicity, are recognized as neurotoxic cholinesterase inhibitors, reproductive or developmental toxicants, known or probable carcinogens, or are known to contaminate California's groundwater. Sixty-two percent of the reported pesticides used for structural pest control in 1998 were California bad actors, as were 30% of those applied to both roadsides and landscapes.[4]

## Toxic Pesticides Are Unnecessary Because Safer Alternatives Work

A main reason for continued pesticide use is the belief that effective alternatives are not available. Many people think that if we stop using toxic pesticides, our landscapes, gardens, schools, workplaces or homes would be overwhelmed by weeds and hoards of hungry, dirty, disease-carrying, people-biting pests. Fortunately, this is simply not true. As this report documents, urban and suburban pest problems can be effectively managed without toxic pesticides.


**Although many people believe that pesticides are just a problem in agriculture, in fact, many dangerous pesticides are used in urban settings—in our schools, homes, workplaces, parks, and on golf courses and roadsides.**


The guiding principle behind managing pests without toxic pesticides is what is often referred to as least-toxic Integrated Pest Management (IPM). IPM uses prevention as a first line of defense against pest problems. By understanding the reasons pest problems occur, we can often prevent them from happening. For instance, blocking access to buildings with caulking and door sweeps, and increasing sanitation can eliminate cockroaches and ants. Weeds can be reduced to acceptable levels by choosing appropriate plant and lawn species for the climate and setting. If pests do reach a level that causes unacceptable damage or annoyance, non-toxic or low-toxic management strategies are used. These may include biological, cultural, physical, mechanical and educational strategies, in addition to chemical control methods, which are used in site-specific combinations to solve the problem. A good IPM program permits use of chemical controls only as a last resort, and in the least-toxic formulation that is effective against the pest. (For more on IPM, see box on page 10.)

Fortunately, in many urban and agricultural settings, least-toxic IPM is becoming the method of choice. This report focuses on eight successful IPM programs that have reduced or eliminated hazardous pesticide use in California's urban settings—in our homes, workplaces, schools, parks and public spaces. It also includes useful appendices of contacts for more information. A brief summary of each of the profiled programs follows.

**Rec & Park gardener Bob Fiorello (right) receiving an award from San Francisco mayor Willie Brown.**

### The City of San Francisco

Since passage of a landmark IPM ordinance in 1996, San Francisco's 70-plus city and county departments have managed pests using IPM. The ordinance mandates important public health protections that go beyond a basic IPM program, including a specific ban of the most toxic pesticides, a rigorously reviewed list of approved least-toxic pest control products, public notification of pesticide use, and public participation in oversight of the program. To date, the program is a renowned success, with the virtual elimination of the most hazardous pesticides, use of exciting innovations in non-chemical pest management, increased public awareness of alternatives to pesticides, and the spawning of similar programs elsewhere in the state and nation.

### Isla Vista Recreation and Parks District

The County of Santa Barbara has established many progressive, environmentally-minded programs over the years. The Isla Vista Recreation and Parks District is a good case in point. Its 52 acres, spread across the entire Isla Vista community, have been managed since 1972 using organic methods. Park staff have mastered the IPM fundamental of pest prevention through such non-toxic methods as choosing plants that out-compete weeds and resist disease, and building a large composting facility to build the park's soil and plant health. Their strategies have all but eliminated their pest challenges, freeing them to consult with other park districts and the public on non-toxic pest control.

### Santa Barbara Public Schools

With the help of an EPA grant, two parents with IPM expertise set up IPM demonstration projects at two elementary schools in Santa Barbara County—Peabody Charter School and Vista de las Cruces School. They designed creative solutions to the variety of pest problems found at these two schools, leading to dramatic pesticide use reductions *and* cost savings. In January of 1999, the Santa Barbara School District school board approved a contract with the Community Environmental Council that will phase in IPM at five additional schools in the District.

### The San Francisco Bay Area's "Our Water Our World" Program

To reduce diazinon and chlorpyrifos contamination of the San Francisco Bay, Bay Area stormwater management agencies developed a program to educate consumers about non-toxic and least-toxic alternatives. This program, called "Our Water Our World," works with regional nurseries and hardware stores to educate the public with fact sheets, place signs near less-toxic products called "shelf-talkers," provide special in-store displays, and most importantly, train store staff in IPM. One of the program's pilot stores, Palo Alto Ace Hardware, tracked sales and found that not only did the program reduce sales of diazinon and chlorpyrifos, but purchases of alternative products more than offset those reductions. There are now over 100 Bay Area nurseries and hardware stores participating in the program.

### The Living Resources Company

For 25 years Steven Zien and his Living Resources Company have worked with over a thousand clients to successfully implement landscape IPM in the Sacramento area. He and his associates use consultations, extensive soil testing and amendments, and a full arsenal of prevention and least-toxic techniques to manage weeds, insects and plant diseases. Zien also reaches out to the community to raise awareness about IPM, and founded an international membership organization that publishes information about organic landscape maintenance.

### The City of Santa Monica

The City of Santa Monica has practiced IPM for maintenance of their public grounds and buildings for the past five years. A recent survey of those involved with implementation of the program—including custodians, outside pest control advisors, Parks and Sports staff, and city IPM managers—found that not only have the city's pest problems decreased with the use of IPM, but the program has cut costs; pest control expenditures dropped 30% in the year after the program was introduced.

### Harbor Bay Isle Owners Association, Inc.

The Harbor Bay Isle Owners Association manages the common grounds for nearly 3,000 homes in Alameda. Grounds include lawns, bike paths, salt water lagoons, and over 2,000 trees. Since its board passed an IPM policy in 1995, its mission has been to reduce pesticide use to an absolute minimum. Working to understand the local microclimate, pest managers emphasize soil health and planting of pest-resistant plants. Since 1995, IPM techniques such as these have slashed pesticide use by 70%.

### NASA Ames Research Center

Since 1994, Moffett Field—an 1840 acre area with over 200 buildings and a diversity of habitat including wetlands, marshes and a sensitive canal along its perimeter—has been run by NASA as the Ames Research Facility. In addition to space age research, this facility has taken a lead in alternative approaches to pest management. In 1995, after employees voiced concerns about the health impacts of toxic pesticides used in buildings, the facility managers turned to IPM. With the help of an IPM consultant they designed a program and engaged two pest management companies to implement it—one for indoor pest control, and one for outdoor landscapes. The results have been dramatic. Indoor pesticide use has been eliminated except for ant and roach bait stations, and outdoor pesticide use dropped 75%, even with the challenges of such large and diverse acreage.

## Recommendations

### State and Federal Policymakers

- Phase out or eliminate all pesticides in schools and other urban settings that cause cancer, adverse reproductive and developmental effects, hormone disruption, or have high nervous system toxicity.
- Immediately ban the use of diazinon and chlorpyrifos to protect imperiled California surface waters.
- Develop and provide training, incentives and materials to promote pest prevention and least-toxic IPM.
- Require schools, cities and counties to develop programs for notifying parents, teachers and the public before and after applying pesticides.
- Ensure that all non-agricultural pesticide use is identifiably reported under the state pesticide use reporting system.
- Publish and distribute a manual containing IPM techniques for a variety of urban settings.
- Earmark funds to implement these programs effectively.

### School, City and County Officials; Industry and Homeowner Association Managers

- Immediately halt routine “calendar” spraying of pesticides.
- Adopt policies that prohibit the use of pesticides that cause cancer, adverse reproductive and developmental effects, hormone disruption or have high nervous system toxicity.
- Develop least-toxic IPM programs that prioritize pest prevention and non-toxic methods of control.
- Record all pest management activity, including any pesticide use, and make this information readily available to the public.
- Develop a program for notifying all affected parties and the public before and after applying pesticides.

### The Public

- Learn what pesticides are used in your local schools, parks and workplaces and urge local decisionmakers, including your school board, city council and board of supervisors, to adopt least-toxic IPM programs.
- Use least-toxic IPM methods in your home and garden.
- Do not purchase highly hazardous pesticides, including those that cause cancer, adverse reproductive and developmental effects, hormone disruption and high nervous system toxicity.
- Hire certified organic landscapers or others knowledgeable in least-toxic IPM if you hire others to do your gardening work.
- Hire pest control companies who practice least-toxic IPM if you hire professional experts for home pest management services.
- Insist on receiving prior notification before pesticides are used or sprayed at your home, workplace, school, or community park, and advocate for institutionalization of IPM.

**Notes**

1 Moses, Marion, *Pesticides, Public Health and Preventive Medicine.* Wallace, R.B. (ed), 14th Edition. Appleton & Lange, Stamford, Connecticut, 1998.

2 Kegley, S. et al., *Hooked on Poison: Pesticide Use in California, 1991-1998.* Pesticide Action Network, San Francisco, CA, May, 2000, p. 14.

3 Ibid, p.14.

4 Ibid, p.31-32.

# Introduction

This report is designed to be a useful resource for individuals, organizations and institutions interested in adopting least-toxic Integrated Pest Management (IPM) methods in urban and suburban settings. It is divided into two equally important parts: case studies of successful IPM programs and a set of appendices that provide useful contacts for IPM programs, IPM consultants and organizations working towards pesticide reduction.

## Case Studies

The case studies presented here provide living proof that use of dangerous pesticides can successfully be reduced or eliminated in urban settings. They concretely answer questions such as: "Do pesticide alternatives really work in schools and other indoor settings?" and "Can our parks be maintained beautifully without use of toxic pesticides?" We chose programs that demonstrated success using IPM in a broad range of settings, covering a variety of California's diverse environments. We also looked for programs that have achieved significant pesticide use reduction, used innovative pest management techniques, documented the economic impacts of IPM and created a written policy to institutionalize their IPM programs.

Below is a brief introduction to each of the areas of programs featured.

### City parks and public spaces

Public parks are an important source of relaxation and recreation for many people. Unfortunately, a trip to the neighborhood park can mean exposure to toxic pesticides, the pest management method of choice for most park lawns and landscapes. Indoor public spaces are also a source of pesticide exposure. Routine spraying for cockroaches, ants and other pests is common practice in city and county buildings, even when no real pest problem exists.

**Pesticide use in both indoor and outdoor public spaces is unnecessary, as a number of California municipalities have demonstrated in recent years.**

Pesticide use in both indoor and outdoor public spaces is unnecessary, as a number of California municipalities have demonstrated in recent years. Outstanding examples include the cities of Arcata, Santa Monica, Berkeley and San Francisco, the County of Marin, and the Isla Vista Parks District in Santa Barbara. The University of California at Berkeley is another leading example. Pest Management Services' Arthur Slater and his staff of four have successfully used IPM to manage pests in over 600 buildings—including six museums and 38 libraries—for the past 27 years.

This report includes case studies of pesticide reduction programs in San Francisco, Santa Monica and the Isla Vista Parks District.

### Homes

Pesticides used in the home are a significant problem, both in terms of volume applied and the health and environmental consequences of the chemicals used. Eighty-five percent of American homes maintain an average inventory of three to four pesticides.[1] These chemicals—used to combat ants, aphids, fleas, flies, cockroaches, moths, weeds, snails and plant diseases present a wide range of short- and long-term health hazards, particularly for children, who are more easily exposed due to their size and behavior and less able to resist the toxic effects because their immune and physiological systems are still developing. Some home use pesticides, such as diazinon and chlorpyrifos, are a problem for wildlife as well as human health. In the San Francisco Bay Area, home use of these two pesticides accounts for the majority of the toxic runoff recently identified as a hazard to the aquatic food chain in the Bay.

Fortunately, there are non-toxic and least-toxic alternatives for controlling just about every household pest. We present three case studies that illustrate a variety of approaches to reducing home pesticide use, including a landscaping company, a homeowners association and a regional program to educate consumers about less-toxic alternatives.

### Business and industry

Rather than having to understand all the ins and outs of pest management, most businesses turn to professional pest control companies. Unfortunately, most of these companies' services involve unnecessary use of toxic pesticides, which are often applied on a calendar "preventative" basis rather than when real pest problems are present or anticipated, and often in highly toxic formulations.

But some pest control companies in California practice IPM (such as the Living Resources Company described above), or are willing to do so by request. For our case study of a business or industry making a positive choice for IPM, we chose the NASA Ames Research Center.

### Schools

Most California schools routinely and unnecessarily use dangerous pesticides in the buildings and on the grounds where our children spend their days learning and playing. A recent survey by the CALPIRG Charitable Trust found that all 13 of the most populous California school districts surveyed used pesticides identified by government agencies that potentially cause cancer, reproductive or developmental effects, endocrine (hormone) disruption or nervous system damage in 1999.[2]

Across the state concerned parents, teachers and school administrators are finding ways to eliminate dangerous pesticide use in schools through the use of IPM. The school boards of the San Francisco Unified School District, the Los Angeles Unified School District and the Ventura Unified School District have all passed strong policies that require least-toxic IPM with an emphasis on non-chemical management, explicitly banning the most dangerous pesticides, and giving parents, students and staff the right to know about school pesticide use. Schools in Arcata, Berkeley, Fremont, Mendocino, Novato, Placer Hills, San Diego, San Jose, Santa Barbara and the Pajaro Valley have also taken important steps to reduce pesticide use. Our case study details the least-toxic pest management efforts of two Santa Barbara public schools.

## Appendices

We have compiled a list of important resources and program contacts that we believe will be helpful to anyone interested in switching to least-toxic Integrated Pest Management. They range from a list of organizations working towards supporting pesticide reduction, to experienced IPM consultants, to specific resource lists for schools, parks and public spaces. We've also included resources for an additional program category: less-toxic pest management along roadsides.

We hope you will find this report illuminating and helpful and we hope that these examples inspire you to follow the lead of the individuals and institutions profiled here, who have given up the use of toxic chemicals in favor of safer, more sustainable method of pest management. And we hope that you will join us and many others who are working to see that this sustainable vision becomes a reality throughout California.

**Notes**

1 Grossman, Joel, *What's Hiding Under the Sink: Dangers of Household Pesticides*. Environmental Health Perspectives, 103, no. 6, June 1995.

2 Olle, Teresa, *"P" is for Poison: Update on Pesticide Use in California Schools.* CALPIRG Charitable Trust, San Francisco, CA, January 2000.

## What is Least-Toxic IPM?

Among the many definitions of IPM, the most thorough emphasize monitoring pest levels, understanding pest ecology, eliminating the use of highly hazardous pesticides, and encouraging participation in pest management decisions among those directly affected. Responses to pests rely on biological, cultural, physical and mechanical controls (see below)—turning to least-toxic, natural pesticides only as a last resort. This approach is sometimes called "least-toxic IPM."

There are several major criticisms of IPM that should be noted. One significant concern is that the IPM concept has been co-opted by pesticide manufacturers intent on continuing the use of hazardous pesticide products by declaring them "IPM compatible." In numerous instances, so-called "IPM" programs rely on hazardous pesticides as a primary tool—perhaps merely adopting one narrow part of IPM, such as scouting for pests before applying chemicals. When IPM is proposed as a solution, community members and other affected parties should always investigate the design of the program to ensure that the reduction and elimination of dangerous pesticides is integral to its mission.

### Elements of IPM

Physical and mechanical controls include trapping and removing pests, placing barriers to keep pests out, and using heat, cold or electric currents to kill pests. For example, freezing can kill trapped insects such as yellow jackets. Other examples include door sweeps, caulking and sealing pipes and window screens, vacuums and other machinery, and human power or flames to remove weeds.

Cultural practices seek to create an environment unfavorable to pests through methods such as carefully managing irrigation and adding compost to soil. Compost improves soil health by building organic matter which provides nutrients to plants, allows beneficial soil organisms to thrive and improves soil structure. Other cultural tactics include choosing disease or pest-resistant plant varieties, and timing plantings to optimize plant health. Cultural practices are not necessarily distinct from mechanical or physical methods—mechanical cultivation to reduce weed populations could also be considered cultural control.

Biological control uses pests' natural enemies, such as beneficial insects, to keep pests within limits. For example, green lacewings (*Chrysopidae* family) can eat up to 60 aphids an hour.[1] Natural enemies include birds, bats, nematodes and various pathogens. Biological controls can be built up naturally, as plants are planted that encourage the population growth of beneficials, or they can be artificially introduced.

Least-toxic pesticides and application methods. As a last resort, IPM systems sometimes use least-toxic substances to control pests. Although some of these substances play an important role in organic production, they are never relied upon as the primary means of pest control. Natural insecticides include *Bacillus thuringiensis* (Bt), a naturally occurring soil bacterium; borax-based compounds, based on the element boron; and diatomaceous earth, a dust made from fossilized remains of an ancient algae. In many cases, these substances have relatively low toxicity, and tend to biodegrade rapidly.[2] However, just because they are natural does not mean they are safe. In addition, if least-toxic pesticides are used, it is important that they be applied in the least harmful manner possible. Bait stations and gels, for example, are preferable to sprays as an application method.

**Notes**

1 Hansen, Michael, *Pest Control for the Home and Garden*. Consumer Reports Books, Yonkers, NY, 1993.

2 Olkowski, William, et al., *Common Sense Pest Control.* The Taunton Press, Newtown, CT, 1991.

# 1 The City of San Francisco

San Francisco's park system is one of the jewels of the city, and includes more than 7,594 acres of public space. Since 1996, the Recreation and Park Department (Rec & Park) that oversees these spaces, and San Francisco's other 70-plus departments have managed pests under a landmark Integrated Pest Management (IPM) ordinance. Implementation of the program has reduced the use of the most hazardous pesticides to practically zero, brought exciting innovations in non-chemical pest management, and increased public awareness of alternatives to pesticides.

## Local Activists Create Real Change

In January 1996, Pesticide Watch Education Fund and Green Corps released a report that documented Rec & Park's use of over 60 different pesticides from December 1994 to November 1995. Pesticides used included 26 chemicals linked to cancer, and 20 suspected of causing reproductive harm. According to Bob Fiorello of Rec & Park, this report and a subsequent front page story in the *San Francisco Examiner* accelerated a process already underway within the department to address their pesticide dependence. "Rec & Park had been trying to do IPM since the 1980s, but we lacked the organization and impetus to really do it. It took events like the report and the *Examiner* article to really get things going."

Soon after the report and a public education campaign led by the Bay Area Beyond Pesticides Coalition, which included 30 public health and environmental organizations, the San Francisco Board of Supervisors unanimously passed the IPM ordinance. For all of San Francisco's departments, it mandated an immediate ban on use of the most hazardous pesticides, a significant reduction in all pesticide use, adoption of IPM, and 72 hour pre- and post notification of almost all pesticide use. "The ordinance provided the direction that we needed," says Bob Fiorello.

## Implementing Alternatives

The best measure of the success of the San Francisco IPM ordinance is the changes in pest management practices that have taken place in a number of the city's departments. Knowing that many traditional chemical tools were no longer acceptable, staff experimented with new and innovative ways to manage pests. As Fiorello puts it, "Because of the restraints on pesticide use, you are more likely to try things. It forces you to take steps that sometimes are better than the old chemical fixes that often did not work." Below is a summary of some of these innovations.

**"Because of the restraints on pesticide use, you are more likely to try things. It forces you to take steps that sometimes are better than the old chemical fixes that often did not work."**

### Weeds

**Annual flower beds in Golden Gate Park**

Rec & Park eliminated use of pre-emergent herbicides in the highly visible flower beds outside the Golden Gate Park's Conservatory. Staff first experimented with solarization, but this technique failed at the site because the over-spray from sprinklers kept the plastic wet and cooled the soil below. The gardeners have since developed a successful system involving watering the empty beds and allowing them to sit for two weeks to let weed seeds germinate. A flamer is then used to kill weed seedlings as they emerge. The system works so well that only occasional hand weeding is required to maintain the bed once the annuals are planted.

**Mulching**

Bob Fiorello and many other Rec & Park staff use mulching extensively to suppress weed growth. Golden Gate Park has a number of different sections that feature plants from various parts of the world. At the "Temperate Asia" portion of Golden Gate Park, where Fiorello works, the most difficult to manage weeds are non-native, invasive species. In the past, staff used pesticides and hand-weeding, but both of those methods proved ineffective. For the past year, Fiorello has successfully used mulching to solve the problem. The process starts by clearing a problem area to prepare it for planting. Staff

then poke holes into large sections of cardboard and place it on top of the cleared soil. Fiorello puts about three inches of woodchips (recycled from fallen trees in the park) on top of this cardboard. Eventually, the cardboard breaks down into rich organic matter, serving the twin goals of suppressing weeds by blocking sunlight and enriching the soil.

**Public Utility Commission**
On the steep slopes that surround one of the City's remote reservoirs, a grazing herd of goats is being used to clear brush, including problem plants like poison oak and yellow star thistle. Robin Breuer, the Public Utility Commission's IPM Coordinator, has contracted the services of the goats along with two dogs and a herder for 18 months. The herd will circle the reservoir three times creating an open growth pattern in the vegetation. In addition to reducing fire hazard, using goats to clear vegetation also protects the reservoir's water supply from potential pesticide contamination.

### Roaches
**MUNI (public transit)**
"There's no roaches in these coaches" is the word from Ray Favetti and the maintenance division that oversees San Francisco's public transit "rolling stock" (buses, trains, trolleys, etc.). Several years ago, buses were routinely sprayed with insecticides whether insects were present or not. Now improved sanitation and semi-annual baiting control pests have dramatically reduced pest control costs. And the buses are filled with daily monitors—passengers sure to let staff know should cockroaches ride along.

### Roadsides
**Public Works**
Median strips are a serious challenge to IPM coordinators. As cities seek to beautify their streets, many miles of these narrow planted areas are added, but rarely are resources allocated for maintenance and upkeep. In addition to the hazard of potential chemical exposures, applicators applying herbicides to medians face the additional risk of working near moving vehicles. Ralph Montana, the spray operator charged with maintaining San Francisco's medians, decided to try planting wildflowers in several areas that seemed heavily prone to weed infestations. Three mixes of wildflowers were selected to match local climatic conditions. The resulting blooms are a success. They require little maintenance and camouflage any volunteer weeds with their less manicured look. To date, no herbicides have been used in these areas.


**San Francisco city staff receiving training on flame treatment for weeds.**

## Coordination and Communication

According to Rec & Park and other agency managers, one of the most important steps in the successful transition to IPM in San Francisco was establishing an infrastructure and a clear communication system. The City set up a Technical Advisory Committee (TAC) and hired a city-wide program coordinator for this purpose.

The TAC mandate is simple: bring together the major players involved in implementing the policy for regular meetings to share information and find creative solutions to challenges. Within the first few months of the passage of the ordinance, Beryl Magilavy, then the Director of the San Francisco Department of the Environment, and Dave

Frieders, the San Francisco Agricultural Commissioner, convened the first meeting of the TAC. The group has met on a monthly basis ever since. Monthly meetings continue, with attendance ranging from 15 to 30 people, and usually includes the seven major City departments who traditionally used the most pesticides, pest control companies who hold contracts with the City for services, IPM experts, public interest advocates, and staff from the Department of the Environment and the County Agricultural Commissioner's office.

These regular, productive meetings evoke a sense of teamwork and help on-the-ground pest managers in different departments share information and work together to find solutions. For example, departments soon recognized a need for increased funding for transition costs, primarily for additional staff in some departments and for IPM training in all departments. This prompted Pesticide Watch to enlist the support of public interest, health and environmental advocates to successfully lobby the mayor to provide some of the needed funds.

In addition to the regular TAC members and the city-wide program coordinator, each of the 70 San Francisco city departments theoretically designates one person to be its IPM coordinator. Many departments have done so, helping to make the overall city program more effective. The coordinators communicate IPM program goals to department staff and instruct them on their role in eliminating pest problems before they occur.

Extending this approach, Rec & Park created four new positions to work with the over 200 gardeners responsible for managing the park system. These IPM coordinators work closely with the gardening staff, offering information about non-toxic alternatives and authorizing program-approved least-toxic pesticide use when necessary. All pesticide purchases are made through the IPM Department, and no pesticides may be applied without sign-off from the IPM coordinator within the department.

The success of the TAC and department IPM coordinators requires the dedication of all participants and the critical role of the City's Pesticide Reduction Program Coordinator. Coordinator Deborah Raphael facilitates regular meetings of the TAC, coordinates city-wide training and distributes information to city employees about successful non-toxic pest management practices.

**Members of the Technical Advisory Committee discussing pest management strategies.**

## Economics of IPM

Even though most programs experience long-term cost savings by implementing IPM, some economic investment is usually required in the beginning. This has been true in San Francisco, where there have been some significant short-term costs associated with setting up the program, including training, purchasing new equipment, and hiring a coordinator and IPM experts. For Rec & Park, elevating four gardener positions to IPM coordinators also resulted in some increased staff costs. So far, though, San Francisco has found an effective system to fund the program's needs. Seven departments, identified as "big users" of pesticides, were each asked by the Mayor to transfer $17,900 to the Department of the Environment for program coordination and development. This $125,300 is used to fund the citywide IPM coordinator position as well as training, expert consulting fees and materials for these

**Excluding non-toxic corn gluten, Rec & Park reduced its total pesticide use by 30% from 1996–1999, and reduced use of the most hazardous pesticides to almost zero.**

**For more information about San Francisco's IPM program, contact Deborah Raphael, San Francisco Pesticide Reduction Program Coordinator at 415-554-6399. Bob Fiorello, gardener with Rec & Park, can be reached at 415-753-7249.**

seven departments, and outreach to the city's remaining departments.

Other funding sources included a start-up grant awarded to the County Agricultural Commissioner's Office by the Environmental Protection Agency, and private grants used to fund specific projects. In addition, individual departments have drawn upon existing budgets to implement specialized training and pilot projects.

## Conclusion

San Francisco's pest management program has enjoyed great success. Excluding non-toxic corn gluten, Rec & Park reduced its total pesticide use by 30% from 1996–1999, and reduced use of the most hazardous pesticides to almost zero. Many pest managers around the state and nation look to it as a model. It has even inspired the adoption of similar programs such as the IPM ordinance passed by the Marin County Board of Supervisors in 1998. But despite its many successes, San Francisco's program is not complete and has a long way to go to reach all of its goals. Despite drastic reduction, many pesticides of concern to the public and the staff, including many herbicides, continue to be used for some purposes at relatively high levels. But, as Bob Fiorello notes, the results of the ordinance have been mostly positive and are here to stay. "IPM is a reality, not a fad. The Rec & Park Department hopes to continue to be at the forefront of demonstrating that it can work."

# 2 Isla Vista Recreation and Parks District

The County of Santa Barbara has had many progressive, environmentally-minded programs over the years. The County's Isla Vista Recreation and Parks District (IV Parks) pest management program is a good example. The district comprises 75 acres of land spread across the entire Isla Vista community, and has been managed since 1972 using organic methods.

IV Parks' 22 parks range from neighborhood and blufftop parks of less than three acres to major parks which include public restrooms, an amphitheater and a wooden greenhouse which will soon be rebuilt as an environmentally friendly "green" building. Some neighborhood parks feature children's play equipment, picnic tables, gazebos, barbecue pits and open grassy areas. The blufftop parks provide open spaces where people can view wildlife, the ocean and the Channel Islands. One park includes large playing fields, including basketball courts, soccer fields and volleyball areas.

## Confronting Pest Problems Head On

"The philosophy followed by park district personnel is to not allow or create an opportunity for a pest to become a problem," says Derek Johnson, General Manager of IV Parks. Staff are constantly on the lookout for potential problem areas, aided by residents who use the parks regularly. If somebody notices a problem, he or she can call park personnel to voice their concerns. A staff person will immediately investigate the problem to find a way to prevent the problem from spreading. Solutions are derived from a system that Johnson and the grounds staff have developed over the years. This includes using various publications—including the journal *IPM Practitioner*, produced by the Bio-Integral Resource Center, and their own small library of collected information—as resources for finding Integrated Pest Management (IPM) solutions to pest or weed problems. Additionally, a small journal and calendar is kept in order to track seasonal problems and to document successes and failure of control methods. Johnson believes consulting such authoritative sources saves money by eliminating the "trial and error" method.

Santa Barbara's mild climate greatly enhances IV Parks staff ability to manage pests organically. Park maintenance is relatively simple and allows staff to focus more on the health of plants and eliminating the likelihood of pest problems. Rather than manage pests once they become a visible problem, district staff work to create conditions which deter pests in the first place. They eliminate hiding and nesting places for pests such as rodents, roaches and silverfish, and cut off their access to indoor facilities such as public restrooms. For plants, staff promote conditions that support the healthy growth of plants so that they are better able to fight pests themselves.

### Weeds

IV Parks staff use compost to manage weeds without chemicals. The district operates one of the largest composting facilities in the county, and receives many inputs from a local stable. District staff use compost to support healthy plant growth to out-compete weeds. They also chose plants strategically to help fight weeds. For example, Yarrow has proven to be a beneficial ground cover that seems to be able to compete with Bermuda and crab grass.

### Plant pests

Strategic plant choice also helps IV Parks staff keep park plants free of both insect pests and diseases. This promotes healthy bird and beneficial insect populations, encourages diversity and helps maintain a stable ecosystem. For instance, the clover in a blend of drought-tolerant, non-invasive fescue and clover used on lawns fixes nitrogen in the soil to maintain high nutrient levels for healthy grass. Thriving plants and grass can fight pests and disease themselves, without use of chemical controls.

**"The philosophy followed by park district personnel is to not allow or create an opportunity for a pest to become a problem."**

Kelly Jenkins

**An Isla Vista playground beautifully maintained with no pesticides.**

Staff also replace exotic plant species with native plants to manage plant pests. Park personnel have eliminated exotic trees such as Curly dock and Eucalyptus. This removes a food source for exotic and hard-to-manage pests that may not have natural predators in the area. Replacement tree species include willows, oaks, sycamores, alders and cottonwoods.

### Small animals

IV Parks employ traps when necessary to manage larger pests such as gophers, rats and mice. For instance, because gopher tunnels destroy root systems in open grassy areas and gopher holes present a risk of ankle sprains to park-goers, staff note gopher holes and place traps at both entrances to active gopher holes. They even use bait in the traps that comes from a local organic co-op. This method has successfully kept the gopher population to a minimum.

### Yellow jacket and mosquito management

During warmer months, yellow jackets and mosquitoes often become serious nuisances in Santa Barbara. Though they will never be completely eliminated, their populations can be managed. IV Parks officials mainly rely on Santa Barbara County Vector Control—who have long been working to combat mosquitoes and yellow jackets—to manage these pests within the district. Vector Control staff have used alternative pest management techniques, including the use of *Bacillus thuringiensis israelensis* (Bti) for mosquito control and a natural compound of diatamaceous earth and pyrethrin for yellow jackets and bees. These methods, although not completely free of potential risk to public health and the environment, have effectively contained the yellow jacket, bee and mosquito populations.

## Guided by Organic Principles

When the district's board created its operating guidelines in 1972, it recognized the need to protect community members from the dangers of harmful pesticides. The IV Parks' guiding policy states that "The Board of Directors of the Isla Vista Recreation and Park District is dedicated to the development and maintenance of Isla Vista Parks using organic methods." The policy includes an emergency clause which authorizes the use of least-toxic pesticides, but only after all other possible alternatives have been explored and dismissed. In practice, this clause has never been invoked in the district's 27 year history.

Derek Johnson and Joseph Lemus, the grounds supervisor, oversee implementation of park care based on organic and IPM standards. They report to the IV Parks Board of Directors and must appear before them if a request is ever made to use pesticides. They work with 11 groundskeepers who are hired based on their past experience and knowledge of IPM and organic practices. Since the staff is hired with IPM/organic principles in mind, they support and carry out the policy enthusiastically. They often work with student volunteers from the University of California at Santa Barbara and Santa Barbara City College. In addition to providing IV Parks with extra help, this training fosters the extension of IPM principles to other segments of the community.

## Helping Others

Because IV Parks staff have established a strong IPM program that focuses on the prevention of pest problems before they occur,

they have all but eliminated their pest challenges, and are now able to serve as a model for their community and beyond.

Not all parks within the IV Parks are managed by the District. Some are Santa Barbara County parks which have been managed using synthetic pesticides. Fortunately, Isla Vista officials have fine-tuned their grounds maintenance techniques well throughout the years and now consult with Santa Barbara County Park's officials on organic methods and IPM. Johnson is currently working with County officials to transition all of the County park grounds that lie within Isla Vista to chemical free pest management.

The IV Park District also serves as a resource to help the public solve household pest problems. For instance, a local resident called Johnson about an oak worm infestation. He'd previously used malathion, but switched to *Bacillus thuringiensis israelensis* (Bti) at Johnson's suggestion. Malathion is an EPA Toxicity Class III chemical which can cause acute problems in humans, including numbness, tingling sensations, loss of coordination, headache, dizziness, tremor, nausea, abdominal cramps, sweating, blurred vision, difficulty breathing or respiratory depression, and slow heartbeat. It is also a non-selective organophosphate insecticide that kills many beneficial insects in addition to pests. Bti, on the other hand, is highly selective and is the least-toxic, most effective biological control currently available.

The Isla Vista District staff also reach out to the community with written materials, such as a quarterly newsletter that often provides information on the IV Parks' successful non-toxic management practices.

## Conclusion

Clearly, when it comes to pest management and proven experience reducing pesticide use, IV Parks is a resounding success. Effectively managing pests in a diverse, highly-used public landscape without using toxic chemicals may seem a challenge to some, but IV Parks staff have been able to do this for almost three decades. The vision of their original Board of Directors, and the dedicated work of staff throughout the years, has created a community resource that is not only beautiful and healthy, but an important model for all of us.

**To learn more about the Isla Vista Recreation and Parks District and its organic and IPM program, contact Derek Johnson, General Manager, Isla Vista Recreation and Park District, 961 Embarcadero Del Mar, Isla Vista, CA 93117, phone: 805-968-2017, fax: 805-968-2829, email: Ivpark@silcom.com, website: www.silcom.com/~ivpark.**

# 3 Santa Barbara Schools

"I used to say I'd match our cockroaches against those at any school in the state," says Pat Morales, principal of Peabody Charter School in Santa Barbara. Today she would lose that match, thanks to a successful pesticide reduction demonstration project.

In 1996, Phil Boise of Organic Consulting Services and Karen Feeney of the Santa Barbara-based Community Environmental Council received grants from U.S. EPA Region IX and the Santa Barbara Foundation to identify and overcome barriers to implementing effective school Integrated Pest Management (IPM) programs. Since there is no better way to identify the challenges than to go through the process of implementing an IPM program, that is where Feeney and Boise started. They set up demonstration IPM projects at two elementary schools in Santa Barbara County—Peabody Charter School and Vista de las Cruces School. Peabody is a large, urban 70-year-old school and Vista is a small, 10-year-old school located in the rural foothills between Lompoc and Santa Barbara. The two schools provided the opportunity to implement IPM in different administrative settings with a variety of pest problems.

Boise and Feeney are both IPM experts, but that was not the only reason they were interested in doing this work. They are also concerned parents who—thanks to their training in pest management—understand the hazards toxic pesticides pose to children in schools. Student poisoning in schools is not rare, and adverse health effects—including nausea, headaches, chronic fatigue and skin rashes—frequently appear even when pesticides are applied according to label directions. Boise and Feeney believe that when effective non-chemical methods exist for school pest control, they should be used instead.

## Teamwork and Commitment

The two demonstration project schools chosen for the project had different pest problems, but shared a commitment to teamwork to move away from chemically-based pest-management practices. When asked what proved most important to the success of the program, Feeney said, "Buy-in." For everyone involved, from the principals who approved the plan and provided resources, to the custodians and grounds managers who were responsible for the actual pest control work, the key was teamwork.

To develop the IPM programs for the two schools, a team of people willing to work together to implement the proposed changes was created. Each team typically consisted of the principal, one or two school board members, the buildings and grounds manager and/or custodian, and interested parents and teachers. Guided by IPM professionals, these teams received training to understand and implement an IPM approach.

IPM required everyone involved to revise their concept of pest control. Instead of attacking bugs and weeds directly, the goal was to take precautionary measures that would discourage pests in the first place—such as eliminating their habitat and excluding them by physical means. "It takes a while to think a different way," says Peabody Principal Pat Morales. Although the pests were under control in the first year, it took several years for this change in mindset to occur at Peabody.

## Peabody School

Because of the age of the building, Peabody School had many cracks and crevices for cockroaches and ants to call home. When teachers would go to the building in the evening, hundreds of roaches would flee when the lights came on. Ants routinely invaded the teachers lounge and flying insects plagued the kitchen and cafeteria. Before the IPM program, attempts to control these pests focused on spraying neurotoxic insecticides (such as chlorpyrifos) and pyrethroids (such as permethrin). Yet even with this regular spraying, serious pest problems remained.

The Peabody team began its IPM project by monitoring pest populations. Sticky traps

were set out at night to determine preferred roach pathways and locations. Each typically caught 10–20 per night, including one with 66. Students helped by counting ants, completing monitoring report forms, and reporting their results back to the IPM team. One teacher even developed an ecology unit that used the monitoring data to teach students about the biology and social structure of ant communities.

Once the habits of pests were determined, the custodians worked closely with Boise and Feeney for two days caulking cracks and dusting boric acid, diatomaceous earth and hydramethylnon into the walls. Hydramethylnon, a possible carcinogen which concerned Boise and Feeney, was used in the short-term because its application method—a gel formula—was less hazardous than the pesticides that had been used previously. They also placed bait stations and sticky traps along the roaches' favorite pathways, and carefully monitored and changed them when necessary. To address the ant problem, they improved sanitation in the teachers' lounge and caulked cracks around windows, electrical outlets, and floor joints. They used commercial baits containing boric acid and sugar, diluted them to 0.5% active ingredient, and placed them outside windows for ants to take back to their nests. The low concentration of boric acid ensured that worker ants would survive long enough to carry the bait back to the nest and poison the queen. For the flying insect problems in the kitchen and cafeteria, forced air barriers were created at the entrances, preventing flies and wasps from entering.

Within six weeks of taking these preventative actions, the roach population plummeted to an average of 3.3 per trap. After 12 weeks, the number dropped again, to an average of 0.5 roaches per trap. Two years later, there is still no roach problem. The ant population also decreased steadily. Within 24 hours the ants had left the buildings and concentrated their activity at the bait stations. "The ants, like us, are pretty lazy," said Boise. "If they can get food and water easily at the bait station they'll go there preferentially, instead of scavenging indoors." After eight weeks the problem nests were inactive. The success of the program was evident when just four weeks after the baits were set out, the teachers accidentally left an uncovered chocolate cake in the window of the teacher's lounge. No ants showed up for the feast—a dramatic demonstration of the effectiveness of the program.

Peabody's IPM team also worked to control weed pests. Before IPM, weeds in landscaped areas and along sidewalk edges were controlled using Roundup™ (glyphosate), even though children frequently played in recently-sprayed areas. The alternative approach to managing weeds involved mulching, hand weeding and trimming edges. Mulch was donated by the county and used around the landscaped areas. A mechanical edger was used to trim the grass along sidewalks.

Initially, some district staff resisted change to established pest control practices. Accustomed to chemical weed control, some staff assumed that the "no spray" request from Peabody meant doing nothing to control weeds. The IPM team eventually convinced staff to put in their usual number of hours hand weeding and edging instead of mixing and spraying chemicals.

## Vista de las Cruces School

Because of the rural surroundings and the relatively young age of the school building, pest problems at Vista were somewhat different than those at Peabody School. At Vista, the IPM team determined its major pests to be ants, swallows, mice, gophers and weeds. Initially, Vista had a contract with a pest control firm to spray the school for insects on a monthly basis. Tom Keller, a teacher at Vista said, "Every time they would come to spray, my lungs would hurt and fill up with fluid." Records from the pest control company showed applications of the neurotoxic pesticides carbaryl, chlorpyrifos, diazinon and acephate. Vista's landscaping contractor managed weeds in their 8,000 square feet of open space and landscaped areas. In the year before the project began, 400 pounds of oxadiazon (Ronstar G™) and five gallons of glyphosate

**Before IPM, the Vista de las Cruces school paid $1,740 per year for a monthly spray contract with a pest control company. When they transferred the responsibility to Tom Drewes, their costs for interior pest control were reduced to a total of $270 over two years.**

Susan Kegley

**Staff at Vista de las Cruces school spread mulch to keep weeds down.**

(Roundup™) were applied to the school grounds. Poison baits were used for mice and gophers, with only limited success.

The Vista IPM team had to make some decisions about whether or not to keep the contracts with the pest control and landscaping firms. Because buildings and grounds manager Tom Drewes was interested in learning IPM techniques, the team decided to cancel the pest control contract for buildings and hand this responsibility off to Drewes. The outdoor work was extensive enough that it made sense to keep the landscaping company on the job, but the IPM team worked with them to ensure they incorporated IPM techniques into their weed control plan.

Boise trained Drewes to prepare and monitor bait stations for ants and to use mechanical traps for gophers instead of poison. Drewes already had set up wasp traps in the school courtyard and near playing fields, and plastic owls and bird netting were erected in the courtyard to prevent swallows from nesting under the eaves. They also came up with an innovative solution for control of the mice—two cats. Adopted from the local humane society, these cats are effectively keeping the rodent population under control. The landscaping firm controls weeds by mulching with "gorilla hair" redwood mulch, and hand weeding. They no longer use herbicides.

## Spreading the Word

Asked what he thought of the program, Vista teacher Tom Keller responded, "It's ridiculous to poison our kids. I think every school in California should do this." To help others learn from the project, six workshops were held to spread the word about the demonstration project results and bring in IPM experts to provide additional training. Each workshop drew between 25 and 75 people from other schools, including park staff, parents, school board members and teachers. The utility and common sense of many techniques were so obvious that other schools quickly adopted part of Vista's IPM plan. In January 1999, the Santa Barbara School District school board approved a contract with the Community Environmental Council that will phase in IPM at five additional district schools.

## Long-Range Solutions Reduce Costs

Under the old system of pest control, the Peabody and Vista de las Cruces schools sprayed frequently for pests, investing many hours in their pest control efforts. By switching to IPM, both schools have actually reduced pests *and* lowered their costs in the long term.

### Cost savings at Peabody

At Peabody, the custodian used to spend one to two hours a day dealing with ants in the teachers lounge—vacuuming, spraying pesticides and mopping up ant trails. In spite of this effort, the ants never really went away. With the investment of 14 hours spent caulking cracks and applying low toxicity pesticides, the amount of time necessary to keep the ants under control decreased by 70 percent. Custodians now place and maintain bait stations. The cost of materials used in the control of interior pests in the program's first year was $705, much of that directed to permanent improvements like caulking that will not need to be repeated in subsequent years.

The cost of transitioning to IPM for landscaping at Peabody was facilitated by the County's donation of hundreds of dollars worth of mulch and the labor of a few volunteers, requiring few out-of-pocket expenses. Peabody has also recently hired its own landscaper, who utilizes IPM techniques to care for the school grounds.

### Cost savings at Vista de las Cruces

Vista de las Cruces principal Kent McClish, when asked about the budget impacts of the IPM program, says "It actually lessens our expense." Before IPM, the school paid $1,740 per year for a monthly spray contract with a pest control company. When they transferred the responsibility to Tom Drewes, their costs for interior pest control were reduced to a total of $270 over two years. When asked about the continuing efforts required to keep the program going, Drewes said, "It really doesn't take much now. It's mostly housekeeping." Weed control at Vista cost $934 in the year before the IPM project was implemented. While the application of mulch to control weeds at Vista was a fairly large up-front expense of $2,170, it has already paid for itself and continues to help control weeds and reduce the amount of water needed for a few more years before it will need to be replaced.

Susan Kegley

**Vista building and grounds manager Tom Drewes displays gorilla hair mulch, which has been used sucessfully to eliminate herbicide use.**

## Conclusion

The pilot projects at Vista de las Cruces and Peabody schools have resulted in an exciting IPM program that is now spreading throughout the District, and setting an important example for other districts statewide. With training, teamwork and a precautionary approach, these schools have demonstrated that not only does IPM work in a school setting—but it's better, cheaper and safer. This is a crucial result, since statewide, more and more parents and other concerned community members want their schools to start using IPM.

Although we believe the results of the Santa Barbara demonstration project demonstrates that IPM techniques work, in our experience, pilot projects often only lead to changes in a few schools rather than in district-wide adoption of IPM techniques. For this reason, we believe that policy change at the school board level is critical to solving pest management problems within a school district in the long term. We have supplemented this case study with a copy of a good model IPM policy—the one passed in 1998 by the San Francisco Unified School District (see Appendix A). Several other school districts, including Los Angeles and Ventura, have also passed tough, effective policies in the past two years to address the problem of pesticide use in their schools.

**For more information, contact: Karen Feeney and Phil Boise, Community Environmental Council, 930 Miramonte Drive, Santa Barbara, CA 93109, 805-963-0583.**

# 4 The San Francisco Bay Area's "Our Water Our World" Program

Most people who encounter aphids, ants, spiders and other home and garden pests head to their local nursery or hardware store to buy some kind of pesticide. A typical store offers many choices to take care of problem pests, including a vast array of EPA-approved pesticides. Often people douse their garden or home with a chemical bath of a product that contains diazinon or chlorpyrifos (Dursban™), two potent nerve poisons.

But those who venture into Palo Alto Ace Hardware learn that there are other choices. The store offers a wide variety of alternatives marked with "less-toxic product" signs, a prominent display of fact sheets on less-toxic pest control, and a staff well-prepared to suggest effective alternatives to customers.

Why is this store so different? Owner Larry Hassett and his staff participate in the Bay Area's "Our Water Our World" IPM Partnership program. This program is a public-private partnership of water pollution prevention agencies, hardware stores and nurseries working together to promote less-toxic pest control and the principles of IPM.

Elisa Lynch

**The beautiful San Francisco Bay is facing pollution problems due to the use of organophosphate pesticides.**

## Polluting Our Water

Each year Californians purchase more than one million pounds of diazinon and chlorpyrifos, two potent organophosphate pesticides. This glut of organophosphate pesticide use is a serious water quality problem in the Bay Area. In 1993, the Central Contra Costa Sanitary District discovered that the presence of diazinon and chlorpyrifos in its treated wastewater could be harming sensitive aquatic life, the base of the food web in the San Francisco Bay. It also found that more than 60% of the diazinon and chlorpyrifos that entered the wastewater treatment plant came from residential rather than agricultural, industrial or government sources. Bay Area stormwater agencies also found troubling results in their studies. Local testing of creeks determined that about 70% of them contained enough pesticides to kill sensitive aquatic life. Most of these pesticides are believed to be washing off of lawns and gardens in residential areas. The San Francisco Bay and San Francisco Bay Area creeks have recently been listed by the U.S. Environmental Protection Agency as impaired. As a result, the San Francisco Bay Regional Water Quality Control Board has mandated that local agencies search for a method to prevent further contamination.

## Partnering with Business

Eliminating diazinon, chlorpyrifos and other dangerous pesticides from the houses and gardens of consumers is not a simple task. Local agencies cannot simply ban their sale, since California law prohibits local restrictions on the sale of pesticides. Bart Brandenburg of the Central Contra Costa Sanitary District and Phil Bobel of Palo Alto's Regional Water Quality Control Plant put together a team to find a way around this obstacle. One key component of their plan included partnering with local pesticide and pest management retailers. Ace's Hassett had previously worked with the City of Palo Alto

on other environmental business projects and agreed to participate in the initial discussions, soon becoming one of the key players. This team came up with the innovative and award-winning "Our Water Our World" program.

The team's first challenge was to find alternative products or processes that could effectively manage the same pests as chlorpyrifos and diazinon without degrading water quality. Hassett says that products that contain chlorpyrifos and diazinon accounted for between 60% and 75% of the pesticide products he sold. He realized that in order to redirect consumer choices, he would have to find and promote alternatives.

With the help of experts, the team developed an extensive list of least-toxic products that included physical, cultural, chemical and biological controls, pest monitoring aids, and educational and reference materials. Some products listed are non-toxic, and many are in the "less-toxic" category. Deciding what qualified as less-toxic was not always simple, and required weighing relative risks and evaluating the availability and effectiveness of alternatives.

After the products were chosen, many obstacles remained in designing the program. For example, the team considered affixing "less-toxic product" labels to product packaging to make absolutely clear which products were recommended by the program. The team learned, however, legally-approved labels of pesticide products cannot be altered.

In the end, the program's developers found that they could effectively encourage the use of less-toxic pest control products and methods through fact sheets, signs near products called "shelf-talkers," displays at the end of shelf rows ("end caps"), and most importantly, through staff training. As much as 50% of purchases are employee-assisted. This is where promotion and sale of alternatives really happens, since the employee's first recommendation is usually what the customer buys.

With a program logo, graphics and fact sheets in hand, the IPM Partnership program was named "Our Water Our World," and moved into action. It was test-run at Palo Alto Hardware, Concord Ace Hardware, Navlet's Nursery and Garden Center and Sloat Garden Center (formerly Diablo Nursery). Experts involved in less-toxic pest management were hired to train employees. Store owners and employees were trained together. The one exception was Palo Alto Ace Hardware employees, who were unable to attend due to local flooding. Hassett, who had already been trained as a Master Gardener, trained his own employees.


Elisa Lynch

**Larry Hassett, owner of Palo Alto Ace Hardware, shows his store display that promotes alternatives to pesticides.**

Hassett says he began training his staff by finding a "hook" to motivate them to care about the issue. Using a map of the San Francisquito Creek watershed, he determined that due to proximity and sales volume, there was one single store in the county that affected the health of San Francisquito Creek more than any other—HIS STORE. This close-to-home example convinced his employees of the program's importance from the start.

Hassett's trained store employees provide customers with advice that goes beyond pointing to a better product or to a sign. Hassett says staff also educate customers about "acceptable" levels of pests: How many ants can you live with? Less-toxic products and methods can control pests to the point where they pose no problem for your home or garden, but do not entirely disappear. Also, customers need to know how to use these alternatives effectively. Otherwise, customers may be disappointed with the results and return to using hazardous pesticides.

Following the successful pilot projects, the "Our Water Our World" program expanded in 1999 to over 100 independently-owned nurseries and hardware stores in the Bay Area. Almost all of the Bay Area's Orchard Supply Hardware stores have also signed up

Table 1

| | |
|---|---|
| **Chlorpyrifos & diazinon products:** | |
| Profit on product: 8/96–8/97: | $2,603.34 |
| Profit on product: 8/97–8/98: | 1,899.39 |
| Change: | -703.95 |
| **Non-toxic & less-toxic products:** | |
| Profit on product: 8/96–8/97: | $2,839.90 |
| Profit on product: 8/97–8/98: | 4,096.67 |
| Change: | +1,256.77 |
| Net Change: | +552.82 |

to participate. Water pollution prevention agency public recognition of participating stores played a big part in this program expansion. As Hassett says, "I'd be very embarrassed if my store wasn't listed as part of this program."

## Solid Results

So does all this effort really make a difference? Now into its third year, Hassett has produced statistics showing that it has. He compared his sales of diazinon and chlorpyrifos-containing products with sales of less-toxic alternatives for the years before and after the program began. The results are clear: targeted pesticide sales declined and profits were more than maintained by those of less-toxic products. See Table 1.

A broader evaluation of the first program year is underway. It compares a survey in Contra Costa County to monitor public awareness about pesticides and less-toxic alternatives, a study of sales data from participating stores, and measurement of diazinon and chlorpyrifos concentrations in the wastewater flowing into the San Francisco Bay from the Central Contra Costa Sanitary District's treatment plant. The public opinion survey and sales data are not complete, but preliminary data show a nearly 30% reduction of diazinon and chlorpyrifos pesticides in the Central Contra Costa Sanitary District's treated wastewater.

## Other Pesticide Toxicity Programs

Store partnerships are only one element of several pesticide toxicity reduction programs underway at the Central Contra Costa Sanitary District. Other programs involve school gardens, Master Gardener workshops and Pest Control Operator training.

## Conclusion

The authors of this report believe that the use of chloryprifos products and diazinon should be eliminated immediately. Unfortunately, decison-makers in Sacramento and Washington are hesitant to take these aggressive actions because of the enormous influence of big monied special interests. Recently, however, the EPA announced that it was phasing out the use of many chlorpyrifos products because of the pesticides' impacts on children. Larry Hassett took the additional step of pulling all chlorpyrifos products from his shelves immediately. Steps like these and programs like "Our Water Our World" demonstrate that there are effective steps that can be taken now that fall short of outright elimination but are strong steps toward reducing our reliance on hazardous pesticides.

The "Our Water Our World" program can boast an enthusiastic and increasing number of participants and numerous inquiries from other counties outside the Bay Area. Even more important, they are achieving their goal of reducing wastewater concentrations of diazinon and chlorpyrifos. Nevertheless, Brandenberg at the Central Contra Costa Sanitary District emphasizes that it takes a long-term commitment by water pollution prevention agencies and their partners to turn around decades of increasing "dependency" on diazinon, chlorpyrifos and other harmful pesticides. The time spent educating consumers on less-toxic pest management methods hopefully will also mean less future dependency on replacement pesticide products that could be equally damaging to the environment.

**Larry Hassett can be reached at 650-327-7222. Or visit the Palo Alto Ace Hardware Store at 875 Alma Street, Palo Alto, CA, 94301.**

**For more information about the regional "Our Water Our World" campaign, call Geoff Brosseau at the Bay Area Stormwater Management Agencies Association at 650-322-3070.**

**For more information about other pesticide toxicity programs such as Kids in Gardens, Master Gardener workshops, and Pest Control Operator training which are now underway at the Central Contra Costa Sanitary District, call Bart Brandenberg at 925-229-7361.**

# 5 Living Resources Company

For many, maintaining a healthy, beautiful landscape without using highly toxic pesticides is a daunting challenge. Yet for 26 years, Steven Zien and his Living Resources Company (Living Resources) have worked with over a thousand clients with diverse landscapes to successfully control pests without hazardous poisons.

Living Resources—an award-winning, Citrus Heights-based organic landscaping service—creates and maintains sustainable landscapes in the greater Sacramento area. They also provide consultations and offer extensive soil testing service to clients throughout California and across North America. Living Resources satisfies its clients' growing needs organically.

## Preventing Pests with Healthy Soil

Living Resources President Zien believes the basic protocol for healthy plant cultivation is simpler than most people realize: by creating an environment that is unsuitable for pests, the need for toxic pest management is reduced or eliminated. A key component of this is the fact that plants are only as healthy as the soil in which they live. "Proper soil fertility and cultural management creates conditions that are less favorable to pests, so they are less likely to become a problem," explains Zien.

With this in mind, Living Resources begins its Integrated Pest Management (IPM) service by improving soil fertility, enriching soil conditions with natural organic fertilizers as indicated by an extensive custom soil analysis. This is the "most effective method to prevent pest damage and the need for pest management," say Zien. "By creating fertile soil with a diverse population of beneficial soil organisms, plants are healthier and more pest resistant." Living Resources recommends a custom-blend organic fertilizer, which it manufactures and applies to its client's landscape. In the fall of 1999, Living Resources custom-blended and applied over 6,500 pounds of organic fertilizer.

## Environmentally Sound, Least-Toxic Pest Management

In addition to fertilization for soil nutrition, key non-toxic pest prevention practices include routine IPM inspections and maintenance. Landscapes are monitored regularly to identify both plants performing suboptimally and pests before they exceed tolerable levels. Any problem area is scouted further to determine what beneficial organisms—such as ladybugs, soldier beetles, lacewings or praying mantids—are already present. Various factors such as weather, irrigation, fertilization, pruning and pests are evaluated to determine the source of the problem. When pests are implicated, an IPM strategy is designed based on environmentally sound, least-toxic methods of control.

The first option might be a form of natural control. For example, after identifying the pest and its life cycle, Living Resources could choose to rely on existing beneficial insects to keep the primary pest population—pests suspected of causing the damage—within tolerable levels. Secondary pests—other pest species present but causing no major problem—must also be identified. Management options selected against the primary pest must not interfere with the factors that are keeping the secondary pest under control. Mites are a typical example of a secondary pest that normally can be controlled naturally without noticeable damage. The application of a conventional pesticide will kill off its biological controls allowing its population to explode, resulting in serious plant damage.

"In most cases, changes in management practices or physical techniques have been successful," says Zien. Weeds,

Amy S. Cohen

**Steven Zien taking a soil sample to determine soil health.**

however, are especially hard to manage organically. "While IPM for insects and diseases works well and can easily be adopted industry-wide, more research is needed to make weed IPM more effective," explains Zien. One weed management method Living Resources uses regularly is flame weeding. This works well to control weeds along fence lines, in driveway cracks, along gravel pathways and even in lawns. Powered by propane to produce a small flame, flamers are held over weeds for just a few seconds. "Burning" the weeds is not necessary; since flamers quickly heat the water in plant cells, causing them to burst. Within a few hours the weed wilts and dies. "Lawns are prairie plants, adapted to prairie fires," Zien explains. "The quick burn the lawn receives with a flamer only kills the tops of the leaves. The growing point is well-protected and after one mowing, the turf fully recovers." Of course, flamers can only be used safely on green vegetation to avoid fire danger.

## Involving Clients in the Process

Many of Living Resources' clients actively assist with ongoing IPM practices. They receive information about organic control options to help them conduct their own programs. For instance, some clients may be asked to give a daily blast of water to wash pests off a plant. Others may be asked to help release beneficial insects such as ladybugs. Once educated about the benefits of such simple practices, many end up actively participating in their landscapes pest management program.

## Pesticides Used Only as a Last Resort

Although better soil health, natural controls, and non-toxic management techniques work most of the time, a variety of other options do exist to manage pests if the problem becomes extensive. Living Resources considers all pest control options that are acceptable under California's organic food laws. Allowable pesticides are only used as a last resort. Living Resources' requires that its strategies be: 1) least hazardous to human health; 2) least damaging to non-target organisms; 3) least disruptive to natural controls; 4) able to provide long-term control; and 5) cost-effective.

Overall, Living Resources rarely uses pesticides. On occasion, especially in spring, aphids can quickly become a serious pest problem on a variety of plants. In these circumstances, beneficial insects cannot eat and reproduce fast enough to keep the rapidly growing aphid population at tolerable levels. A one-time application of insecticidal soap effectively kills almost all of the aphids, while leaving most of the beneficial insects unharmed. The pest population is reduced enough that naturally occurring beneficial insects can take over and control the pest population. Unlike most other companies, "Living Resources is not trying to achieve 100% control (total elimination of the pest) from a single application," says Zien. Often the use of an organically acceptable product will lower the pest population enough to implement other forms of controls and maintain pests within tolerable levels.

Only when all other options fail are botanical pesticides such as pyrethrin, neem or the naturally occurring caterpillar pathogen *Bacillus thuringiensis* (Bt) used. When a physical control such as a daily blast of water is impossible or impractical, an application of neem can dramatically reduce or eliminate an excessive pest population. After such treatment, proper irrigation and regular water blasts can usually keep the pest within tolerable levels for the remainder of the season. If pests persist, Living Resources may recommend replacement of susceptible plants with resistant varieties.

## Healthy Choices Don't Cost More

Living Resources' higher than industry norm labor and fertilizer costs are offset by its virtually non-existent costs for pest control products. "The majority of IPM costs are labor instead of pesticides and application equipment," explains Zien. High labor costs are absorbed into charges for other services. For

example, monitoring, scouting and flame-weeding takes slightly more time than to spray an herbicide, but the cost of propane is dramatically less than the cost of herbicides and protective equipment. In addition, since Living Resources only uses organically acceptable pest control products and makes so few pesticide applications, it does not have the high insurance costs that conventional pest control companies pass along to their customers. Zien believes Living Resources' overall costs are lower than the combined associated costs of conventional landscape maintenance.

## Convincing the Public

Living Resources initial major challenge was lack of public acceptance of less-toxic pest management. Clients accustomed to conventional pest control techniques expected monthly pesticide applications, even when there were not any pests. They are concerned that without regular applications, "the landscape, garden and home would be overwhelmed by a hoard of hungry, dirty, disease-carrying, people-biting pests," says Zien. "IPM is a radical shift in theology that goes against 50 years of education provided directly and indirectly from the agricultural chemical industry—e.g., 'better living through chemistry,' and 'the only good bug is a dead bug.'"

"Most pest control companies do not want to implement IPM," says Zien. "They go in, spray a poison, no more pest. It's quick and easy." Zien suggests that IPM's initial time commitment and consideration of many factors act as a deterrent. And, he says, pesticide manufacturers push pest control companies to choose pesticides as the solution: as dangerous synthetic pesticides are taken off the market or as pests become resistant, companies just switch to another synthetic chemical. "Until they run out of pesticides, things are not likely to change in the pest control industry, and IPM will not be widely adopted," says Zien.

To raise public awareness about health and safety issues regarding pesticides, as well as existing alternatives, Living Resources launched an educational campaign. Zien's media outreach generated frequent guest appearances on local garden radio talk shows, a regular garden column called "Organic Matters" in the *Sacramento Bee*, and numerous presentations to a wide variety of professional groups and clubs.

Amy S. Cohen

**Steven Zien identifying an insect to determine potential pest problems.**

Zien also founded Biological Urban Gardening Services (BUGS), to serve as the educational branch of Living Resources. BUGS is an international membership organization which publishes a quarterly newsletter, "BUGS Flyer—The Voice of Ecological Horticulture," and a catalog of educational brochures on organic landscape maintenance. BUGS is active in a number of coalitions (including Californians for Pesticide Reform) and has lobbied state legislators on IPM and pesticide safety issues.

## Conclusion

For 26 years, Living Resources has been a leader in least-toxic pest management. Through on-the-ground experience and innovation, it has shown that toxic pesticides are not necessary to manage pests in our landscapes. Steven Zien encourages others to follow his lead and educate themselves about the success of IPM, using a wide range of resources including libraries, the Internet, knowledgeable organizations (see Appendices) or a local cooperative extension office. "Education is the key, along with a willingness to change and try new technologies," he emphasizes. Statewide, this is still a relatively new field, but one which is likely to experience a lot of growth—there are more and more landscaping services discovering and using IPM all the time.

**The Living Resource Company and Biological Urban Gardening Services (BUGS) can be reached at: P.O. Box 76, Citrus Heights, California 95611, Phone: 916-726-5377, email: bugslrc@cwia.com, website: www.organiclandscape.com.**

# 6 The City of Santa Monica

On September 20, 1994, the City of Santa Monica in Los Angeles County officially charted its course as a leader in sustainable environmental practices. On that date, the city council adopted its Sustainable City Program, based on the premise that "the economy, the environment, and the community are inextricably linked." One program component was pesticide reduction, which expanded the city's already existing Toxic Use Reduction Program to include Integrated Pest Management (IPM) for maintenance of buildings.

Four years after startup, the IPM program is an unquestionable success. A recent survey of those involved with program implementation, including custodians, outside pest control operators, Parks & Sports staff and pesticide managers found pest problems have decreased since IPM was introduced. Moreover, the program slashed city costs—pest control expenditures dropped 30% in the year after the program was introduced.

**...the program slashed city costs—pest control expenditures dropped 30% in the year after the program was introduced.**

## IPM Highlights

Reducing pesticide use at city facilities was a creative process. Under the guidance of an IPM Coordinator, IPM consultants and the city's structural pest management contractor, Innovative Pest Management, each pest problem was examined for opportunities to implement prevention and reduced risk management methods. Below are several examples of Santa Monica's innovative initiatives.

### Flies at the animal shelter

Santa Monica's animal shelter is home to dogs, cats, rabbits, birds and even four horses. Flies attracted to the animals and animal wastes had long plagued the shelter. Historically, the shelter combated these flies by placing pesticide dispensers timed to periodically spray an insecticide inside the facility. When the City's IPM Coordinator Sandy Schubert was informed of the problem, she worked closely with IPM consultant Bill Currie, Innovative Pest Management and staff from the shelter to determine how to eliminate this pesticide use.

As a result of their efforts, the shelter adopted several non-chemical methods to manage the flies. They stopped using the pesticide spray and worked to improve sanitation through more efficient removal of animal and other wastes. Shelter staff also introduced beneficial wasps, hung sticky traps and pheromone lure traps inside and outside the building, and installed air curtains and fans to increase air circulation and to keep flies out. According to Sandy Schubert, the new fly management program is working well.

### Rats at City Hall

One of the first problems Innovative Pest Management faced under the IPM contract for structural pest management was rats in City Hall. The rampant rat population could often be heard running in the walls and ceilings. Carl Doucette, owner of Innovative Pest Management, responded to the problem by placing snap traps inside the building and bait stations in conspicuous locations outside. Because the rats took an immediate liking to the baits, Doucette initially needed to change them often. However, after several months of trapping and baiting, the rat population shrank substantially. The problem was eliminated without using hazardous pesticide sprays or liquids.

## Setting Up an IPM Program: What it Took

When the city council passed its 1994 IPM policy, Brian Johnson, the Coordinator of the city's Environmental Programs Division, and Debbie Raphael, then Environmental Analyst in Johnson's department, began to assemble the components of their structural IPM program. First they assigned pest managers at every city facility to be trained in IPM practices, identifying pest problems, sharing information about IPM with other facility staff, and working with the IPM Coordinator to develop site specific plans.

According to Doucette of Innovative Pest Management, "Communication with pest managers has been key to the success of the program." In the past, each department or division selected its own pest control company, leading to a lack of centralized control over pesticide use at all levels. Raphael and Johnson's remedy was to hire one company to manage all city structural pest management. They developed a bidding process that included a wide range of considerations, including non-economic factors. This process weeded out potential bidders who did not share the city's commitment to IPM and ultimately resulted in the hiring of Innovative Pest Management. After the contract was signed, Raphael and Doucette developed a list of approved least-toxic pesticides, which has been updated over the past few years as new and less hazardous products have become available.

Sandy Schubert, who has replaced Debbie Raphael as IPM Coordinator for Santa Monica, says, "The key is participation on all levels, from custodians to pesticide contractors to staff and department heads. The people who are responsible for pest management on the ground believe in IPM, and they have support from the city council and other high-level leaders. That makes a big difference."

## Educating the Public

In addition to reducing risk from pesticides through IPM, the city educates the Santa Monica community about the potential health and environmental hazards of pesticide use, and about the public's role in use reduction. Raphael, Johnson and Environmental Outreach Specialist Andrew Basmajian developed a number of public outreach materials to spread this message. One was a giant poster that was placed on city garbage trucks that featured a picture of a child's hand reaching down onto a playing field to pick up a soccer ball, accompanied by text that stated "Child reaching for a) pesticides, b) ball, or c) both." Below the picture and the text was a public service announcement that stated "Make a smart choice about toxics—Reduce use, dispose properly."

Target, a major pesticide manufacturing company with offices in southern California, was outraged by the ad campaign and demanded a meeting with the City Manager. At the meeting, representatives from Target and other chemical companies insisted that the signs be removed. The City Manager refused, stating that he believed the message of the posters was consistent with the city's Toxics Use Reduction program. Leadership at the upper-levels of management is a critical component for the success of a program because attacks like these are not uncommon and can result in damage to a program without complete buy-in from the top.

## Conclusion

Santa Monica's structural IPM program has made real progress. Its infrastructure is well established and it has strong support from city council leadership, the IPM contractor and on-the-ground pest managers. The program is now able to focus on continued outreach and training for the community and other staff. Outreach to staff is important because it protects employees, an important reason the city supported the Sustainable City Program and its IPM component. It is also important because most city staff do not think about their role in making the IPM program work, even though they play a critical part in maintaining sanitation. The city hopes to continue to work with staff, and to publicize the IPM program to encourage other communities to follow Santa Monica's lead. The city also plans to formalize the groundbreaking landscape IPM efforts that it has been practicing for years.

**"The key is participation on all levels, from custodians to pesticide contractors to staff and department heads."**

**To learn more about Santa Monica's IPM program, contact Sandy Schubert, Santa Monica IPM Coordinator, at 310-458-2255.**

# 7 Harbor Bay Isle Owners Association, Inc.

The planned community of Harbor Bay Isle, located in Alameda, feature tree-lined boulevards, bike paths, salt water lagoons and common spaces that allow residents to walk their dog, go on a picnic or simply feel the grass under their bare feet. All of these spaces are managed virtually free of toxic pesticides.

## Working with the Environment

Managing the common areas in a community of nearly 3,000 homes would be considered a management challenge under any conditions. Yet, Community Services for the Community of Harbor Bay Isle Owners Association, Inc. (CHBI) successfully manages this area with minimal pesticide use.

According to Tom Jordan, Executive Director of CHBI, the Association takes a "holistic approach" based on Integrated Pest Management (IPM), "with a mission to reduce the maximum possible amount of pesticide use." Within this framework, Jordan focuses on two broad strategies.

First, Jordan believes strongly in working closely with nature to solve pest problems. This commitment requires understanding soil and plant health within the local microclimate, and scrutinizing its biological makeup to determine causes of problems. For example, if non-native vegetation has been brought into an area, removing it may also eliminate alien pest species. Plants that prove highly susceptible to pests can be removed and replaced with other more pest resistant plants. With these methods, CHBI has eliminated most pesticide use in its landscapes.

Jordan's second strategy draws on common sense to examine all possible pesticide alternatives. Examples of alternatives include use of "Safer Soap," horticultural oils, beneficial insects and appropriate tree thinning and pruning techniques.

Ultimately, proper care for CHBI's grounds involves consistent scrutiny of the landscape and regular communication with maintenance staff. At the onset of a pest problem, the grounds crew work together to determine the best possible solutions from replacing a plant to adding more mulch for better weed control to asking residents to restrain their dogs from trampling a particular row of bushes. Maintenance staff are encouraged to attend seminars and workshops on a regular basis to expand their IPM knowledge.

## Examples of Pest Management Practices

CHBI's IPM method has achieved real reductions in pesticide use. Jordan estimates they have decreased pesticide use by 70% since they started using IPM in 1995. And in the last six months of 1999 their pesticide use dropped to close to zero. The following are some examples of how CHBI staff have been able to achieve this dramatic decrease in pesticide use.

### Weeds

CHBI's weed management program aims to create healthy environments that allow plants to overcome invasive weed species. One technique CHBI uses to promote healthier lawns is to replace Kentucky blue grass with dwarf fescue grass. The fescue is tighter growing, with a wider blade that inhibits weed growth, reducing the need for both fertilizers and pesticides. An added benefit of the fescue is that it is more drought resistant than other grass varieties, and therefore requires far less irrigation.

The biggest changes in CHBI's weed management has been an increased reliance on manual weed pulling, and use of heavy amounts of mulch. It was a challenge to convince staff accustomed to conventional landscaping to accept these changes in weed management. Now that different areas have been under mulch for several years, the change to IPM has proven itself. Weeds are much easier to pull and the overall beauty of the area has increased.

### Tree Diseases

When Jordan and Maintenance Director Joe Landaeta started using an IPM approach to landscape maintenance, common areas

sported only five varieties of trees. These included Alder, Willow, Sycamore, Monterey pine, and Liquid Amber. With so few tree varieties, disease can spread rapidly from one tree to the next, decimating the population. The Monterey pine has been of particular concern since it is very susceptible to pine pitch canker.

To address this problem, maintenance personnel removed dead and diseased trees and replaced them with over 25 new varieties. Staff are also experimenting with planting Mediterranean pines near existing Monterey pines to see whether they act as a disease deterrent, an experiment that has been successful so far.

## The History of IPM at CHBI

When Jordan assumed his post he wanted to maintain CHBI's beautifully landscaped grounds and ensure the health of the 20 surrounding homeowner communities. In 1995, he began working with IPM consultant Michael Baefsky. After a series of consultations, Baefsky and Jordan agreed on a simple IPM management plan. "It all begins with simple concepts. You look at the problems, decide if they are local or systemic, and find suitable solutions," says Jordan. When implementation of Baefsky's plan began, Jordan submitted a proposal to the CHBI Board of Directors to formalize IPM as CHBI's official grounds maintenance policy. The board is ultimately responsible to the homeowners for the appearance of the landscaping, and was willing to try IPM and gave Jordan and his maintenance team, led by Landaeta, free rein to care for the grounds. Five years later, that faith has paid off.

## Working with the Community

In addition to maintaining CHBI's grounds, Jordan and Landaeta keep area homeowners informed about the best and least-toxic ways to care for the community's landscapes. The community is informed through articles published in the CHBI newsletter. For example, the October/November 1999 issue included an article by Landaeta on water quality control for the lagoon. The article discussed methods used to control plant life that avoid the use of toxic chemicals. These articles—coupled with the obvious beauty of the grounds—show the community that alternatives to pesticides work. Landaeta wholeheartedly agrees with Jordan's management philosophy and adds that, "We see the environment as part of the community."

Matt Shaeffer

**A Harbor Bay resident enjoying a walk on the well-maintained grounds.**

## Conclusion

Jordan has not precisely quantified the cost difference between conventional pesticide practices and Integrated Pest Management, but reports that they appear unchanged. For example, increases in labor costs for intensive manual weed management are offset by decreases in the cost of pesticides. Since 1994, Jordan's maintenance budget has stayed the same.

With adequate time and a similar commitment to IPM, the success CHBI has enjoyed could be accomplished by anyone. Initially, it takes an investment to analyze the causes of pest problems and maintain current plant health. As the staff at CHBI has demonstrated, the best solution to a specific pest problem can be simple and non-toxic—such as hand-weeding, mulch, working with native plants and using a diverse range of plant species. Visitors of the Harbor Bay common grounds need only take a brief look around to understand that protecting the community's health by reducing pesticide use does not have to compromise the beauty of the landscape.

**To learn more about IPM at the Community of Harbor Bay Isle Owners Association, contact Tom Jordan, Community of Harbor Bay Isle, 3195 McCartney Rd, Alameda, CA 94502, Phone: 510-685-3363.**

# 8 The NASA Ames Research Center

Just north of San Jose on highway 101, an oversized hangar dominates the view of the San Francisco Bay. This area was formerly part of a Naval base called Moffett Field. Since 1994, Moffett field—1,840 acres with over 200 buildings and a diverse habitat, including wetlands, marshes and a sensitive canal along its perimeter—has been run by NASA's Ames Research Center. In addition to space age research, this facility has taken a lead in alternative approaches to pest management.

## "Houston, We have IPM"

In 1995, Ames Facilities and Environmental staff met to discuss the health impacts of toxic pesticides used to control cockroaches, mice, ants and other pests in buildings. After the meetings, Ames Research Center Facilities/Maintenance Manager Al Lyon launched an IPM effort. His department teamed with Sheila Daar, an IPM consultant from Berkeley, to develop and implement a pilot project—a basic structural pest control program in six buildings to experiment with eliminating pesticide applications. With Daar's guidance, a strategy for the buildings was mapped out and problem areas were targeted.

A cornerstone of structural IPM practices is understanding why pests occur in particular settings, and eliminating the food supplies and hiding and nesting spaces that bring them there. Evaluation of the root causes of pest problems in the buildings at the Research Center revealed that solutions were in fact quite basic. For example, basement storage areas had not been cleaned out since NASA took over the base in 1994. Once they were cleaned, the habitats of numerous pests were eliminated. Lyon's staff also disposed daily of standing trash, removing pests' food supply. In addition, approaches such as routine cleaning with soap and water, use of boric acid powder for trouble spots, and strategic placement of ant traps and bait stations successfully reduced pest populations. These simple methods eliminated toxic pesticide use in all buildings at Ames within 18 months, exceeding all expectations.

**Approaches such as routine cleaning with soap and water, use of boric acid powder for trouble spots, and strategic placement of ant traps and bait stations successfully reduced pest populations.**

## Outdoor IPM: Challenges and Innovations

After achieving high quality results in the Center's buildings, Lyon expanded the program to the entire NASA Ames facility. This expansion to outdoor areas brought with it a number of new challenges.

### Ground squirrels

One of the Center's biggest pest management achievement to date has been the management of ground squirrels. Prior to the IPM program, ground squirrels were controlled using toxic smoke bombs. Now, the crew combines an aggressive monitoring program with the selective use of dry ice. For example, at two Center baseball fields, staff recently found 60 ground squirrel holes. Staff flagged the holes and then filled them in. The next day 40 out of the 60 holes were dug up again, indicating that ground squirrels were active in those holes. Staff placed dry ice in active holes, activated it with water, and closed the holes. The next day workers returned to find only 10 or 15 holes still active, and duplicated the procedure. Using this method, workers have reduced the ground squirrel population at the Center by 75%.

### Weeds, wetlands and security

Lyon and Daar have tackled weed problems at Ames with innovation and common sense. Some strategies they developed have and will continue to make significant changes in labor hours and long-term cost.

One challenge unique to the Center was controlling weeds while maintaining security. The perimeter of the Research Center has wetlands and an irrigation canal. This area commonly provides habitat for endangered species, including the burrowing owl. Its tall grasses, however, are inconvenient for security. To mitigate pesticide use near these sensitive areas in a way that does not disturb wild-

life, the crews turned to more labor-intensive practices such as hand weeding and mowing instead of using herbicides, disking, or a weed whacker. The wetlands within the Center themselves are left practically undisturbed, and the roadsides that surround the wetlands are either hand-weeded or spot sprayed with minimal amounts of Round-Up™ or Rodeo™ herbicide.

Over time, however, the maintenance workers found that mowing for weed control encouraged thistles to spread. While thistle is hearty and good for eradicating other weeds, it is difficult to mow and spreads invasively. To combat this problem, they have introduced heartier grasses that are more suited to the climate and do not grow tall enough to warrant mowing or disking in some areas. This natural height limitation cut labor costs and reduced pesticide use. It was also great for security since it eliminated the hiding places found in taller grasses.

Other examples of innovative weed control include the use of four resident goats to keep the vegetation down in a fenced-in grassy area containing Navy bunkers, and the development of a mulching compound for reusing chippings and detritus. This mulching compound has been of particular value to the Center's landscaping contractor.

### Exotic vegetation

The outdoor IPM program brought other challenges as well, such as how to deal with exotic vegetation that invited pests. Daar recommended using replacement vegetation such as native grasses and wildflowers that eliminated the cause of pests, and therefore eliminated the need for aggressive and toxic pest control strategies.

## Pest Management Companies

The two companies Lyon has managing pests are A-Pro Pest Management—responsible for structural pest control in Ames' 200 buildings, and Shimada Landscapers—responsible for landscaping throughout the Center's 1840 acres. Lyon says the philosophy these companies follow is to "minimize chemical use and find the best alternatives for managing pests without using pesticides." Contracts with A-Pro Pest Management and Shimada contain IPM provisions that echo this philosophy.

## Costs of the IPM Program

While the IPM program initially cost more for Lyon's Department—extra costs included hiring a consultant, planting new vegetation, and an increase in labor hours—Lyon says that over time costs have evened out. Less has been spent on pesticides, and the Center's new mulching and wood chipping compound has also cut the costs of weeding, mowing and herbicide use.

## Conclusion

In only four years, NASA Ames has proven that simple responses to pest problems are sound methods for creating a least-toxic environment, even in a place as diverse as the NASA Ames Research Center. Pesticide use for landscaping has been reduced by 75%, and indoor pesticide use has been eliminated with the exception of bait stations used for ants and roaches.

**To learn more about the IPM program at NASA Ames, contact: Al Lyon, Facilities/ Construction Project Manager, Plant Engineering Branch, Technical Services Division, Ames Research Center, Mail Stop 19-11, Moffett Field, CA 94035-1000, Phone: 650-604-3319, email: alyon@mail.arc.nasa.gov. Sheila Daar may be contacted at 510-549-2430. A-Pro Pest Management can be reached at 408-559-0933.Shimada Landscapers can be reached at 408-733-3330.**

# 9 Conclusion and Recommendations

## Supporting IPM in California's Urban Settings

As this report documents, least-toxic IPM is taking hold in many California communities. The eight programs profiled demonstrate the efficacy of IPM, and share two important components that are critical to success.

### 1. A sound policy including the following key provisions:

- A policy to use least-toxic IPM, with chemicals used only as a last resort.
- A ban of the most toxic pesticides, such as carcinogens, reproductive and developmental toxins, endocrine disruptors and pesticides that are acutely toxic.
- A requirement that if chemicals are used, they are those that pose the least possible hazard to human health and the environment.
- Notification provisions for all affected parties before containerized non-bait pesticides are used.
- Involvement of the community in program oversight.

### 2. A well-trained, committed staff.

An IPM program is only as strong as the people responsible for implementing it. As the profiles in this report demonstrate, committed staff working with IPM professionals can successfully manage pests without using highly hazardous pesticides.

Unfortunately, despite these successes, hazardous pesticides continue to be used unnecessarily in many urban settings. It is time that elected officials and state and federal regulators renew their commitment to protecting the public, particularly children, from the unnecessary risks of using pesticides in urban settings. Currently there is no coherent, long-term strategy guiding implementation of IPM in urban settings. The California Department of Pesticide Regulation (DPR) and the U.S. EPA, as well as local governments and school boards, need to take a proactive stance to reduce pesticide use in California and across the nation.

Meanwhile, facilities managers in schools, business and industry, and city and county agencies need not wait for state or local officials leadership to implement least-toxic Integrated Pest Management. The evidence that IPM works is clear. Now it's a matter of taking action to institutionalize it.

We urge all of these constituencies to take action.

## Recommendations

### State and Federal Policymakers

- Phase out or eliminate all pesticides in schools and other urban settings that cause cancer, adverse reproductive and developmental effects, hormone disruption or have high nervous system toxicity.
- Immediately ban the use of diazinon and chlorpyrifos to protect imperiled California surface waters.
- Develop and provide training, incentives, and materials to promote pest prevention and least-toxic IPM.
- Require schools, cities, and counties to develop programs for notifying parents, teachers and the public before and after applying pesticides.
- Ensure that all non-agricultural pesticide use is identifiably reported under the state pesticide use reporting system.
- Publish and distribute a manual containing IPM techniques for a variety of urban settings.
- Earmark funds to implement these programs effectively.

### School, City and County Officials; Industry and Homeowner Association Managers

- Immediately halt routine "calendar" spraying of pesticides.
- Adopt policies that prohibit the use of pesticides that cause cancer, adverse reproductive and developmental effects, hormone disruption or have high nervous system toxicity.
- Develop least-toxic IPM programs that prioritize pest prevention and non-toxic methods of control.

- Record all pest management activity, including any pesticide use, and make this information readily available to the public.
- Develop a program for notifying all affected parties and the public before and after applying pesticides.

### The Public

- Learn what pesticides are used in your local schools, parks and workplaces and urge local decisionmakers, including your school board, city council and board of supervisors, to adopt least-toxic IPM programs.
- Use least-toxic IPM methods in your home and garden.
- Do not purchase highly hazardous pesticides, including those that cause cancer, adverse reproductive and developmental effects, hormone disruption and high nervous system toxicity.
- Hire certified organic landscapers or others knowledgeable in least-toxic IPM if you hire others to do your gardening work.
- Hire pest control companies who practice least-toxic IPM if you hire professional experts for home pest management services.

Insist on receiving prior notification before pesticides are used or sprayed at your home, workplace, school or community park, and advocate for institutionalization of IPM.

# Appendix A **IPM Policy Example**

Institutionalization of least-toxic IPM is important to ensure that least-toxic pest management practices continue even with staff turnover. It is also important because there are so many definitions of IPM, and not all of them result in reduction or elimination of dangerous pesticides. For this reason, we included an example of a policy that institutionalizes good IPM: the San Francisco Unified School District's 1998 IPM policy. This policy is a good model because it captures IPM's essential elements in two pages:

1. A requirement to use least-toxic IPM, with chemicals used only as a last resort;
2. A requirement that if chemicals are used, they are those that pose the least possible hazard to human health and the environment;
3. A ban of the most toxic pesticides, such as carcinogens, reproductive and developmental toxins and pesticides that are acutely toxic;
4. Notification provisions for all affected parties before non-bait pesticides are used;
5. Involvement of the community in program oversight.

The full policy is on the following page. The Pesticide Watch website (www.pesticidewatch.org) contains a number of policies, including those passed by the Los Angeles and Ventura Unified School Districts.

Remember that a good policy is only as valuable as the work that goes into implementing it properly. We have found that a successful switch to least-toxic IPM is most likely if the following pieces are in place:

- A sound policy including the provisions listed above.
- A well-trained, committed staff.
- Continued public scrutiny and involvement.

## San Francisco Schools Least-Toxic Integrated Pest Management Policy

Policy No: P3325

Article: Business and Non-instructional Operations
Section: Facilities Development and Management
Sub-section: Integrated Pest Management Practices for SFUSD Facilities
Background Preamble: The maintenance of a safe, clean, healthy environment for students and staff is essential to learning and is a goal of the San Francisco Unified School District.

The use of toxic chemicals to control pests and weeds may itself threaten staff and students' health and ability to learn.

The City and County of San Francisco has adopted a model Integrated Pest Management (IPM) policy that ended the use of the most toxic pesticides on San Francisco City and County property and greatly reduced the County's reliance on chemical pesticides.

Similar programs in other school districts and institutions have shown that IPM is a viable, cost-effective approach to controlling pests.

Policy:

I. That the District shall establish and follow an IPM policy based on the model policy established by the City and County of San Francisco, containing the following elements:

   1. Monitoring to determine pest population levels.

2. Use of biological, cultural and physical tools to minimize health, environmental and financial risks from pests.
3. Use of chemical controls only as a last resort.
4. Use of chemical controls that pose the least possible hazard to people, property and the environment.
5. Careful monitoring of treatment to evaluate effectiveness.

II. That, effective immediately, the following categories of highly toxic pesticides shall not be used by District employees or used on property owned or leased by the District except as specifically exempted by this policy:

1. U.S. Environmental Protection Agency (U.S. EPA) acute toxicity category I and II pesticides.
2. Pesticides identified by the State of California as chemicals known to the state of California to cause cancer, developmental or reproductive toxicity pursuant to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Prop. 65).
3. Pesticides found by the U.S. EPA to show evidence of causing cancer (EPA carcinogenicity categories A, B and C).

III. That effective January 1, 1999, only pesticides identified by the S.F. Department of the Environment as "reduced risk pesticides" pursuant to San Francisco Administrative Code 39.8(g) may be used by District employees or used on property owned or leased by the District, except as specifically exempted by this policy.

IV. The District and school sites shall, through various communication means, provide pre-notification to students, parents and staff of non-bait pesticide applications. The District shall post all areas treated with non-bait pesticide applications and posted notification shall remain from three days before to three days after treatment. The District shall provide publicly posted notification that identifies areas treated with pesticidal baits. The District shall distribute a factsheet outlining the IPM program and pest control activities within the District to parents, students and staff a the beginning of the school year. The District and each site shall maintain a record of pesticide use on school grounds and make that information available to the public.

V. The District shall establish an IPM committee to develop implementation guidelines and oversee implementation of the new policy. The committee shall be comprised of parents, students, teachers, school administrators, representatives from the administration, facilities and landscape staff, any pest control company or companies contracted by the District to manage pests, and community environmental and public health organizations.

VI. The District shall designate an IPM coordinator who shall be responsible for coordinating school district efforts to adopt IPM techniques, communicating goals and guidelines of the IPM program to staff and students, including conducting training, tracking pesticide use and ensuring that related information is available to the public, and presenting an annual report to the school board evaluating the progress of the IPM program.

VII. The IPM committee may allow District staff or any company contracted to provide pest control to the District to apply a pesticide otherwise banned under this resolution based upon a finding that the protection of public health requires the use of that pesticide. Such exemptions shall be granted on a per-case basis and shall apply to a specific pest problem for a limited time. The IPM coordinator may grant emergency exemptions if action is required before the next meeting of the IPM committee. The IPM coordinator shall report all such emergency exemptions to the IPM committee.

# Appendix B

## Integrated Pest Management Consultants

The consultants listed below all have extensive experience working with large institutions, such as schools and cities, to establish Integrated Pest Management programs.

### Art Slater

UC Berkeley
B80 Hildebrand Hall
Berkeley, CA 94720
Phone: 510-643-8079
Email: slater@dofm.berkeley.edu

Background: Art has extensive experience setting up indoor programs for large institutions, including the University of California-Berkeley. Other areas of expertise include structural pest control and providing expert testimony in legal cases on a wide range of issues, including landlord/tenant disputes and medical entomology.

### Baefsky and Associates

Contact: Michael Baefsky
PO Box 311
Orinda, CA 94563
Phone: 925-254-7950
Email: mbaefsky@igc.org

Background: Michael's specialty is landscape IPM, particularly weeds. He has done extensive research into alternatives to Roundup™ and other toxic herbicides, and has implemented many programs using these tools. Michael has also worked with a number of school districts, including a current project working with the Pajaro Unified School District.

### Daar/IPM Consulting Group

Contact: Sheila Daar
2421 Prince Street
Berkeley, CA 94705
Phone: 510-549-2430
Email: sdaar@flashcom.net

Background: Sheila and her group provide IPM planning, education and training in structural, landscape and roadside systems. They have extensive hands-on experience with public and commercial buildings, schools, parks, botanical gardens, roadsides, rights-of-way and watersheds.

### International Pest Management Institute

Contact: William E. Currie
PO Box 12469
Prescott, AZ 86304
Phone: 520-776-7782
Email: bugebill@primenet.com

Background: Bill and IPMI provide training and consulting for low-risk pest management in schools, parks and municipalities. IPMI has provided training and consulting for hundreds of schools and trained thousands of participants, including Los Angeles Unified School District staff. Their current emphasis is on providing consulting during the planning, design, specifications, construction and landscaping of schools and other structures to prevent pests which eliminates the need for the use of pesticides.

### Steven Ash IPM Associates

Contact: Steven Ash
71 Clark Street
San Rafael, CA 94901
Phone: 415-454-9615
Email: stevnash@concentric.net

Background: Steve is an expert in all non-crop, non-structural pest management, including landscapes, parks and irrigation systems. He has extensive background in training and public education, technical and non-technical writing of materials, and setting up IPM programs, including the San Francisco Public Utilities Commission (PUC) program. Steve also has worked on a number of committees responsible for implementing IPM policies, including those for San Francisco and Marin counties.

### Tanya Drlik, IPM Consultant

PO Box 7414
Berkeley, CA 94707
Phone: 510-524-8404

Background: Tanya Drlik worked as an Integrated Pest Management Specialist for 10 years with the Bio-Integral Resource Center (BIRC) in Berkeley, California before becoming an IPM consultant. She consults for projects involving the design and implementation of IPM programs in many different settings, provides IPM training for audiences from laypeople to professionals, and writes accurate and eminently readable IPM educational material from fact sheets to manuals.

### Community Environmental Council

Contact: Phil Boise
930 Miramonte Drive
Santa Barbara, CA 93109
Phone: 805-963-0583 x150
Email: pboise@rain.org

Background: Phil is an IPM expert trained in both indoor and outdoor pest problems. Currently, Phil and CEC are consulting with the Ventura Unified School District on implementation of a recently passed least-toxic IPM policy. CEC has also worked with the Santa Barbara school district on pest management. See the profile on p. 18 for more information on this project.

# Appendix C

## Parks and Public Spaces

The cities and departments listed below have established least-toxic IPM programs and are excellent contacts for more information about eliminating hazardous pesticide use and alternatives for parks and public buildings.

### The City of Arcata

Contact: Jennifer Hanan, Vice Mayor
736 F Street
Aracta, CA 95521
Phone: 707-269-0394
Email: jenhanan@hotmail.com

Background: On February 16, 2000, the Arcata City Council voted unanimously to pass an ordinance that eliminated the use of all pesticides on all properties owned or managed by the city. The ordinance codified what had been practice in Arcata since 1986, when the city council declared a moratorium on pesticide use on city property. Since that time, city staff have implemented a series of pest management practices that have allowed them to manage pest problems without pesticides.

### Isla Vista Recreation and Park District

Contact: Derek Johnson
961 Embarcadero Del Mar
Isla Vista, CA 93117
Phone: 805-968-2017
Email: ivpark@silcom.com

Background: See profile on p. 15 for more information.

### San Francisco Department of the Environment

Contact: Deborah Raphael
11 Grove Street
San Francisco, CA 94102
Phone: 415-554-6399
Email: debbie_raphael@ci.sf.ca.us

Background: The department coordinates San Francisco's city-wide IPM program. Areas of expertise include coordinating a large city program across multiple departments, training, policy and policy implementation. See profile on p. 11 for more information. See other San Francisco departments listed in this section for other information about the city's program.

### San Francisco Recreation and Park Department

McLaren Lodge, Golden Gate Park
501 Stanyan Avenue
San Francisco, CA 94117
Phone: 415-753-7249

Background: The San Francisco Recreation and Park Department has been a leader in reducing pesticide use as part of the San Francisco pesticide ordinance. See profile on p. 11 for more information.

### Santa Monica Environmental Programs Division

Contact: Sandra Schubert
200 Santa Monica Pier
Santa Monica, CA 90401
Phone: 310-458-2255
Email: sandy-schubert@ci.santa-monica.ca.us

Background: The Environmental Programs Division coordinates Santa Monica's city-wide IPM program. Particular areas of expertise include contracting with structural pest control vendors, employee education about IPM and coordinating with multiple agencies within a city. See profile on p. 28 for more information.

# Appendix D **Schools**

The school districts listed below all practice IPM and are good contacts for on-the-ground information. The organizations listed all have extensive experience in advocating for school pesticide reform, have educational resources on pesticides and schools, or have information on alternatives.

## Fremont Unified School District

Contact: Fred Okal, Supervisor
Phone: 510-657-0693

Background: Fremont USD has been using internal IPM protocols for at least the past four years. Pesticides are applied only when absolutely necessary, and their use is limited to weekends when children are not present. No pesticides are used inside buildings.

## Los Angeles Unified School District

Contact: Robert Hamm, Deputy Director of Maintenance and Operations
Phone: 213-633-7587

Background: LAUSD passed a tough IPM policy in March, 1999, and has made major improvements in pest management practices since its passage. One of the most important elements of the implementation plan is training. LAUSD has contracted with Bill Currie, an IPM expert, who has designed an extensive training program for all LAUSD staff. The LAUSD policy is the first policy that we are aware of that includes the Precautionary Principle.

## Mendocino Unified School District

Contact: Larry Lance, Maintenance Supervisor
Phone: 707-937-1603

Background: Mendocino USD is governed by a policy on pesticide use that requires the District to follow least-toxic IPM procedures. They have not reported using pesticides on school grounds in many years.

## Novato Unified School District

Contact: Ron Warfield, Manager of Operational Services
Phone: 415-898-8103

Background: Novato USD has developed "Administrative Guidelines," which guide their Integrated Pest Management Plan. The plan includes a ban on Toxic Category I pesticides, known carcinogens, and California restricted use chemicals. Novato also has a strong program for maintaining records of which pesticides are used and when.

## Placer Hills Unified School District

Contact: Ken Poulsen, Superintendent
Phone: 530-878-2606

Background: A written IPM policy does not yet exist for this district, but they have had a pesticide reduction/IPM process in place since 1994. Teachers and other community members have been very involved with monitoring pesticide use in the district.

## San Francisco Unified School District

Contact: John Bitoff, Director Facilities Management
Phone: 415-695-5546

Background: SFUSD has a strong policy which includes a ban on Category I and II pesticides, Prop 65 listed pesticides, and EPA identified known, probable, and possible carcinogens. In the event of a need for pesticide use, they have a system for posting three days before and three days after application, notifying parents before non-bait pesticide applications, and distributing educational fact sheets for parents at the beginning of the year. If pesticide use is unavoidable, only products from an approved list are allowed to be used.

## Santa Barbara Unified School District

Contact: Phil Boise, Community Environmental Council
Phone: 805-963-0583 x 150

Background: See profile on p. 18 for more information.

## Ventura Unified School District

Contact: Mike Bramlett, Head of Maintenance and Operations
Phone: 805-641-5266

The Ventura School Board unanimously passed an IPM policy in November 1999. The policy banned Category I and II pesticides, the Prop 65 list, and EPA identified known, probable and possible carcinogens. In the event of a need for pesticide use, they have a system for posting three days before and three days after application, notifying parents before non-bait pesticide application, and distributing educational fact sheets for parents at the beginning of the year. If pesticide use is unavoidable, only products from an approved list are allowed to be used. Borrowing from the LAUSD policy, Ventura USD policy includes the Precautionary Principle.

## Organizations with Information on Pesticides and Schools

Below is a short list of organizations who have done work on pesticides in schools. Since this subject has become a concern nationwide in recent years, we chose to only include a few based on our experience working with them in California, or their work on nationwide pesticides in schools issues. Full address/contact information can be found in Appendix F: Organizations.

**Beyond Pesticides/National Coalition Against the Misuse of Pesticides**

**Bio-integral Resource Center**

**California Public Interest Research Group**

**Pesticide Watch Education Fund**

**Department of Pesticide Regulation, Pest Management, Analysis and Planning Program**
Contact: Nancy Gorder, Senior Environmental Research Scientist, 1020 N St, Room 161, Sacramento, CA 95814-5624, Phone: 916-324-4100, Email: schools@empm.cdpr.ca.gov.

## References

Listed below are materials that may be helpful in learning more about pesticide use and alternatives to pesticide use in schools.


- *Evaluation of Integrated Pest Management (IPM) Use in Pennsylvania School Districts.* (1997) Clean Water Action and Clean Water Fund, 1128 Walnut Street, #300; Philadelphia, PA 19107. 215-629-4022.
- *Failing Health: Pesticide Use in California Schools.* (1998) Jonathan *in Schools: A How-To Manual.* Bio-Integral Resource Center, PO Box 7414, Berkeley, CA, 94707. 510-524-2567.
- *No Place for Poisons: Reducing Pesticide Use in Schools*. (1997) Elizabeth Loudon, Washington Toxics Coalition. 206-632-1545.
- *"P" is for Poison: Update on Pesticide Use in California Schools*. (2000) Teresa Olle, CALPIRG Charitable Trust. 415-292-1497.
- *Pest Control in the School Environment: Adopting Integrated Pest Management.* (EPA 735-F-93-012.) U. S. Environmental Protection Agency, Office of Pesticide Programs, 401 M Street SW, Washington, DC 20460. EPA National Center for Environmental Publications and Information: 1-800-490-9198.
- *Pesticides in Schools: Reducing the Risks* (1993) Attorney General Robert Abrams, New York State Department of Law, 120 Broadway, New York, NY, 10271. 212-416-8446. (Note: This report was reissued in1996 by Attorney General Dennis Vacco.)
- *Pesticides: Use, Effects, and Alternatives to Pesticides in Schools.* (1999) (GAO/REED-00-17) United States General Accounting Office, Washington, DC 20548.
- *Primary Exposure: Pesticides in Massachusetts Schools.* (1996) By Lea Jonston, MASSPIRG Education Fund, 29 Temple Place, Boston, MA 02111. 617-292-4800.
- *Reducing Pesticide Use in Schools: An Organizing Manual.* (1998) Gregg Small, Pesticide Watch Education Fund. 415-292-1486.
- *Schooling of State Pesticide Laws—Review of State Pesticide Laws Regarding Schools*. (1999) Beyond Pesticides/National Coalition Against the Misuse of Pesticides. 202-543-5450.
- *Unthinkable Risk: How Children are Exposed and Harmed When Pesticides are Used in Schools* (2000). Northwest Coalition for Alternatives to Pesticides, Oregon. 541-344-5044. www.pesticide.org.

# Appendix E **Roadsides**

Pesticide use along roadsides is a major problem in California and throughout the United States. The organizations listed below have information about the problems associated with roadside spraying, alternatives and steps that you can take to reduce the threat.

### Bio-Integral Resource Center (BIRC)
(See also Appendix F)

BIRC maintains information on alternative vegetation management techniques. This includes their "Integrated Vegetation Management Guide," as well as their "Integrated Vegetation Management Technical Bulletins." Bulletins include the following topics: spartina (smooth cordgrass); leafy spurge; purple starthistle; tansy ragwort; yellow starthistle; purple loosestrife; spotted, diffuse, and Russian knapweeds; gorse; Scotch, French and Spanish broom; and Canada thistle.

### Californians for Alternatives to Toxics (CATS)
PO Box 1195
Arcata, CA 95518
Phone: 707-822-8497
Email: catz@reninet.com
Website: www.reninet.com/catz

CATS has led successful efforts to pressure CalTrans to eliminate their use of herbicides along roadsides. CalTrans announced on March 17, 1997 that it would stop spraying pesticides wherever local authorities requested it to do so.

### CalTrans
CalTrans is one of the largest users of herbicides in California. They have set explicit herbicide use reduction targets, with stated goals of a 50% reduction by the year 2000, and an 80% reduction by the year 2012.

To find out local information on the program in your district, look in the blue pages of your phone book, under Department of Transportation and call the Public Affairs phone number. Also, see www.dot.ca.gov.

### California Coalition for Alternatives to Pesticides (CCAP)
Lee Hudson, Chair
Phone: 530-265-5001
Email: gasp@jps.net

CCAP has worked extensively with CalTrans on roadside spraying issues.

### Information on alternatives to roadside spraying:
Planting native grasses: http://www.yolorcd.ca.gov/roadsides/planting/roadveg_ss.html

Planting hedge rows: http://www.yolorcd.ca.gov/hedgerows/hedgerow_ss.html

Vegetation Management on Rights-of-Way: an Ecological Approach. *The IPM Practitioner,* 8 (2): 1-7. By Sheila Daar, 1991.

# Appendix F **Organizations**

Below is an alphabetical list of organizations working to educate the public on the dangers of pesticide use and the benefits of pesticide use reduction in urban and suburban areas.

## California-based Organizations:

### Bio-Integral Resource Center (BIRC)
PO Box 7414
Berkeley, CA 94707
Phone: 510-524-2567
Email: birc@igc.org
Website: www.birc.org

BIRC specializes in finding non-toxic and least-toxic, Integrated Pest Management (IPM) solutions to urban and agricultural pest problems. Their staff has a sophisticated knowledge of least-toxic programs for the home and garden, and is available to the public for consultation for a small fee.

### Californians for Pesticide Reform (CPR)
49 Powell Street, Suite 530
San Francisco, CA 94102
Email: pests@igc.org
Phone: 415-981-3939, 1-888-CPR-4880 (California only)
Website: www.igc.org/cpr

CPR is a coalition of more than 140 public health, consumer, environmental, sustainable agriculture, labor, farmworker and public interest organizations. Their goals are to eliminate the use of the most hazardous pesticides in California; reduce overall use; support sustainable alternatives in all settings; and promote and protect the public's right-to-know. CPR staff can provide information on pesticides, reports on pesticide use in California, and resources on how individuals can work to eliminate pesticide use.

### California Public Interest Research Group (CALPIRG)

450 Geary Street, Suite 500
San Francisco, CA 94102
Email: calpirg@pirg.org
Phone: 415-292-1487
Website: www.pirg.org/calpirg

CALPIRG is a non-profit, non-partisan public interest organization that has been at the forefront of the toxics movement for more than 20 years. The PIRG staff of attorneys, scientists, policy analysts, researchers and organizers have been instrumental in promoting the public's right-to-know about toxic chemicals and pressing government and industry to clean up and prevent toxic pollution.

### Pesticide Action Network North America (PANNA)

49 Powell St., Suite 500
San Francisco, CA 94102
Email: PANNA@panna.org
Phone: 415-981-1771
Website: www.panna.org

PANNA works to advance non-toxic alternatives to pesticides globally, by linking local and regional organizations to magnify the call for pesticide reform. PANNA maintains an extensive library of resources and assists activists working for pesticide reform with research, networking and strategizing.

### Pesticide Watch Education Fund

450 Geary St., #500
San Francisco, CA 94102
Phone: 415-292-1486
Email: info@pesticidewatch.org
Website: www.pesticidewatch.org

Pesticide Watch Education Fund provides assistance to individuals and community groups working to reduce the use of pesticides and promote safer methods of pest management in their communities. The organization provides educational materials, skills trainings, strategy consultation, referrals to doctors, lawyers and other technical experts, and networking opportunities with other groups working on similar issues.

## Other Organizations:

### Beyond Pesticides/National Coalition Against the Misuse of Pesticides (NCAMP)

701 E Street, SE, #200
Washington, DC 20003
Phone: 202-543-5450
Email: info@beyondpesticides.org
Website: www.beyond pesticides.org

NCAMP was formed to serve as a national network committed to pesticide safety and the adoption of alternative pest management strategies which reduce or eliminate a dependency on toxic chemicals. They provide the public with useful information on pesticides and alternatives to their use, including fact sheets on individual pesticides, pesticide policy and least-toxic alternatives.

### Northwest Coalition for Alternatives to Pesticides (NCAP)

PO Box 1393
Eugene, OR 97440
Phone: 541-344-5044
Email: info@pesticide.org
Website: www.pesticide.org

NCAP works to protect people and the environment by advancing healthy solutions to pest problems. NCAP has a wealth of information on pesticides and least-toxic alternatives, including comprehensive fact sheets on specific pesticides and pests.

### New York Coalition for Alternatives to Pesticides (NYCAP)

353 Hamilton St.
Albany, NY 12210
Phone: 518-426-8246
Email: nycap@crisny.org
Website: www.crisny.org/not-for-profit/nycap/nycap.htm

Through education and outreach, NYCAP seeks to improve public and environmental health by promoting safer alternatives to pesticides, and campaigning for environmentally-sound public policy. NYCAP provides techniques for safe pest control, training for school and workplace pesticide reduction, referrals to practitioners of least-toxic pest management, plans-of-action for community organizing, and advice on effective grassroots lobbying.

# Appendix G Online and Printed Resources

The following resources provide background information on the hazards and toxicity of specific pesticides as well as alternative practices and products.

## California Department of Pesticide Regulation (DPR)

DPR has primary responsibility for regulating all aspects of pesticide sales and use to protect public health and the environment. They can provide information about pesticides and pesticide use patterns.

Website: www.cdpr.ca.gov

## Central Contra Costa Sanitary District

This website features factsheets on less-toxic strategies for home and garden pest control.

Website: www.centralsan.org

## Environmental Defense chemical scorecard website:

Scorecard provides detailed information on more than 6,800 chemicals, including all the chemicals used in large amounts in the United States and all the chemicals regulated under major environmental laws. For the 650 chemicals covered by the Toxics Release Inventory, Scorecard lets someone identify which are released or managed in the greatest quantity in a specific local area.

Website: scorecard.org/chemical-profiles

## Extoxnet

This website is a joint effort of UC Davis and Oregon State University that provides an online service of excellent pesticide profiles and other information about toxics.

Website: www.ace.orst.edu/info/extoxnet

## Marin County Stormwater Pollution Prevention Program

MCSTOPPP is a joint effort of Marin's cities, town, and unincorporated areas to prevent stormwater pollution, protect and enhance water quality in creeks and wetlands. Their website provides fact sheets and advice on least-toxic home and garden pest control.

Website: www.mcstoppp.org

## National Pesticides Telecommunications Network

Maintained at the University of Oregon, this free service offers information over the phone on health and environmental effects of pesticides.

Phone: 1-800-858-7378

## Office of Pesticide Programs, U.S. EPA

This EPA department provides pesticide profiles and information about pesticide use and regulation.

See: www.epa.gov/pesticides.

Also see: http://www.epa.gov/pesticides/carlist/table.htm for a list of EPA pesticides classified as known, probable or possible human carcinogens.

For a list of chemicals known to the state of California to cause cancer or reproductive toxicity, website: www.oehha.ca.gov/prop65/3199lsta.htm.

## Pesticide Action Network (PANNA) database:

PANNA has the most comprehensive database on the health and environmental impacts of pesticides and the use of pesticides in California. Also, see the PANNA website for the PESTIS database. This includes a database of articles and reports on pesticides, especially back articles from Global Pesticide Campaigner (PANNA's newsletter), PANUPS (PAN's weekly online news service which highlight pesticides and sustainable agriculture), and other reports and articles.

Website: www.panna.org for a link to the site, or call PANNA for a CD-Rom version of the database.

## The Dirt Doctor!:

This website by Howard Garrett contains information on common pest problems and least-toxic solutions as well as information on organic gardening.

Website: www.dirtdoctor.com

## Washington Toxics Coalition (WTC)

Washington Toxics Coalition
4516 University Way, NE
Seattle, WA 98105
Phone: 206-632-1545
Fax: 206-632-8661
Email: info@watoxics.org
Website: www.accessone.com/~watoxics

WTC works to identify and promote alternatives to toxic chemicals. In addition to information on pesticides, WTC has information on their website on least-toxic household products and alternative household solutions.

## Printed Materials

*Basic Guide to Pesticides, Their Characteristics and Hazards* (1992), Briggs, Shirley and Rachel Carson Council, Washington, DC, Hemisphere Publishing Corporation.

*Common Sense Pest Control: Least-toxic Solutions for Your Home, Garden, Pets, and Community* (1991), Olkowski, William, et al., Newtown, CT, The Taunton Press.

*Designer Poisons: How to Protect Your Health and Home from Toxic Pesticides* (1995), Moses, Marion MD, San Francisco, CA, The Pesticide Education Center.

*From Your Backyard to the Bay: A Bay Area Resource Guide for Alternatives to Toxic Pesticides* (1999), Pesticide Watch Education Fund, San Francisco, CA.

*Pesticides: California's Toxic Time Bomb?* (1998), Californians for Pesticide Reform, San Francisco, CA.

*Toxic Secrets: "Inert" Ingredients in Pesticides: 1987–1997* (1998), Marquardt, Sandra, et al., Eugene, OR, Northwest Coalition for Alternatives to Pesticides.