

Pesticide-Free Parks Project

Background

Kaw Valley Greens Work

- Obtained pesticide information from city
- Urged for better posting
- As a result the LPRD created the Pesticide-Free Park program. Almost three years later no progress, but regression.

Requested to Maintain Watson Park Pesticide-free

- Received endorsement from Old West Lawrence Association (OWLA)
- Met with Parks and Recreation management in October 2003
- LPRD declined to add Watson Park to the Pesticide-free Parks Program because they believe
 1. The pesticides used are safe.
 2. It's not possible to maintain the park without pesticides.
 3. If it can be done, it would be too expensive.

Pesticides Are Not Safe

Dangers of Using Pesticides

- Pesticides in Lawrence Parks
- Dangers of pesticides for children and the community

All Things Are Connected

- Pesticides erode soil quality & plant health
- Pesticides end up outside the application area
 - Kaw River
 - Air
 - Pool
 - Homes

It Is Possible to Maintain Watson Park Pesticide-free

Some Cities with Integrated Pest Management Policies

- Carrboro, NC
- San Francisco, CA
- Seattle, WA

- Santa Barbara, CA
- Marblehead, MA
- Boulder, CO

Some Cities with Pest Management Ordinances

- Cleveland Heights, OH
- Arcata, CA

Some Additional Cities with Pesticide-Free Parks

- Waterloo, IA
- Wichita, KS
- Portland, OR

Why Isn't It Being Done?

- Lack of Education

Need Healthy Turf

- General Tips for a Healthy Lawn
- Specific Issues for Watson Park
 - Crabgrass
 - Trees, poles, fences
 - Broadleaf weed control in turf
 - Pre-emergent in flowerbeds
 - Tip blight and mildew
 - Borer control
 - Spider mites
 - Fertilizer
- Additional information and resources

It Is Cost-effective

- More expensive at first, less expensive over time
- Eliminate liability—park workers, children, and community
- Healthy environment provides obvious benefits
- Promotional programs generate revenue
- Involve the community—Develop a volunteer program
 - Adopt-a-Flowerbed
 - Volunteer program in Seattle

Comments on LPRD Report

Pictures of Pesticide-Free Parks

Background

- Letter to City Manager from Kaw Valley Greens requesting a list of pesticides used in public places.
- Letter to City Manager from Kaw Valley Greens requesting proper posting of signs where toxic chemicals are applied.
- Photograph of LPRD sign
- “Public Poison: Exploring Pesticide Practices of the Lawrence Parks and Recreation Department” *The Grass Root*. Summer, 2001. Vol.1 No.2, pp4-5.
- “What is a Pesticide?” *The Grass Root*. Summer, 2001. Vol.1 No.2, p5.
- “Poisoning Lawrence” *The Grass Root*. Spring, 2002. Vol.2 No.1, p1.
- “Living Nontoxically: Eat the Weeds!” *The Grass Root*. Fall, 2002. Vol.2 No.2, p4.
- “Some adverse effects of using 2, 4-D” *The Grass Root*. Fall, 2002. Vol.2 No.2, pp4-5.
- “Update from the Pesticide Committee” *The Grass Root*. Fall, 2002. Vol.2 No.2, pp8-9.
- Letter to City Manager from Old West Lawrence Association (OWLA) requesting that Watson Park be maintained pesticide-free.

Kaw Valley Greens
P.O. Box 1482
Lawrence, KS 66044
September 13, 2001

Mike Wildgen
City Manager
P.O. Box 708
Lawrence, KS 66044

Dear Mr. Wildgen:

The Kaw Valley Greens are very concerned about exposure to pesticides—including herbicides, fungicides, insecticides, and rodenticides—in public places. Pesticides are toxic chemicals designed to kill living organisms. They also contain additional ingredients, which are not those designed to kill the “target pest”, that are also toxic. People vary in their sensitivity to pesticides and other toxic chemicals. Children and older people are, in general, more susceptible than most people. In addition, there are some people who are very sensitive and must avoid all exposure to toxic chemicals in order to prevent illness.

We have previously tried to obtain information by phone about pesticides used by the city in public places, but found that our questions were not phrased adequately to encompass all that concerns us.

We would like a list of all pesticides applied by the city in places accessible to the public. This includes public buildings, streets, parks, playgrounds, and landscaped areas. We would like the trade name, active ingredient, and EPA registration number. We would like to know where these pesticides are applied, what pest they are designed to kill, and when they are used. We would like this information for the public purpose of helping people to avoid undesired exposures to toxic chemicals.

If you have any questions about this request, please contact any of the people below.
Thank you very much.

Sincerely,

Kaw Valley Greens Pesticide Committee
Marie Stockett
Amy Herren
Carolyn Micek
Terry Shistar

Cc: Mike Rundle, Sue Hack, David Dunfield, Jim Henry, Marty Kennedy, Joel Mathis

Dear Mr. Wildgen,

Thank you for responding to our letter and sending our committee a list of pesticides currently used by the city of Lawrence. In response to this long list and our continued concern about public exposure to these chemicals, we would like to make five requests to the city. The focus and concern of our committee is to ensure that the city of Lawrence provides adequate warning to the public of toxic chemicals so as to avoid harmful exposure to them.

First of all, the city should post signs in such a way that the public is adequately notified before entering a sprayed or treated area. Secondly, the signs should contain more accurate warnings. For example, the signs should contain signal words designated by the EPA ('caution', 'warning', or 'danger'). The signs should also identify what was sprayed, the date and time it was applied, and the date on which the sign may be removed. Thirdly, these signs should be posted for an adequate amount of time after application in order to minimize risk. We suggest that a sign be posted in the designated area for four half-lives of the chemical. This, however, is a rough guideline as more dangerous chemicals may need more time than four half-lives. Fourthly, the city should invest in sturdier, more easily read signs that the public can easily notice. They should be able to sustain exposure to sun, wind and rain. And lastly, the city should give proactive notification of spraying for reserved park spaces or buildings. Anyone who has reserved space at a park or building should be notified of possible exposure- that is, anything that would require posting on the day the facility is to be used.

Thank you for your consideration. The Kaw Valley Greens Pesticide Committee would like to meet with you regarding these requests at your earliest convenience.

Sincerely,
Kaw Valley Greens Pesticide Committee
Marie Stockett
Terry Shistar
Amy Herren
Laurie Troyani
Carolyn Micek

cc: Mike Rundle, Sue Hack, David Dunfield, Jim Henry, Mary Kennedy, Joel Mathis

City of Lawrence
Plant Health Care Program

On this day, Thursday 22nd, 2002
is being applied on Manage / Limac Plus
as a treatment for weeds

For information, please call
832-7974 or 832-7970.



Public Poison

Exploring Pesticide Practices of the Lawrence Parks and Recreation Department

by Amy Herren, Marie Stockett, Terry Shistar, and Richard Morantz

Pesticides are poisonous substances designed to kill insects and plants. What toll do these toxins take on us? Many of us may not give pesticides much thought since we generally cannot detect their presence immediately with our senses. To most of us they are invisible, especially when sprayed in our public places without public notification. Here in Lawrence, our city government regularly exposes its citizens to toxic chemicals in our city parks where our children play, in our public schools where our children learn, along the Kansas River from which we drink, and around our downtown where we shop. The City of Lawrence does this without adequately notifying us, the public. In this article, we reveal pesticide practices carried out by the Parks and Recreation Department.

We contacted Crystal Miles, Landscape Supervisor. She acknowledged pesticides are sprayed in Lawrence parks and assured us that they are safe after they dry, "especially after 24 hours." She said that the different parks have different levels of maintenance and emphasized that the city is required by law to control "noxious weeds." She gave us more people to contact and asked if there was any-

thing she could say to reassure us.

We next contacted Rowan Green, Turf Management Supervisor. He assured us that the city uses only "certified pesticide applicators." He told us that about every six weeks they spray Roundup next to fences, signposts, ball diamonds, and anything else that they can't mow close to. They apply fertilizers, treat any poison ivy or other "noxious weeds" with 2,4-D, and apply a broad-leaf weed preventer and fertilizer to most parks in mid-April.

Both Ms. Miles and Mr. Green told us that the city posts signs at the entrances to parks that have been sprayed for 2-4 hours after spraying. Because of Ms. Miles's comments about the "safety" after 24 hours, we asked if it would be possible for the city to leave the signs up for 24 hours just to be really safe. Mr. Green said that the city would not consider that because they are confident they are doing everything necessary to protect everyone. Also, he assured us that if we contacted the makers of Roundup they will assure us that it is as safe as table salt.

We expressed concern about our children playing in parks that have been sprayed

with pesticides, and Mr. Green promised to call us with information about parks that are "almost never treated." As promised, he called us back the next business day with a list of 12 parks where they do "next to nothing."

We called back Ms. Miles to identify the "weed and feed" the city sprays on parks in the spring. She seemed puzzled that we would want this information. She said that if we saw pesticides being improperly applied she would certainly want us to notify her, but otherwise she didn't understand the point. She said that the city follows a "normal turf program like lawn professionals would use," and "for us, pesticides are a tool." For weeds growing in sidewalk cracks, they use Roundup; in turf, usually for crabgrass, they use 2,4-D. The "weed and feed" used in the parks is Surflan on mulched areas, and Dimension on turf.

We also asked about a use that one of us had observed: A man was spraying the lawn in front of city hall, and there was no sign up at the time. Ms. Miles said that the pesticide was the fungicide Touche. When we investigated this fungicide, we

Continued on next page

Product	Active Ingredient	Where Used	Why Used	Half Life	Nervous System	Heart/ Circulatory System	Cancer	Birth Defects	Reproductive Effects	Sensitizer/ Irritant	Endocrine Disruptor
Roundup	Glyphosate	Cracks in sidewalks	Weeds	3 to 141 days	X	X				X	
Several	2,4-D	Turf	Broadleaf weeds	10 days	X	X	X	X	X	X	X
Surflan	Oryzalin	Mulched areas	Preemergent weed control	2 months		X	X	X	X	X	
Dimension	Dithiopyr	Turf	Preemergent weed control	10 months	X	X				X	X
Touche	Vinclozolin	Grass	Fungus	3 days to 3 weeks			X	X	X	X	X

found that it contains the active ingredient vinclozolin. According to EPA, in 1997, "To reduce exposure to children, residential uses of vinclozolin were deleted and turf and ornamental applications limited to commercial and industrial sites." Therefore, this use of Touche is illegal.

The table shows some basic information about some of the pesticides used in Lawrence parks, as well as the fungicide used in front of City Hall, an area that is not considered a park. The table lists the half-life of the active ingredient, which should be an important consideration in deciding how long to post sprayed areas. It also lists some adverse health effects that scientific studies have linked to exposure to the pesticides.

Pesticides are in our parks, our schools, and other public places. This is a fact. We should be told when our city is exposing us to these toxic chemicals. We should be told to what we are being exposed to and what effects these toxins have on us and our children. The choice to be exposed should not lie in the hands of city government. The choice should be ours. Contact your public officials, and tell them that you want public notification of every pesticide application and non-toxic methods to always be implemented.

Fred DeVictor, Parks and Recreation

PO Box 708, Lawrence, KS 66044
785-832-3450
fdevictor@ci.lawrence.ks.us

Mike Wildgen, City Manager

PO Box 708, Lawrence, KS 66044
785-832-3400
mwildgen@ci.lawrence.ks.us

Mike Rundle, Mayor

PO Box 708, Lawrence, KS 66044
785-843-8544
mike@mikerundle.org

To join the campaign contact Carolyn Micek at 785.594.7411.

Look for future articles about city pesticide use in schools, along the Kansas River, around downtown, and other public places.

What is a Pesticide? by Terry Shistar

Legally, the term "pesticide" refers to any material that is used to "kill, mitigate, or repel" any organism - bacteria, fungus, plant, insect, bird, mammal, or other—that is considered to be a "pest". When used in this legal sense, the term "pesticide" encompasses herbicides, fungicides, insecticides, nematocides, and other "cides", as well as disinfectants and growth regulators. Crops that have been genetically engineered to include genes for toxins that will kill insects munching on them are also considered pesticides.

A pesticide is usually a mixture of ingredients. The primary ingredients are called "active ingredients", and these are the ingredients for which the manufacturer makes pesticidal claims. Any substance that is purposely added to the pesticide product that is not an active ingredient is termed an "inert" ingredient. These "inert" ingredients are generally not biologically or chemically inert. Indeed, some chemicals that are active ingredients in some products are considered "inert" ingredients in other products. Inert ingredients generally do not need to be listed on the pesticide label, and pesticide manufacturers often claim that their identity is a trade secret. "Inert" ingredients have several functions—in addition to providing a solvent or bulking agent, they may also help a pesticide stick to a plant, penetrate the cuticle of an insect, or stay in solution in the tank mixture. Synergists were considered "inert" ingredients in the past, but are now listed as active ingredients or synergists on the label. An example of a synergist is piperonyl butoxide, which inactivates the primary detoxification pathway in insects and mammals for pyrethrum (a botanical insecticide) and synthetic pyrethroids.

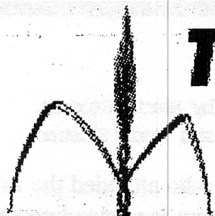


A typical ready-to-use household insecticide may be 1% active ingredients and 99% "inert" ingredients. In this case, the "inert" ingredients are often petroleum distillates, which are also hazardous, though usually not as toxic as the active ingredients. By the way, most of the toxicological tests on pesticides are performed on the active ingredient rather than the entire product. The lack of information about inert ingredients makes it very difficult to say that any pesticide exposure poses no risk or little risk.

There is one other type of ingredient in a pesticide product—contaminants. Contaminants are those chemicals that are present by accident. These are usually other products of the processes used to produce one of the ingredients. Dioxins are formed in the production of phenoxy herbicides and some other pesticides like the wood preservative pentachlorophenol (or "penta"). In the case of penta, the concentration of dioxins can be reduced, but the result is more hexachlorobenzene, which has many of the same toxicological effects as dioxins. Contaminants are almost never considered in the risk assessments that EPA uses to decide whether to register a pesticide, and most testing is done using a purified form of the active ingredient.

Finally, in judging the risks presented by pesticide exposure, we need to take into consideration breakdown products and metabolites. Pesticides are metabolized in our bodies and broken down in the environment. Sometimes the result is a chemical that is more toxic or toxic to different organisms than the original ("parent") chemical. For example, some bacteria breakdown the herbicide 2,4-D to 2,4-dichlorophenol, which is toxic to animals. Many organophosphate insecticides (the family of chemicals including malathion and Dursban) are broken down to chemical intermediaries that are more persistent and ten times as toxic as the parent compound.

Because of all the hidden ingredients of pesticide products, it is difficult to judge the risks from the chemicals listed on the label. Look for explanations of pesticide regulation and risk assessment in future issues of the Grass Root.



The

Grass Root

Spring 2002

The Kaw Valley Greens

Volume 2 Number 1

Poisoning Lawrence

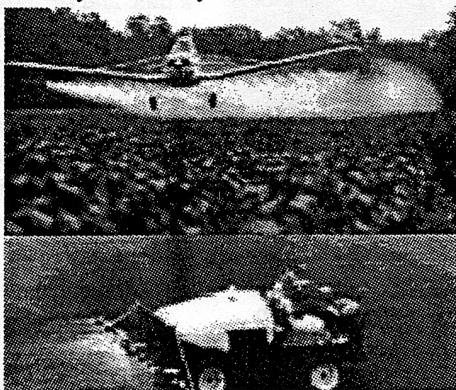
by Amy Herren and Marie Stockett

The Lawrence Parks and Recreation Department applies 73 pesticides to publicly accessible areas in Lawrence. It took several requests and probing from the Lawrence Journal-World before the city provided the lengthy and disturbing list. Go to <www.kawvalleygreens.org> to find the list and basic information about health effects that residents should be aware of.

In November, we met with City Manager Mike Wildgen, representatives from city departments, and Mayor Mike Rundle. At this meeting, we told city representatives that whenever a pesticide is applied to a public area, we feel it is necessary and reasonable to require the following:

1. The city should post signs in such a way that the public is adequately notified before entering a sprayed or treated area.
2. The signs should contain more accurate warnings than currently being practiced by the city. For example, the signs should contain signal words designated by the EPA ('caution', 'warning', or 'danger'). The signs should also identify what was applied, the date and time it was applied, and the date on which the sign may be removed.
3. These signs should be posted for an adequate amount of time after application in order to minimize risk. We suggest that a sign be posted in the designated area for four half-lives of the chemical. This, however, is a rough guideline as more dangerous chemicals may need more time than four half-lives.
4. The city should invest in sturdier, more readable signs that the public can easily see. They should be able to sustain exposure to sun, wind and rain.
5. The city should give proactive notification of spraying for reserved park spaces or buildings. Anyone who has reserved

space at a park or building should be notified of possible exposure- that is, anything that would require posting on the day the facility is to be used.



The city indicated a willingness to continue discussion on posting guidelines in the future. At the urging of Mayor Rundle, city officials also said they would look into inviting a consultant to Lawrence to hold a workshop about Integrated Pest Management (IPM), which is the practice of using the least toxic methods in accomplishing pest control goals. City Manager Wildgen added that the Kaw Valley Greens could be invited to the training.

On February 15, Kamyar Enshayan came to Lawrence at the city's request. Enshayan was not an IPM expert but did help develop "Yards for Kids," a community health education program that aims to reduce the use of pesticides within the cities of Cedar Rapids and Waterloo, Iowa. Enshayan held a morning training session with city staff, and an afternoon seminar for the public. In a telephone conversation prior to the event, the Kaw Valley Greens expressed to Manager Wildgen an interest in attending the morning training session but were told, "I don't think that's a good idea."

In the afternoon seminar, Enshayan

said that from what the city showed him, Lawrence is not spraying pesticides on a large percentage of city land. However, we reminded the city that they apply a combination pre-emergent pesticide and fertilizer, a "weed and feed," to the entire area of most Lawrence parks.

Parks and Recreation management agreed this was true. Enshayan said he gave recommendations to city staff on how to reduce its current pesticide use, and Parks and Recreation managers who attended the afternoon seminar seemed willing to pursue his suggestions. At the close of the meeting, Parks and Recreation Director, Fred DeVictor, expressed interest in creating a working group to discuss alternatives to pesticides and invited the Kaw Valley Greens to take part.

Tell the City of Lawrence to reduce its pesticide use.

City Manager

Mike Wildgen
mwildgen@ci.lawrence.ks.us
785-832-3400

Parks and Recreation Director

Fred DeVictor
fdevictor@ci.lawrence.ks.us
785-832-3450

Commissioners

Mike Rundle <mike@mikerundle.org>
(785) 843-8544
Sue Hack <suehack@sunflower.com>
(785) 842-6608
David M. Dunfield
<ddunfield@glpma.com>
(785) 843-5554
James R. Henry <jhenry@ku.edu>
(785) 842-6879
Martin Kennedy
<mkenney@sunflower.com>
(785) 843-4416

by Terry Shistar

One of the most commonly used pesticides is the herbicide 2,4-D, which is a standard broadleaf herbicide used on lawns (as well as on crops like wheat.) Once you know the smell of 2,4-D, you'll realize that you smell it all spring, when lawn care companies are at their busiest making sure that our lawns are safe from dandelions. Some people may even spray it during the summer when it has a nasty habit of vaporizing and condensing somewhere else. (For years, 2,4-D drift has been a leading cause of pesticide damage complaints.)

The herbicide 2,4-D is considered controversial by some people. Others read its rap sheet and can't figure out why it is still at large. It was part of the Agent Orange defoliant used during the Viet Nam war. Although concentrations of dioxins in the 2,4-D used now are lower than those in Agent Orange, there is good evidence linking the herbicide with nerve damage, endocrine disruption, cancer, and other health effects. (See box.)

Well, what *are* we to do about those terrible weeds? I think the first thing is to change the way we think of them.

When my kids had a pet iguana (carnivore in early life, turning vegetarian as it ages), I learned that some pests are not as omnipresent as they sometimes seem to the gardener. When Quincy was a carnivore, I had a hard time keeping him supplied with insects I could easily catch—like cabbage worms. When he turned vegetarian, I found that I had to range farther and farther every week to find him an adequate supply of weed “greens”. Once we stop thinking of those plants and animals as “pests”, we can allow ourselves to see value in them.

Now let me tell you about dandelions. Raw dandelion greens have almost twice the calcium, slightly more iron, more than twice the vitamin A, and more vitamin C than the same quantity of spinach.

Raw dandelion greens have as much vitamin C as orange juice from concentrate. Dandelion is considered a classic spring tonic because it is somewhat laxative, diuretic, and improves the functioning of the liver and promotes the secretion of bile. It is considered beneficial for those suffering from indigestion, poor liver function, bad skin, and arteriosclerosis.

The flowers can be made into dandelion wine or dandelion beer. Dandelion seeds are favored by goldfinches, so after you have the pretty yellow flowers, you get the pretty yellow birds.

Dandelions are free! (But don't eat the ones that are sprayed with pesticides!)

As I said, once you try to take advantage of those so-called “pests”, you’ll discover that they really aren’t all that pestiferous all year long. So if you’ve gotten hooked on the free, nutritious greens, try these weeds in the summer: Lambsquarters (*Chenopodium sp.*), which has three times as much calcium as spinach, and more of vitamins A and C; Pigweed (*Amaranthus sp.*), which has even more calcium than lambsquarters, twice as much iron as spinach, more vitamin A, and more than twice the vitamin C.

By the way, I haven't yet overcome our cultural bias against eating insects, but if you'd like to try it, grasshoppers have more protein and less fat than lean ground beef.

as summarized by the Northwest Coalition for Alternatives to Pesticides Visit the URL shown at the left.

* Symptoms of 2,4-D poisoning include drowsiness, vomiting, convulsions, kidney and liver injury, and muscle twitching. 2,4-D, and its salts that are used in herbicide products, are severe eye irritants. Three of these salts cause skin lesions.

* 2,4-D is unusual among herbicides. It causes an array of adverse effects to the nervous system: myotonia (the inability of muscles to relax), disruption of nervous system chemical activity, and behavioral changes. Maturing nervous systems may be particularly vulnerable: in lab tests juvenile rats exposed to 2,4-D developed smaller brains than unexposed rats.

* The ability of blood to carry oxygen and to form clots is reduced by 2,4-D.

* 2,4-D has also caused genetic damage in tests using both cell cultures and laboratory animals. It increased the frequency of a gene mutation in hamster muscle cell cultures, increased the frequency of abnormal chromosomes in bone marrow cells of rats and mice, and increased the number of breaks in human DNA (the molecule from which chromosomes are made).

continued top of next page

2,4-D *continued*

- * Studies of male farmers exposed to 2,4-D have found that exposed farmers have low-quality sperm. In addition, farmer-applicators in areas of high 2,4-D use have more children with birth defects than unexposed men.
- * 2,4-D exposure has been linked with increased risk of the cancer non-Hodgkin's lymphoma in a series of studies. These include studies of farmers in the U.S. and Canada; workers in 2,4-D manufacturing plants; professional lawn care applicators; and gardeners. In addition, exposure to 2,4-D-treated lawns has been associated with an increased risk of lymphoma in dogs. 2,4-D's ability to cause cancer has been controversial since the first of these studies was published.
- * 2,4-D disrupts the normal functions of hormone systems: it decreases blood concentrations of the metabolic hormone thyroxine and increases production by the testes of estradiol, a female sex hormone.
- * The U.S. Environmental Protection Agency has reported that 2,4-D is contaminated with dioxins, including the notorious 2,3,7,8-TCDD. TCDD causes a variety of reproductive problems, cancer, and damage to the immune system.
- * Among the many "inert" ingredients in commercial 2,4-D products are the carcinogen crystalline silica, the neurotoxic solvent xylene, and the teratogen and eye irritant 2-ethyl-1-hexanol.
- * 2,4-D reduces successful hatching of bird eggs, and destroys birds' food and nesting habitat. It is acutely toxic to earthworms and harms beneficial insects. Both 2,4-D (particularly the butoxyethanol ester) and a 2,4-D breakdown product (2,4-dichlorophenol) are acutely toxic to fish.
- * Increased risk of lymphoma in dogs has been associated with 2,4-D exposure. A National Cancer Institute study found that owners of dogs with lymphoma had treated their lawns with 2,4-D (or hired lawn care companies) more frequently than owners of dogs without the disease.
- * 2,4-D causes genetic damage in barley, wheat, rice, and onions.
- * 2,4-D treatment can increase insect damage by increasing pest insects' ability to reproduce. 2,4-D can also increase the severity of plant diseases, including tomato early blight, tobacco mosaic virus, and corn leaf blight.
- * Rhizobium is a nitrogen-fixing bacteria found on the roots of legumes. 2,4-D reduces its growth and nitrogen-fixing ability, as well as the growth and nitrogen-fixing ability of several species of blue-green al

From the Kaw Valley

Update from the Pesticide Committee

by Marie Stockett
and Terry Shistar

The Pesticide Committee continues to gather information about how pesticides are used in Lawrence and to pressure the city to adopt safer methods of dealing with “pests”. In past issues of the *Grass Root*, we have described our previous interactions with city staff, which are generally characterized by (1) a reluctance on their part to do what we think is an adequate job of notifying people of the danger when the city uses pesticides in public places and (2) what we perceive as a lack of commitment to reducing pesticide use. The progress we described has resulted from continued pressure from us and a willingness on the part of some city officials—most notably City Commissioner and former Mayor Mike Rundle—to recognize the importance of the issue.

On the morning of April 22nd, Earth Day, Kaw Valley Greens members saw the city apply pesticides around trees, flowerbeds, and posts, along fences, and in sidewalk cracks of Watson Park. People, including children, and pets walked through the freshly sprayed areas. Four small signs were posted at corners of the park and entitled “Plant Health Care Program”. The name of the pesticide applied was hand written and illegible. The ink on two of the signs was smeared. The applicator said that he sprayed Round-Up because it makes mowing the park easier.

On May 29, the city designated three parks as “Pesticide-Free Parks”. The first is a nearly four mile stretch of native grasses and other landscaping along Clinton Parkway. The other pesticide-free parks are Parnell Park, 901 E 15th St, and Ludlam Park, 2800 W 9th St. The designated pesticide-free parks will not receive chemical treatment for pest and weed control, but will be treated with alternative treatment methods, such as removing disease prone plants and trees and mechanically or manually digging out weeds. According to the city, “In the pesticide-free parks, visitors and staff will need to expand their tolerance of weeds and pests. The same level of care and maintenance will be given, but the alternative methods will create a park that may have some dandelions or other weeds.”

On June 4, the city held a public forum on their pesticide policies. Officials gave a presentation on current practices and displayed the city’s “Plant Health Care Program” posting

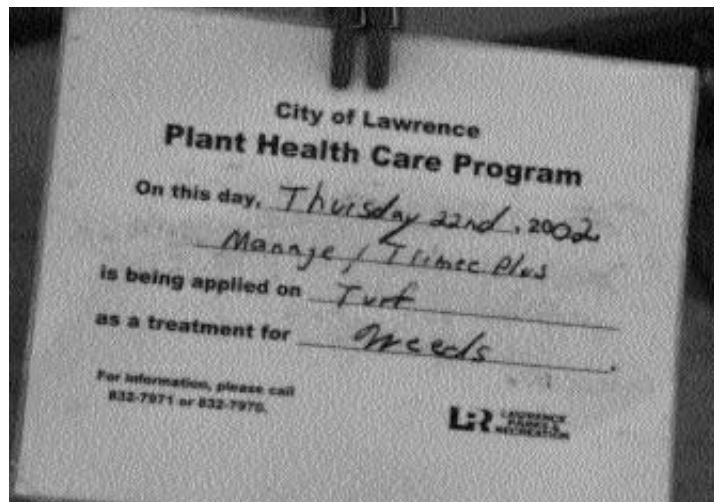
signs. One local resident, Stacey Walls, who attended the forum with her two-year-old son, said that the sign is misleading and does not adequately warn the public of pesticide exposure. She asked Fred DeVactor, Director of Parks and Recreation, “Look at the title. Why does it say ‘Plant Health Care Program’?”

DeVactor said, “Because that’s what it is.” Walls added, “But this sign implies health, and pesticides are not healthy.”

DeVactor said that he does not see the city abandoning pesticide use altogether because he believes that they are necessary to protect the investments made in the parks. He said that the plan is to try maintaining the three small parks without pesticides for a time and see how it goes. If it goes well, then they will expand the number of pesticide-free parks around town.

The Kaw Valley Greens offered to assist the city in finding ways to solve their pest problems without toxic chemicals. The city said that people can post problems and solutions to pest problems to a website, which we have not found. However, the city’s “plant health care” brochure says, “Please direct questions or informational requests to the Horticulture (785)832-7970 or Turf Management Divisions (785-832-7971) of the Parks and Recreation Department. Lprd@ci.lawrence.ks.us.”

On the morning of August 22, the Kaw Valley Greens saw a pesticide applicator place a “Plant Health Care Program” sign on the corner of 7th and Kentucky near the playground at Watson Park. The sign said Trimec was being applied. He then sprayed



along the sidewalk toward the pool. Another pesticide applicator sprayed around the corner of 8th and Kentucky, where another sign was located. The sky was dark and cloudy, indicating that rain would soon come, thus flushing the pesticides from the application sites and into other areas, including the river. The Kaw Valley Greens left the park for a short time. When we returned 30 minutes after our initial arrival, the signs were gone and the rain began. Trimec contains 2,4-D and other ingredients known cause a variety of health effects, including interfering with the endocrine system.

please see Pesticides on p. 9

Pesticides *continued*

The Kaw Valley Greens are looking to Adopt-A-Park, maintain and landscape it without the use of pesticides. We have tried to arrange this with the city but have been unable to reach Mark Hecker, Parks Manager.

*If your Neighborhood Association would like help finding alternatives to using pesticides in your neighborhood, call Terry at 748-0950.

Tell the city to stop poisoning our parks.

City Manager	Parks and Recreation Director
Mike Wildgen	Fred DeVactor
mwildgen@ci.lawrence.ks.us	fdevictor@ci.lawrence.ks.us
785-832-3400	785-832-3450

Commissioners

Mike Rundle	Sue Hack
mike@mikerundle.org	suehack@sunflower.com
(785) 843-8544	(785) 842-6608

David M. Dunfield	James R. Henry
ddunfield@glpma.com	jhenry@ku.edu
(785) 843-5554	(785) 842-6879

Martin Kennedy
mkenedy@sunflower.com
 (785) 843-4416

Here are our suggested posting guidelines.

1. The city should post signs in such a way that the public is adequately notified before entering a sprayed or treated area.
2. The signs should contain more accurate warnings than currently being practiced by the city. For example, the signs should contain signal words designated by the EPA ('caution', 'warning', or 'danger'). The signs should also identify what was applied, the date and time it was applied, and the date on which the sign may be removed.
3. These signs should be posted for an adequate amount of time after application in order to minimize risk. We suggest that a sign be posted in the designated area for four half-lives of the chemical. This, however, is a rough guideline as more dangerous chemicals may need more time than four half-lives.
4. The city should invest in sturdier, more easily read signs that the public can easily notice. They should be able to sustain exposure to sun, wind and rain.
5. The city should give proactive notification of spraying for reserved park spaces or buildings. Anyone who has reserved space at a park or building should be notified of possible exposure- that is, anything that would require posting on the day the facility is to be used.

Old West Lawrence Association
P.O. Box 1553
Lawrence, KS 66044
October 8th, 2003

Mike Wildgen
City Manager
P.O. Box 708
Lawrence, KS 66044

Dear Mr. Wildgen,

At our last meeting held October 7th, 2003, the Old West Lawrence Association (OWLA) decided that we do not want our community park, Buford Watson Park, contaminated with pesticides any longer. We believe that the risks associated with exposure to these toxic chemicals are just too high. OWLA is excited about your Pesticide-Free Parks Program and respectfully requests that Watson Park be officially declared a Pesticide-Free Park, where no pesticide—including herbicide, fungicide, insecticide, or rodenticide—shall be applied. We want our park maintained using non-toxic methods only.

We ask that you respond to our letter no later than October 22nd, 2003. If you have any questions, please do not hesitate to contact Marie Stockett at 832-1345.

Sincerely,

Dale Slusser, OWLA President

Cc: Fred DeVictor, Sue Hack, Mike Rundle, David Dunfield, Boog Highberger, David Schauner

Pesticides Are Not Safe

- List of pesticides used in Lawrence by LPRD.
- Fact Sheet about pesticides used in Watson Park
- Letter to Parks & Recreation Management from Dr. Kamyar Enshayan, University of Northern Iowa.
- "Children's Health and Pesticides" by M. Gallagher and K. Teipel. Environmental Decisions Involve Everyone (EDIE). 2000. Also available at:
<http://www.pesticidefreesign.com/Children.html>
- "Evidence of Health Risks of Commonly Used Pesticides to Children" by Dr. Kamyar Enshayan. Also available at:
<http://www.uni.edu/yardsforkids/childrenandpesticides.html>
- "Ten Reasons Not to Use Pesticides" Journal of Pesticide Reform. Winter, 2001. Vol. 21, No.4. Also available at:
<http://www.pesticide.org/TenReasons.pdf>
- "Interaction Of Pesticides With Natural Controls" By Patricia S. Muir. Oregon State University.
<http://oregonstate.edu/instruction/bi301/interfer.htm>
- "Compost Tea For Everyone" By Lisa Van Cleef, SF Gate.
<http://sfgate.com/cgi-bin/article.cgi?file=/g/a/2004/09/15/greeng.DTL>
- "Presentation to the House Committee on Environment and Sustainable Development (inquiry on pesticides)" Canadian Organic Growers. (Exerpts)
<http://www.cog.ca/pesticides.htm>

- “Some health effects of the most common pesticides used in ornamental landscapes” by Heide Hermary. Society of Organic Urban Land Care Professionals.
http://www.organiclandcare.org/members/health_effects_of_pesticides.pdf
- “Movement Of Pesticides In The Environment” *Toxicology Information Briefs*. Extension Toxicology Network.
<http://extoxnet.orst.edu/tibs/movement.htm>

Some Additional References:

- “Why Be Concerned About Pesticides?” By Patricia S. Muir. Oregon State University.
<http://oregonstate.edu/instruction/bi301/whycare.htm>
- “Problems Associated With Pesticides” IPM Thailand.
<http://www.ipmthailand.org/en/Pesticides/problems.htm>
- “Pesticides” European Pesticide Hazard Information and Decision Support System.
<http://www.econ.vu.nl/gis/education/Euphids/Pesticides.htm>
- “Effects of synthetic fertilizers on the soil ecosystem” By Heide Hermary. Society of Organic Urban Land Care Professionals.
http://www.organiclandcare.org/members/synthetic_fertilizers.pdf

Pesticides Used by LPRD

Product	Active Ingredient	Where Used	Why Used	Half Life	Cancer	Reproductive Effects	Nervous System	Kidney and Liver	Sensitizer/Irritant	Birth Defects	Endocrine Disruptor
(No brand name)	2,4-D	Levee	Broadleaf weeds	10 days	X	X	X	X	X	X	X
3-Way Lesco Herbicide	2,4-D amine, MCPP, dicamba	Fine turf areas	Broadleaf weeds	10 days to 9 weeks	X	X	X	X	X	X	X
Millennium	2,4-D, clopyralid, dicamba	Eagle Bend	Henbit, clover, dandelion	10 days to 9 weeks	X	X	X	X	X	X	X
Weed-B-Gon	2,4-D, MCPP	CLSC	Clover, dandelion	10 days	X	X	X	X	X	X	X
Trimec DSC	2,4-D, MCPP, dicamba	Watson, Constant, ball diamonds, park trails	April broadleaf weeds, poison ivy	10 days to 9 weeks	X	X	X	X	X	X	X
Momentum	2,4-D, triclopyr, clopyralid	Eagle Bend	Broadleaf weeds	2-14 months	X	X	X	X	X	X	X
Advance	abamectin	city buildings and facilities		Stable indoors		X	X		X	X	
Avert	abamectin	city buildings and facilities	Cockroaches	Stable indoors		X	X		X	X	
Avid .15 EC	abamectin	Landscape beds; downtown; parking lots	Spider mites on junipers, etc.	2 weeks to 2 months		X	X		X	X	
Acephate Pro PCO	acephate	city buildings and facilities		50 days indoors	X		X		X		
Induce	alkyl and fatty acids		Spray adjuvent								
Heritage	azoxystrobin	Eagle Bend	Fungus prevention	72-164 days					X		
Bensumec 4 Lf	bensulide	Eagle Bend	Crabgrass, bluegrass prevention	4-12 months			X	X	X		
Injecticide	bidrin	Downtown trees	Aphids, leafhoppers on ash		X	X	X				
Talon-G	brodifacoum	city buildings and facilities	commensal mice and rats	?							
WeatherBlok XT	brodifacoum	city buildings and facilities	rats and mice	?							
Daconil Weatherstick	chlorothalonil	Eagle Bend	Fungus prevention	10-36 days	X	X	X	X	X		
Manicure 6	chlorothalonil	Eagle Bend	Fungus prevention	10-36 days	X	X	X	X	X		
Dursban 50W	chlorpyrifos	Eagle Bend	Cutworms, Army worms	30 days		X	X		X	X	
Dursban Pro	chlorpyrifos	Dad Perry Park	Ticks, chiggers	30 days		X	X		X	X	
			crawling insects, ticks, booklice, silverfish, ants								
PT 279 Engage	chlorpyrifos	city buildings and facilities		>72 days indoors		X	X		X	X	
Primo	cimectacarb (1)	YSI, CLSC	Growth retardant on lines								
Demon TC Insecticide	cypermethrin	city buildings and facilities	termites, ants, bees, etc.	Stable indoors	X	X	X	X	X	X	X
Tim-Bor DPT	disodium octaborate tetrahydrate	city buildings and facilities		?							
DiSyston	disulfoton	Downtown and parking lot euonymous	Scale	2-4 days			X				
Dimension	dithiopyr	Eagle Bend	Crabgrass, foxtail prevention	10 months			X		X		X
Dimension .172	dithiopyr	Fine turf areas	Preeemergent weeds	10 months			X		X		X
Wasp Freeze	d-trans allethrin, phenothrin	city buildings and facilities	bees, hornets, spiders, wasps	1-2 days			X	X	X		
Conquer Residual Insecticide Concentrate	esfenvalerate	city buildings and facilities	fleas, ticks, granary insects, etc.	1-3 months			X		X		
MaxForce FC Roach Bait stations	fipronil	city buildings and facilities	roaches		X						X
Ornamec 170	fluazipop-p-butyl	Landscape beds; parking lots	Perennial grassy weeds	3-12 weeks	?	?		?	X	?	?
Roundup	glyphosate	YSI, CLSC, Holcom	Weeds	3-141 days			X		X		
Roundup	glyphosate	Ball diamonds, parking lots, sidewalks	Eliminate weedeating	3-141 days			X		X		
Roundup Pro	glyphosate	Landscape beds; parking lots	All weeds	3-141 days			X		X		
Roundup Pro	glyphosate	Levee, airport, street islands	Weeds, grass	3-141 days			X		X		
Mach 2	halofenozide	Eagle Bend	Grubs		?	?	?	?	?	?	?
Manage	halosulfuron methy	Landscape beds; parking lots; fine turf	Yellow nutgrass			X		X	X	X	
Manage	halosulfuron methy	Eagle Bend	Yellow nutgrass			X		X	X	X	
MaxForce Roach Killer Bait Gel	hydramethylnor	city buildings and facilities	roaches	Stable indoors	X	X		X	X	X	
Merit	imadocloprid	Lyons, Ice diamonds	Grubs	107 days to >> 1 year		X	X		X		
Merit	imadocloprid	CLSC	Grubs	107 days to >> 1 year		X	X		X		
Merit	imadocloprid	Eagle Bend	Grubs and cutworms	107 days to >> 1 year		X	X		X		
Merit 75 WSP	imadocloprid	Downtown trees and euonymous	Aphids, lace bugs	107 days to >> 1 year		X	X		X		
Gallery 75	isoxaben	Landscape beds	Bindweed	30-40 days	X			X			

Pesticides Used by LPRD

Product	Active Ingredient	Where Used	Why Used	Half Life	Cancer	Reproductive Effects	Nervous System	Kidney and Liver	Sensitizer/Irritant	Birth Defects	Endocrine Disruptor
Demand	lambda-cyhalothrin	city buildings and facilities			?	X		X			
Scimitar	lambda-cyhalothrin	Eagle Bend	Cutworms, attenius beetle		?	X		X			
Scimitar GC	lambda-cyhalothrin	Landscape beds; downtown trees	Sucking insects		?	X		X			
Hyvar XL	lithium salt of bromacil	Levee, airport	Weeds, grass	2-6 months	X			X	X		
Fore	mancozeb	Eagle Bend	Fungus prevention	1-3 months(2)	X					X	X
			Growth regulator on steep slope								
Embark 2S	mefluidide, diethylamine salt	Johnnies slope, N. 2nd		2 weeks		X			X	X	
				2 weeks to 6 months							
Subdue Maxx	metalaxyl	Eagle Bend	Fungus prevention					X		X	
Precor IGR	methoprene	city buildings and facilities	fleas	?							
Pennant liquid	metolachlor	Landscape beds	Yellow nutgrass	2 months		X	X	X	X	X	X
Trimec Plus	MSMA, 2,4-D, 2,4-DP, dicamba		Control broadleaf weeds	10 days to 9 weeks	X	X	X	X	X	X	X
JT Eaton's Stick-em glue products	none	city buildings and facilities	rodents								
Surflan AS	oryzalin	Landscape beds	Preemergent broadleaf weeds	2 months	X	X			X	X	
Touche F	oxazolidinadione(3)	Fine turf areas	Turf diseases-leaf spot								
Pendulum	pendimethalin	Watson, Constant, fence lines, tree bases	April crabgrass, chickweed, misc weeds	1 year	X		X		X	X	
Turficide	pentachloronitrobenzene	Eagle Bend	Fungus prevention	4 months to 3 years						X	X
Tordon 22K	picloram	Levee, airport	Broadleaf weeds, thistles	11 months	X	X		X	X		
Tordon RTU	picloram, 2,4-D	Landscape beds	Sapling stumps	11 months	X	X	X	X	X	X	X
Exhalt	polymerized pinene, saturated naphthenes, paraffins		Spray adjuvent								
			fleas, cockroaches, ants, etc.								
Catalyst	propetamphos	city buildings and facilities		4-32 weeks(4)			X	X			
Banner Max	propiconazole	Eagle Bend	Fungus prevention	2 months to 2 years	X	X		X	X	X	
ULD BP-300	pyrethrins, piperonyl butoxide, MGK 264 synergist	city buildings and facilities	roaches, ants, spiders, etc.	?		X	X	X	X		
Poast	sethoxydim	Landscape beds; parking lots	Perennial grassy weeds	5 days		X	X	X	X	X	
Advance Dual Choice	sulfuramid	city buildings and facilities	ants	?							
Oust	sulfometuron methyl	Levee	Weeds, grass	30 days							
Clear's 3336 F	thiophanate	Landscape areas; some parks	Tip blight on Austrian pines	1 day	X	X	X				X
3336F	thiophanate-methy	Eagle Bend	Fungus prevention	1 day	X	X	X				X
Bayleton	triadimefon	Eagle Bend	Fungus prevention	9-12 months	X	X	X	X		X	
			Preemergent broadleaf weeds								
Snapshot 2.5 TG	trifluralin, isoxaben granular	Landscape beds		2-4 months	X		X	X	X		
Touche	vinclozolin	Eagle Bend	Fungus prevention	3 days to 3 weeks	X	X			X	X	X

Notes:

(1) This is not the active ingredient currently used in this product. Information about cimectacarb is not available.

(2) The degradation product of mancozeb is ethylene thiourea, which is stable and much more toxic than mancozeb.

(3) This active ingredient is not listed in any of EPA's databases.

(4) Length of time spray maintained its effectiveness on sprayed surface.

Source: Lawrence Parks & Recreation Department, 2001.

Pesticides Applied to Watson Park

- 1) **Dimension** is applied to turf to control crabgrass
Its active ingredient is dithiopyr, which has a half life of 10 months and has been shown to cause:

Heart and circulatory system problems
Nervous system disorders
Endocrine disruption
Sensitizer/irritant issues

- 2) **Team** is applied to grass to control crabgrass.
Its active ingredients are trifluralin and benfluralin., which have a half life of 169 days and have been shown to cause:

Cancer
Heart and circulatory system problems
Reproductive problems
Kidney and liver dysfunction
Endocrine disruption
Sensitizer/irritant issues

- 3) **Round Up Pro** is applied around trees, poles, and fences to control vegetation.
Its active ingredient is glyphosate and has a half life of up to 141 days. It has been shown to cause:

Heart and circulatory system problems
Nervous system disorders
Sensitizer/irritant issues

- 4) **Powerzone** is applied to turf to control weeds.
Its active ingredients are MCPA, mecoprop-P, dicamba, carfentrazone-ethyl, which have a half life of 10 days. They have been shown to cause:

Cancer
Heart and circulatory system problems
Reproductive problems
Nervous system disorders
Kidney and liver dysfunction
Sensitizer/irritant issues

- 5) **Trimec DSC** is applied to turf to control weeds.

Its active ingredients are 2,4-D, MCP, and dicamba. These ingredients have a half life of 10 days to 9 weeks and have been shown to cause:

Cancer
Heart and circulatory system problems
Reproductive problems
Nervous system disorders
Kidney and liver dysfunction
Birth defects
Endocrine disruption
Sensitizer/irritant issues

- 6) **Surflan** is applied to flower and shrub beds to reduce weeds.

Its active ingredients are oryzalin, which has a half life of 2 months and has been shown to cause:

Cancer
Heart and circulatory problems
Birth defects
Reproductive problems
Sensitizer/irritant issues

- 7) **Snapshot** is applied to flower and shrub beds to reduce weeds.

Its active ingredients trifluralin and isoxaben granular, which have a half life of 2 months to 4 months and have been shown to cause:

Cancer
Heart and circulatory problems
Nervous system disorders
Kidney and liver dysfunction
Sensitizer/irritant issues

- 8) **Cleary's 3336F** is applied to Austrian pines and shrubs to control tip blight and mildew.

Its active ingredient is thiophanate, which has a half life of 1 day and has been shown to cause:

Cancer
Heart and circulatory problems
Reproductive problems
Nervous system disorders
Endocrine disruption

- 9) **Astro** is applied to ashes, redbuds, and crabapples to control borers.
Its active ingredient is permethrin, which has a half life of 25days and has been shown to cause:

Cancer
Reproductive problems
Nervous system disorders
Kidney and liver dysfunction
Endocrine disruption
Sensitizer/irritant issues

- 10) **Avid 15EC** is applied to plants to control spider mites.
Its active ingredient is abamectin and has a half life of 2 weeks to 2 months. It has been shown to cause:

Heart and circulatory problems
Reproductive problems
Nervous system disorders
Birth defects
Sensitizer/irritant issues

Subject: Follow up

Date: Mon, 18 Feb 2002 12:03:48 -0600

From: Kamyar Enshayan <kamyar.enshayan@uni.edu>

To: fdevictor@ci.lawrence.ks.us, twilkerson@ci.lawrence.ks.us, cmiles@ci.lawrence.ks.us, rgreen@ci.lawrence.ks.us

Dear Crystal, Rowen, Tom and Fred,

Thanks again for inviting me to Lawrence. I enjoyed seeing your beautiful parks and I was so delighted to learn the wonderful work you and your staff do. I enjoyed the public event as well.

I thought to write and share with you some follow up ideas for your consideration:

1. The two outfits who manufacture flame/heat type weeders for a wide variety of uses:

www.flameengineering.com

www.chemfree-weedcontrol.com

These tools may be very useful in certain areas, and seemed to be reasonably priced.

2. Had some thoughts on the sq. footage for the parks. Were the numbers that I saw the total sq.ft. for the park (i.e. the roads, shelter, etc.), or was it the grounds minus roads, buildings, shelters, and parking lots? It would be more accurate to not include the roads, buildings, etc. and include only the sq. ft. for the turf and shrubs, flower beds, etc. for each park and then the percentage of *that* area that is sprayed.

3. It would be interesting to keep track of total pesticide used every year (golf courses aside, though much could be done to reduce there as well). That way you have percentage sprayed as well as total pesticide used over the years.

4. Publicize your accomplishments. You have done a lot and are doing a wide range of practices that take away the need for pesticide use.

5. Declare a few parks as pesticide-free.

6. With 4 & 5, and all your accomplishments, you need not be in a defensive posture, instead, you can easily have a very proactive posture, and lead and inspire many others, because you are already at the forefront:

- Inspire home owners, churches, day care centers, other businesses to follow your lead
- Have annual demonstrations in a few parks, i.e. showing high cutting height results in better turf compared to cutting 1-2 inches! Highlight specific practices you do--native plants, etc.
- Promote the idea that you are striving to create healthy public spaces and that a few dandelions and other plants here and there are OK, that you have thought about this issue carefully.

7. Dr. Rhonda Janke at KSU Department of Horticulture should be a great resource. She might be able to work with you, to deal with specific challenges and come up with pesticide-free practices for some areas.

8. Re-examine high visibility areas, near high people traffic areas, which could be managed differently.
9. There could be further reduction of herbicide in general turf areas by simply mowing, fertilizing and aerating. Sure there might be slightly more weeds, but if it is not athletic turf, it is ok. It will be mowed and it is green! You may even consider some sort of a goal, 1% sprayed by 2005, or something like that.
10. In the parks or athletic fields you must spray, see what you can do to change the timing so that it is done after the season, or sometimes that would reduce exposure as much as possible.
11. I want to share a few things about health effects of pesticides, the main reason for significant reduction (we did not really have time to discuss this, and I won't elaborate much here either, but will put a couple of sheet in the mail to Crystal and Rowen)
 - The process by which EPA approves a pesticide to be on the market is very *political*. In other words, companies with deep pockets have a lot of influence on EPA and other government agencies.
 - All testing and label development are done by the companies that manufacture the pesticides, *NOT* by EPA! The EPA is under funded and does not have the resources to test these products and evaluate them independently.
 - As a result, when we say, we are following the label, we should know that that does not mean applying according to the label will be necessarily safe. Take MCP, for example. EPA states that it is teratogen (causes birth defects) and that margins of safety may not be adequate for some applicators and that the current data is incomplete. None of this information from EPA will be on the label.
 - Surely, there are those who believe all is well and that if you are careful, and wash your hands, it is all OK. But that's mostly a marketing strategy by the manufacturers to sell a product. The medical journal articles and research by health researchers speak for themselves. (I will mail you a short summary).
 - My take on all this is: We simply do not know enough about the long-term health effects of these pesticides. And what we do know is sobering. Because our children's health is at risk, because our park staff's health is at risk, we must avoid using these substances as much as we can. This is a preventive approach. To me this is a common sense approach. People do not want risks to be taken for them. They do not want their children exposed unknowingly.

Again, as someone who likes to see significant reduction in pesticide use and to see more pesticide-free practices in place in our communities, I can tell you that you have done so much already and that your work is exemplary.

Let me know how I can be of further help.

Kamyar Enshayan
319-273-6895

Children's Health and Pesticides



The exposure of children to pesticides around their homes, and in public areas such as schools, playgrounds, or day care centers has been recognized as an important and inadequately understood problem.

In conducting a 1993 review of potential risks due to pesticides in the diets of children, the National Research Council (NRC) determined that children, including infants might be at greater risk than adults from harmful effects the pesticides can cause.

Potential effects of pesticides on people of any age include central nervous system damage, cancer and respiratory illness. Because of the rapid development and the immaturity of their organs their tissues may absorb chemicals more readily and be less able to break them down. Pound for pound they eat more, drink more, and breathe more than adults and are lower and closer to the ground.

One study found that children whose lawns were treated with pesticides were four times more likely to have soft tissue cancers and had a six-fold increased risk for developing leukemia.

The Council of Hazardous Materials found that treated lawns shouldn't be walked on for up to 10 days. Some studies show that pesticides have a half-life of up to a year, yet we allow our children to crawl, sit, and play on chemically treated grass and ingest pesticide residue from contact with toys and hands. For your children's health please consider a natural lawn.

What can you do?

- Re-evaluate and limit your own use of pesticides.
- Weigh the known advantages and disadvantages of pesticide use.
- Consider redefining your lawn and yard.
- Take a stand and notify your neighbors.
- Contact your local municipality and develop a local policy on chemical lawn spraying in your neighborhood.

Sources

"Children's Exposure to Pesticides" Star Report: U.S. EPA Office of research and Development's Science to Achieve Results (STAR); Vol. 1, issue 1; October 1997.

"For Children, lawn pesticides are a bigger threat than weeds"Star Tribune; Minneapolis, Minnesota; April 8, 1999; Susan J. Berkson.

"Kids Need More Protection From Chemicals Environment," Los Angeles Time; Los Angeles, California; January 28, 1999; Lawrie Mott.

"A Parent's Guide To Pesticide Reduction In Wisconsin Schools ", April 1999; Wisconsin's Environmental Decade, Citizens for a Better Environment and Wisconsin PTA; April 1999; M.E. Rolle.

Evidence of Health Risks of Commonly Used Pesticides to Children



Pesticides --weed killers, insecticides, and fungicides-- are designed to kill or damage living things. While these hazardous substances are used primarily on farms to control weeds, insects, and fungi, considerable amounts of pesticides are used in urban areas where more people are likely to be exposed to them.¹ Children play in school grounds, parks, and backyards and in every one of these places they are exposed to weed killers. Very young children who put fingers and other objects in their mouths may face even greater exposure.² Detailed residue studies have shown that herbicides applied to home lawns are brought into the house by foot traffic days after application.³

Frequent exposure to commonly used pesticides pose health threats to all of us, but especially to infants and children. Children's special susceptibility to pesticides was first widely publicized by the National Academy of Sciences 1993 report *Pesticides in the Diets of Infants and Children*.⁴ The report concluded that children are not adequately protected from pesticides on their food. (The report recommended many changes in the regulation of pesticides. Many of these changes were included in a 1996 law, the Food Quality Protection Act, which have yet to be fully implemented.)⁵

There is also non-food exposure to pesticides, i.e. spray drift from a neighbor's yard, playing and rolling at the park or home lawn just sprayed, hugging a dog treated with flea and tick insecticides, and prenatal exposures. The effects of children's acute exposure to pesticides are discussed in the American Academy of Pediatrics' *Handbook of Pediatric Environmental Health*.⁶

The long term health effects on children of exposure to small doses of pesticides are not well understood. However, recent studies have shown associations between children's exposure to pesticides and a wide variety of health problems:

- * In Minnesota, farmers licensed to apply pesticides on their farms are more likely to have children with birth defects. This association was particularly strong in counties with high use of fungicides and herbicide related to 2,4-D, a commonly used lawn weed killer.⁷

- * In California counties with high agricultural pesticide use, the incidence of limb reduction birth defects is also high.⁸

- * A study of children with brain cancer in Los Angeles County, CA, found that these children were twice as likely as children without the disease to have been exposed prenatally to flea and tick insecticides when their mothers treated their pets.⁹

* A study of Canadian farmers found that use of the insecticide carbaryl was associated with increased incidence of miscarriage and the use of the herbicides atrazine and 2,4-DB was associated with increased risk of premature birth.¹⁰

* 2,4-D, one of the most common lawn weed killers has been associated with Non-Hodgkin's Lymphoma in numerous studies.¹¹

A compilation of recently published studies linking "normal" use pesticides and a variety of illnesses is available at www.chem-tox.com/pesticides.

Taken together, these studies are a clear demonstration that pesticides' effects on human health are a cause for concern. And because we do not fully understand the long term impacts of pesticides on children or on the biosphere, it is simply prudent to greatly minimize their use or preferably not use them at all. Practical, cost-effective, and healthy alternatives do exist.

Excerpted primarily from the Journal of Pesticide Reform Vol. 19, No. 2.

1. Jenkins, V. S. 1994. The Lawn: A History of an American Obsession. Smithsonian Institution Press, Washington, D.C.
2. Wargo, J. 1996. Our Children's Toxic Legacy: How Science and Law Fail to Protect Us from Pesticides. Yale University Press, New Haven, CT.
3. Nishioka, M. et al. 1996. Measuring transport of lawn-applied herbicide acids from turf to home: correlation of dislodgeable 2,4-D turf residue with carpet dust and carpet residue. Environmental Science and Technology, Vol. 30, No. 11.
4. National Research Council. 1993. Pesticides in the diets of infants and children. National Academy Press, Washington, D.C.
5. Cox, Caroline. 1999. Do Pesticides Pose Special Hazards to Children? J. of Pesticides Reform. Vol.19, No.2.
6. American Academy of Pediatrics. 1999. Handbook of Pediatric Environmental Health. 141 Northwest Point Boulevard, Elk Grove Village, Illinois 60009-0927.
7. Garry, V.F. 1996. Pesticide applicators, biocides, and birth defects in rural Minnesota. Environ. Health Persp. 104:394-399.
8. Schwartz, D.A. and J.P. LoGerfo. 1988. Congenital limb reduction deficits in the agricultural setting. Am. J. Public Health. 78(6):654-659.
9. Pagoda, J.M and S. Preston-Martin. 1997. Household pesticides and risk of pediatric tumors. Environmental Health Persp. 105:1214-1220.
10. Savitz, D.A. et al. 1997. Male pesticide exposure and pregnancy outcome. Am. J. Epidemiol. 146:1025-1036.
11. Zahm S.H. and A. Blair. 1992. Pesticides and Non-Hodgkin's Lymphoma. Cancer Research (suppl.) 52, 5485s-5488s.

Source: "Evidence of Health Risks of Commonly Used Pesticides to Children" by [Dr. Kamyar Enshayan](mailto:Dr.Kamyar@uni.edu).
<http://www.uni.edu/yardsforkids/childrenandpesticides.html>

TEN REASONS NOT TO USE PESTICIDES

1. Pesticides don't solve pest problems.
2. Pesticides are hazardous to human health.
3. Pesticides cause special problems for children.
4. Pesticides often contaminate food.
5. Pesticides are particularly hazardous for farmers and farmworkers.
6. Pesticides are hazardous to pets.
7. Pesticides contaminate water and air.
8. Pesticides are hazardous to fish and birds.
9. Pesticide health and safety testing is conducted by pesticide manufacturers.
10. Pesticides have too many secrets.

BY CAROLINE COX

1. Pesticides don't solve pest problems. They don't change the conditions that encourage pests.

Some pesticides are remarkably efficient tools for killing pests, but almost all do nothing to solve pest problems. To solve a pest problem, it's necessary to change the conditions that have allowed the pest to thrive. Simply killing the pest is not enough. As the U.S. Environmental Protection Agency (EPA) wrote in its *Citizen's Guide to Pest Control and Pesticide Safety*, "Pests seek places to live that satisfy basic needs for air, moisture, food, and shelter. The best way to control pests is to try to prevent them from entering your home or garden in the first place. You can do this by removing the elements that they need to



Caroline Cox is NCAP's staff scientist.



Nicole Ashley

survive."¹ This concept is true for agriculture, forestry, and commercial pest management as well as for homeowners.

Simply killing pests, instead of solving pest problems, leads to routine and repeated use of pesticides. Almost a billion pounds of conventional pesticides are used in the U.S. every year, and this use has continued for decades.² This enormous quantity would have decreased if pesticide use was truly solving pest problems.

2. Pesticides are hazardous to human health. Every year, enormous quantities of pesticides known to cause significant health problems are used in the U.S.

Pesticides cause a wide variety of health problems; as Mt. Sinai School of Medicine physician Philip Landrigan has written, "the range of these adverse health effects includes acute and persistent injury to the nervous system, lung damage, injury to reproductive organs, dysfunction of the immune and endocrine [hormone] systems, birth defects, and cancer."³

Making these problems even more significant, pesticides that are hazardous to our health are used in enormous quantities. Consider just two of the many types of pesticide-related health hazards: cancer and problems with reproduction. Also consider the 28 conventional pesticides that, according to EPA estimates, are the most widely used in U.S. agriculture, in and around U.S. homes, and by commercial pesticide applicators.⁴ Even though 7 of these 28 pesticides have not yet been evaluated by EPA, over 40 percent are classified by the agency as carcinogens (able to cause cancer).⁵ Total use of the pesticides classified as carcinogens is a staggering 350 million pounds per year.^{4,5}

EPA does not formally classify pesticides according to their hazards for reproduction, but according to an EPA risk information database that summarizes studies about 19 of the 28 commonly used pesticides, almost all (18 out of these 19) have caused reproductive problems in laboratory tests, including miscarriages, birth defects, and testicular

atrophy.⁶ Total use of these 18 pesticides is almost 550 million pounds per year.^{4,6}

If they were to accurately reflect pesticide hazards, these enormous numbers should be even larger, since not all evidence of health hazards is reflected in EPA's analysis. For example, studies of Kentuckians⁷ and Californians⁸ found that exposure to the commonly used herbicide atrazine is associated with increased risks of cancer, but EPA classifies atrazine as "not likely to be carcinogenic in humans."⁹ The widely used fumigant metam sodium is not included in EPA's risk information database, but has caused pregnancy problems in laboratory tests.¹⁰

3. Pesticides cause special problems for children. For their size, they consume more food and drink than adults, and both of these can be contaminated with pesticides. They play in ways that increase their potential exposure. Also, their growing and developing bodies can be particularly sensitive.

USDA/Ken Hammond



Children are more exposed and more susceptible to pesticides than are adults. As Dr. Lynn Goldman wrote while she was the assistant administrator of EPA's Office of Prevention, Pesticides, and Toxic Substances, "As a pediatrician, I know that children can be more vulnerable to environmental contaminants. Their systems are growing. Compared to adults, children eat proportionally more fruits and vegetables and drink proportionately more water. Their

behavior patterns — crawling on the floor and putting things in their mouths — cause them to be more exposed to contaminants."¹¹

Pesticides can cause short-term illnesses in children, but also more lasting problems. "There is evidence, for example," explained Dr. Philip Landrigan, "that pre- and postnatal exposures to pesticides increase the risk of childhood cancer, and concern has arisen that early exposure to neurotoxic pesticides may increase risk later in life of chronic neurologic diseases."³

4. Pesticides often contaminate food. The widespread use of pesticides in agriculture means that pesticides are frequently found on a variety of common foods.

Recent monitoring by the U.S. Dept. of Agriculture's (USDA's) Pesticide Data Program showed that 67 percent of the fresh fruits and vegetable samples that the agency tested were contaminated with at least one pesticide. Almost 40 percent of the samples were contaminated with more than one pesticide. Certain fruits are contaminated even more frequently, including over 90 percent of the samples of both strawberries and pears.¹² USDA found pesticide contamination of wheat, a staple of many American diets, in 80 percent of the samples tested. Almost 90 percent of the samples that USDA tested of soybeans, a significant part of many infant formulas, were contaminated.¹³



USDA/Tim McCabe

5. Pesticides are particularly hazardous for farmers and farmworkers. There are no comprehensive systems for keeping track of the number and type of pesticide illnesses in the U.S., but research shows that farmers and farmworkers face risks of both acute pesticide poisoning and long-term illness.

Because agricultural pesticides account for over 75 percent of total U.S. pesticide use,² farmers and farmworkers are often exposed to larger amounts of pesticides more frequently than other people. EPA has estimated that between 10 and 20 thousand pesticide-related illnesses and injuries occur among farmers and farmworkers every year, but the agency believes that these large numbers are actually serious underestimates.¹⁴

There are no national systems to track acute pesticide illnesses, and information about chronic effects, like cancer or birth defects, is even more limited. However, many studies indicate that the hazards of pesticides are significant. For example, studies of farmers have shown that use of phenoxy herbicides and organophosphate insecticides is associated with an increased risk of a variety of cancers, including lymphoma, leukemia, and prostate cancer.¹⁵ In California farmworker populations, pesticide use is associated with leukemia, brain cancer, and testicular cancer.⁸



6. Pesticides are hazardous to pets. Pet poisonings occur frequently, and exposure to a widely used lawn herbicide is associated with a higher risk of cancer in dogs.

Pesticide poisoning of pets is unfortunately common. For example, in 1990 the American Association of Poison Control Centers received over 11,000 calls regarding pesticide-poisoned pets.^{16,17} Only antifreeze causes more pet poisoning deaths than two types of pesticides: rodent control pesticides and organophosphate insecticides.¹⁶

Pesticides can also cause long-term health problems for pets. For example, the National Cancer Institute found that companion dogs with canine malignant lymphoma (a cancer) were more likely than healthy dogs to live in households where owners applied the herbicide 2,4-D to their lawn or used lawn care companies to treat their yard.¹⁸

7. Pesticides contaminate water and air. Monitoring studies find pesticides in almost every sample that is tested.

Pesticides are widespread contaminants of rivers and streams. The U.S. Geological Survey's (USGS's) national water quality monitoring program found that all of the samples the agency analyzed from major rivers were contaminated with at least one pesticide. Smaller streams were almost as frequently contaminated: 99 percent of the urban stream samples and 92 percent of the agricultural stream samples tested by USGS contained at least one pesticide. Wells are also often contaminated: The USGS found at least one pesticide in almost 60 percent of the wells in agricultural areas that the agency tested and in almost 50 percent of the wells in urban areas.¹⁹

Pesticides are similarly widespread in air. In a USGS compilation of local, state, multistate and national air monitoring studies, the insecticide diazinon contaminated almost 90 percent of the samples tested, and the insecticide chlorpyrifos almost 70 percent. The two most common herbicide contaminants were 2,4-D (in almost 60 percent

of the samples) and trifluralin (in almost 50 percent of the samples). DDT, the notorious insecticide whose U.S. uses were cancelled over thirty years ago, contaminated over 90 percent of the samples.²⁰

8. Pesticides are hazardous to fish and birds. Enormous quantities of pesticides already known to EPA to cause problems for fish and birds are used in the U.S. every year.

EPA assessments demonstrate that pesticides often harm living things other than the pests that they target, including fish and birds.

Current EPA regulations require testing for some of these kinds of effects, but testing of pesticides first registered before requirements were updated in 1984 is incomplete. Almost all of EPA's list of 28 commonly used pesticides fall into this category. However, EPA has reevaluated, completely or partially, 13 of these commonly used pesticides to bring them up to current standards. In looking at hazards to fish and birds, EPA estimates exposures (or uses data from monitoring studies) and compares them to amounts that have caused harm in laboratory tests. Of the 13 pesticides mentioned above, EPA's exposure calculations for 10 exceeded potentially harmful levels for fish, birds, or both.²¹ Use of these 10 pesticides totals over 300 million pounds per year,^{4,21} even though less than half of the commonly used pesticides have been evaluated.



USDA/ARS/Scott Bauer

9. Pesticides are immensely profitable for the corporations who manufacture them, yet these corporations conduct or sponsor the tests used to determine their safety.

Pesticides are enormously profitable for the companies who make and sell them. The two largest pesticide companies in the world during 2000, Syngenta and Monsanto Company,²² each made over a billion dollars in profits in 2000 from the sale of pesticides and related products.^{23,24}

These immense profits create an inevitable conflict of interest because, under the U.S. pesticide law (the Federal Insecticide, Fungicide and Rodenticide Act; FIFRA) pesticide manufacturers themselves provide the data showing that their product "will perform its intended function without unreasonable adverse effects on the environment."²⁵

As stated in the *Code of Federal Regulations*, a company that wishes to register a pesticide "must furnish any data ... which are required by the Agency [EPA] to determine that the product meets the registration standards of FIFRA."²⁶ The result is that independent health and safety testing of pesticides is virtually nonexistent.

10. Pesticides have too many secrets. Where are pesticides used in our communities? When? How much? What's in them? We almost never have good answers to these questions.

While EPA requires that signs be posted on farms to notify workers about applications of agricultural pesticides,²⁷ in general there are no federal posting requirements for pesticides used on other kinds of sites.²⁸ Only about half of the states have enacted such laws²⁸ and only a handful of states have laws to comprehensively track pesticide use and make the data publicly available.

Even if we can get some of this kind of information about the pesticides being used in our communities, we are still left with important unanswered questions because many pesticide ingredients are both untested and unidentified. The so-called "inert" ingredients in pesticide products are rarely listed on product labels,²⁹ and are excluded from most of the toxicology tests required by EPA.³⁰

In her classic book *Silent Spring*, author and biologist Rachel Carson eloquently describes the end result of all this secrecy. "When the public protests," she wrote, "confronted with some obvious evidence of damaging results of pesticide applications, it is fed tranquilizing pills of half truth. We urgently need an end to these false assurances, to the sugar coating of unpalatable facts."³¹ Her words are no less true today than they were forty years ago.

References and Notes

- U.S. EPA. Prevention, Pesticides, and Toxic Substances. 1995. Citizen's guide to pest control and pesticide safety. Sept. p.6. www.epa.gov/pesticides.
- Aspelin, A.L. and A. H. Grube. 1999. Pesticides industry sales and usage: 1996 and 1997 market estimates. U.S. EPA. Office of Prevention, Pesticides, and Toxic Substances. Office of Pesticide Programs. Biological and Economic Analysis Div., Nov. p. 24. www.epa.gov/pesticides
- Landrigan, P.J. et al. 1999. Pesticides and inner-city children: Exposures, risks, and prevention. *Environ. Health Persp.* 107 (Suppl. 3): 431-437.
- Aspelin, A.L. and A. H. Grube. 1999. Pesticides industry sales and usage: 1996 and 1997 market estimates. U.S. EPA. Office of Prevention, Pesticides, and Toxic Substances. Office of Pesticide Programs. Biological and Economic Analysis Div., Nov. Pp. 21-22. www.epa.gov/pesticides. The 28 pesticides whose estimated use is over 5 million pounds per year are atrazine, metolachlor, 2,4-D, metam sodium, glyphosate, methyl bromide, dichloropropene, acetochlor, paradichlorobenzene, pendimethalin, trifluralin, chlorpyrifos, cyanazine, alachlor, copper hydroxide, chlorothalonil, dicamba, mancozeb, EPTC, terbufos, dimethenamid, bentazon, propanil, simazine, copper sulfate, DEET, MCPA, and chloropicrin.
- U.S. EPA. Office of Prevention, Pesticides and Toxic Substances. 1999. Office of Pesticide Programs list of chemicals evaluated for carcinogenic potential. Unpublished database. The 12 pesticides identified in this database as likely, probable, or possible carcinogens are metolachlor, metam sodium, dichloropropene, acetochlor, paradichlorobenzene, pendimethalin, trifluralin, cyanazine, chlorothalonil, mancozeb, dimethenamid, and simazine.
- U.S. EPA. 1987-2000. Integrated risk information system. www.epa.gov/iris. (Files for acetochlor, alachlor, atrazine, bentazon, bromomethane (methyl bromide), chlorothalonil, chlorpyrifos, 2,4-dichlorophenoxyacetic acid (2,4-D), dicamba, 1,4-dichlorobenzene, 1,3-dichloropropene, s-ethyl dipropylthiocarbamate (EPTC), glyphosate, 2-methyl-4-chlorophenoxyacetic acid (MCPA), metolachlor, pendimethalin, propanil, simazine, and trifluralin. Only for 1,3-dichloropropene did no tests show evidence of reproductive problems.)
- Kettles, M.A. et al. 1997. Triazine herbicide exposure and breast cancer incidence: an ecologic study of Kentucky counties. *Environ. Health Persp.* 105: 1222-1227.
- Mills, P.K. 1998. Correlation analysis of pesticide use data and cancer incidence rates in California counties. *Arch. Environ. Health* 53:410-413.
- U.S. EPA. Office of Prevention, Pesticides and Toxic Substances. Office of Pesticide Programs. Health Effects Division. 2001. Atrazine PC Code 080803: Toxicology disciplinary chapter for the reregistration eligibility decision document. Washington, D.C. www.epa.gov/opprrd1/reregistration/atrazine/index.htm. pp. 56-57.
- U.S. EPA. 2000. Hazard information on toxic chemicals added to EPCRA Section 313 under chemical expansion. Table 3. www.epa.gov/tri/hazard_cx.htm.
- Goldman, L. 1996. Food Quality Protection Act of 1996: New directions in public health protection. Speech delivered to an American Crop Protection Association symposium, Sept. 10. EPA Office of Pesticide Programs. www.epa.gov/oppfead1/sphgold1.htm.
- U.S. Dept. of Agriculture. Agricultural Marketing Service. Science & Technology. 2000. Pesticide data program: Annual summary calendar year 1999. Pp. 15, 17. www.ams.usda.gov/science/pdp.
- U.S. Dept. of Agriculture. Agricultural Marketing Service. Science & Technology. 1998. Pesticide data program: Annual summary calendar 1997. Pp. 16. <http://www.ams.usda.gov/science/pdp>.
- U.S. General Accounting Office. 2000. Pesticides: Improvements needed to ensure the safety of farmworkers and their children. Washington, D.C., Mar. www.gao.gov.
- Blair, A. and S.H. Zahm. 1995. Agricultural exposures and cancer. *Environ. Health Persp.* 103 (Suppl. 8): 205-208.
- U.S. EPA. 1995. Analysis of chlorpyrifos IDS data for domestic animals. Memo from V. Dobozy to B. Kitchens, Occupational and Residential Exposure Branch, Jan. 23. www.epa.gov/pesticides.
- U.S. EPA. Prevention, Pesticides and Toxic Substances. 1998. Reregistration eligibility decision: Rodenticide cluster. p. 101. www.epa.gov/pesticides.
- Hayes, H.M. et al. 1991. Case-control study of canine malignant lymphoma: positive association with dog owner's use of 2,4-dichlorophenoxyacetic acid herbicides. *J. Natl. Cancer Inst.* 83:1226-1231.
- U.S. Geological Survey. 1999. The quality of our nation's waters - nutrients and pesticides. Circ. 1225. p. 58.
- Majewski, M.S. and P.D. Capel. 1995. *Pesticides in the atmosphere: distribution, trends, and governing factors*. Chelsea MI: Ann Arbor Press, Inc. Pp. 78-79.
- The ten pesticides whose use is estimated by EPA to harm fish or birds are atrazine, metolachlor, dichloropropene, pendimethalin, trifluralin, chlorpyrifos, alachlor, chlorothalonil, terbufos, and bentazon. The risk assessments for fish and birds are found in the following documents: U.S. EPA. 2001. Reregistration eligibility science chapter for atrazine: Environmental fate and effects chapter. Pp. 7,8; U.S. EPA. Prevention, Pesticides and Toxic Substances. 1995. Reregistration eligibility decision: metolachlor. p. 33; U.S. EPA. Prevention, Pesticides and Toxic Substances. 1998. Reregistration eligibility decision: 1,3-dichloropropene. p. 77; U.S. EPA. Prevention, Pesticides and Toxic Substances. 1997. Reregistration eligibility decision: pendimethalin. p. 88; U.S. EPA. Prevention, Pesticides and Toxic Substances. 1996. Reregistration eligibility decision: Trifluralin. Pp. 56,59; U.S. EPA. 2000. Reregistration eligibility science chapter for chlorpyrifos: Fate and environmental risk assessment chapter. p. 101; U.S. EPA. Prevention, Pesticides and Toxic Substances. 1998. Reregistration eligibility decision: alachlor. p. 173; U.S. EPA. Prevention, Pesticides and Toxic Substances. 1999. Reregistration eligibility decision: chlorothalonil. Pp. 131,142; U.S. EPA. 1999. Revised Environmental Fate and Effects Division reregistration eligibility decision chapter for terbufos. Pp. 36,39; and U.S. EPA. Office of Prevention, Pesticides and Toxic Substances. 1993. Reregistration eligibility decision: bentazon. p. 30. All can be found on the EPA web site at www.epa.gov/pesticides/reregistration/status.htm.
- PJB Publications Ltd. 2001. Consolidation compresses annual sales ranking. *Agrow: World Crop Protection News* (July 27): 1-2.
- Monsanto Co. Undated. 2000 annual report: A single focus. p. 57. www.monsanto.com.
- Syngenta. Undated. Annual review 2000: Building the world's premier agribusiness. p. 32. www.syngenta.com.
- FIFRA Sec. 3(c)(5)(C)
- 40 CFR § 152.50
- 40 CFR § 170.120, 170.122.
- Arne, K.H. 1997. State pesticide regulatory programs: Themes and variations. *Occup. Med.: State Art Rev.* 12:379
- 40 CFR § 156.10 (g)
- 40 CFR § 158.340
- Carson, Rachel. 1962. *Silent Spring*. New York NY: Fawcett Crest. p. 23.

INTERACTION OF PESTICIDES WITH NATURAL CONTROLS

Do pesticides interfere with any of these [natural controls](#) ? Let's look at whether and how each of those natural controls is affected by pesticide use. See also the section on [negative feedbacks](#) for further elucidation.

1) Genetic resistance of plants to insects and diseases is probably not directly affected by pesticides except that pesticides remove pressures for plants to [evolve resistance](#) to the insects and diseases -- pressure that would be present in natural populations or in the absence of pesticides. The knowledge that pesticide controls exist also may decrease somewhat the pressure on plant breeders to emphasize pest resistance, as they know that growers can rely on pesticides for some of the control.

When thinking about how pesticides interfere with some of the other natural controls, it is important for you to know that it is estimated that **less than 1%** of pesticides applied actually hit the target organisms. Most reaches nontarget sectors of the agroecosystem or spreads to surrounding ecosystems.

2) There can be **direct** effects of pesticides **on predators, competitors, and diseases** of the pests. These organisms naturally work to control pest outbreaks. In fact **50-90%** of pest control in agroecosystems is actually accomplished by these predators, competitors, and diseases of pests (depending on who you read).

For example, the ladybugs that eat aphids in your garden may be sensitive to the pesticide that you use to control the aphids.

As another example, apple growers using a fungicide to control apple scab, which is caused by a fungus, often noticed increased outbreaks of the disease after spraying. It turned out that the spray was toxic to earthworms. Why should that matter? Well, the fungus overwinters on fallen leaves and fallen apples, and then produces spores in the spring that re-infect the tree. Earthworms normally removed the infected leaves and apples when they fell to the ground, reducing the spores that could cause new infections, but when the worms were poisoned, this natural control ceased to be effective!

There are many documented cases like this, in which beneficial natural enemies are inadvertently harmed by pesticides, with resulting pest outbreaks; cottonboll worm, cotton aphid, spidermites, and many apple pests are but a few examples. In some cases the effect would have been difficult to predict without clear knowledge of the ecology of the pest in the system. For example, fungicides may result in insect attacks in cases where a fungus was keeping an insect under control.

(3) There can also be **indirect** effects of pesticides on predators of the pest, in that the food supply of the predators (that is, the pests!) declines because of pests being killed by

pesticides. In this case, populations of the predators will decline as well, and so will be less able to control the pest, particularly when the pesticide treatment terminates. Time and again this is seen; a temporary suppression of the pest when the pesticide being used, but then immediately after treatment stops, **pests re-bounce to higher than previous levels** because populations of their predators were decreased as well, and so are less able to control the pest. (See [case studies](#) from Indonesia and Bali.)

An important lesson is that predators and parasites of the target pest may suffer as great or greater mortality than the target, especially if ecological relationships and sensitivities not well understood.

4) Host availability. Most simply, epidemics in nature subside when the pests eat or kill so much of the host population that they starve themselves, essentially (or can no longer find homes). (In fact, few epidemics in nature go this far, as the other natural control agents are usually effective before this point, but in the final analysis, host availability will stop an epidemic if all else fails.) Use of pesticides keeps this from happening; under protection from pesticides, hosts are kept alive so surviving pests have a steady supply of host available. (Naturally I'm not suggesting that a farmer can afford to let a crop be eliminated to starve the pest! I'm just being comprehensive in looking at how pesticides interact with natural pest controls.)

The following section ("[>>](#)" at the bottom of the page) discusses the problem of pest resistance to pesticides, while later sections amplify the discussion of interaction between pesticides and natural controls ([negative feedbacks](#)), discuss the problem of "[secondary pests](#)," provide some [case studies](#), and discuss reasons for [concern](#) about pesticide use. Click "Navigate" for reminders on how to move within and among these documents.

Compost Tea For Everyone

Lisa Van Cleef, Special to SF Gate
Wednesday, September 15, 2004

Bay Area gardeners have something new to cheer about: Lyngso Garden Materials, the Redwood City-based landscape-supply center, is brewing compost tea for the public.

According to company co-owner Theresa Lyngso, healthy biology is vital to good soil. Spraying your plants and soil with this specially aerated "tea," made from high-quality compost, is one of the most efficient ways to build your garden's microbial population: A handful of healthy garden dirt should contain billions of microbes that eat the soil and release nutrients into it, which results in healthier, leafier, disease-resistant plants.

Lyngso is working with Alane O'Rielly Weber, who teaches in San Mateo County's Master Composter Program, to produce the tea. As Weber explains, inorganic (chemical) fertilizers, pesticides and herbicides, as well as mechanical compaction, damage these beneficial soil microbes and reduce or delete the benefits of healthy soil.

"We live in a fairly densely populated area, and our soil is compacted, disturbed by so much building," says Lyngso.

In an e-mail, Weber adds, "This breakdown of microbial functioning can be the cause of poor plant growth and color, low resistance to garden pests and pathogens and decreased fruit and vegetable production. Without the reintroduction of the beneficial microbes found in well-made compost tea, garden maintenance becomes a dependent cycle of chemical inputs and controls, spreading pesticide pollution by air and leaching through the soil to pollute our groundwater, creeks and bay waters."

If you wonder whether compost tea works, take a look at San Francisco's public golf courses: They're beautiful and chemical free. Phil Rossi, coordinator of the San Francisco Recreation and Park Department's Integrated Pest Management (IPM) Program (profiled in [this past column](#)) and his crew have practically eliminated the use of fungicides and pesticides from the courses by spraying with compost tea, producing incredibly healthy soil that in turn produces healthy, disease-resistant plants. The department's IPM program is now a national model.

The folks at Lyngso call their tea Actively Aerated Compost Tea (AACT), referring to the brewing process that maintains oxygen levels necessary for aerobic (oxygen-based) functioning; it's brewed in a stainless steel vat that's constantly pumping air into the brew for the most nutritious blend. Both the compost tea and the compost it's made from are lab tested to ensure the right blend of beneficial microbes for building soil health.

Weber says you can apply AACT, which Lyngso sells in 1- and 3-gallon bottles for \$10 per gallon, directly to the soil with a watering can or use a sprayer for leaf surfaces. If

your soil isn't too badly damaged, she advises diluting it with four parts water to one part tea.

Because of the chloramine in tap water, which will kill beneficial microbes in the compost tea, Weber suggests treating the water with a treatment solution for aquarium water, which is readily available at any pet store.

AACT, which is composed of living creatures and is therefore very sensitive to heat, sunlight and oxygen loss, should be used quickly -- within two or three hours of purchase -- and protected until application.

Weber says it's important to use your nose when it comes to compost teas: If your old batch of AACT smells like ammonia, it's gone anaerobic, and the beneficial microbes are dead.

Having used aerated compost tea, I can say it works, and I agree with Weber when she recommends it as an important bridge between damaged or unmanaged soil and healthy, fertile soil.

For more information, check out the Lyngso Garden Materials Web site at <http://www.lyngsogarden.com> or contact Weber at wormlady@sbcglobal.net.

Presentation to the [Canadian] House Committee on Environment and Sustainable Development (inquiry on pesticides)

(From Section V. Soil - The Building Block of Growing)

Soil is immensely complex. There are 100,000 mites in 1 square metre of soil; 10,000 biota species in 4 cups of soil, and a huge quantity and variety of other organisms such as algae, nematodes, fungi, bacteria, and viruses. Soil is a living complex biosystem, the most complex, diverse and poorly understood habitat on earth. If soil samples from only 2 cm apart are examined, they show many different microcomponents, which are even more diverse 1 metre away, and tremendously different 1 km away.

Bacteria in soil help decomposition and maintain balance, and fungal activity may be even more beneficial than bacterial. Pesticide use disrupts both.

"Build it and they will come." Building soil to increase its fertility is accomplished through complex organic processes. The different stages of humus breaking down feed various micro-organisms in the soil and plants growing out of the soil. Organic growing emphasizes building soil by adding humus for this nutrient release and also for moisture retention. The application of composted manure and vegetable matter accelerates the natural processes of soil enrichment, producing healthier plants...

Pesticides destroy the process and prevent its continuing.

Some health effects of the most common pesticides used in ornamental landscapes

By: Heide Hermary

Organophosphates (diazinon, malathion, chlorpyrifos, dimethoate)

- all are insecticides
- can be absorbed through skin, stomach & lungs
- interfere with cholinesterase - a body enzyme that is essential in the transmission of nerve impulses. Cholinesterase is affected for up to 3 weeks
- some have caused chronic nerve damage
- all can cause cumulative acute effects if used day after day
- some have sulfur attached to the phosphorous in the chemical formula, and can form toxic by-products called "oxons" (*chlorpyrifos, diazinon, malathion, dimethoate*). "Oxons" form when the sulfur in the parent pesticide is replaced by oxygen from the air. **Oxons may be 10 times more toxic than the parent pesticide.** Oxons tend to form under sunny conditions with little rainfall or dew.

Carbamates (insecticides: aldicarb, carbaryl, carbofuran; fungicides: benomyl, maneb, zineb)

- can be insecticides or fungicides
- all contain nitrogen
- toxic effects almost identical to Ops, but cholinesterase only affected for 24 hours.
- repeated daily exposure does not cause cumulative effects
- cause "nitroso compounds" as a toxic by-product when it comes in contact with a nitrogen dioxide (pollutant from automobile emissions and cigarette smoke). **Nitroso compounds are animal carcinogens. Other health effects cause damage to liver, kidneys, lungs, bladder, esophagus, skin and eyes.**
- dithiocarbamates (*maneb, zineb*) form Ethylene thiourea (ETU) as a toxic byproduct. ETU is suspected to be a carcinogen, and affects the thyroid and liver.

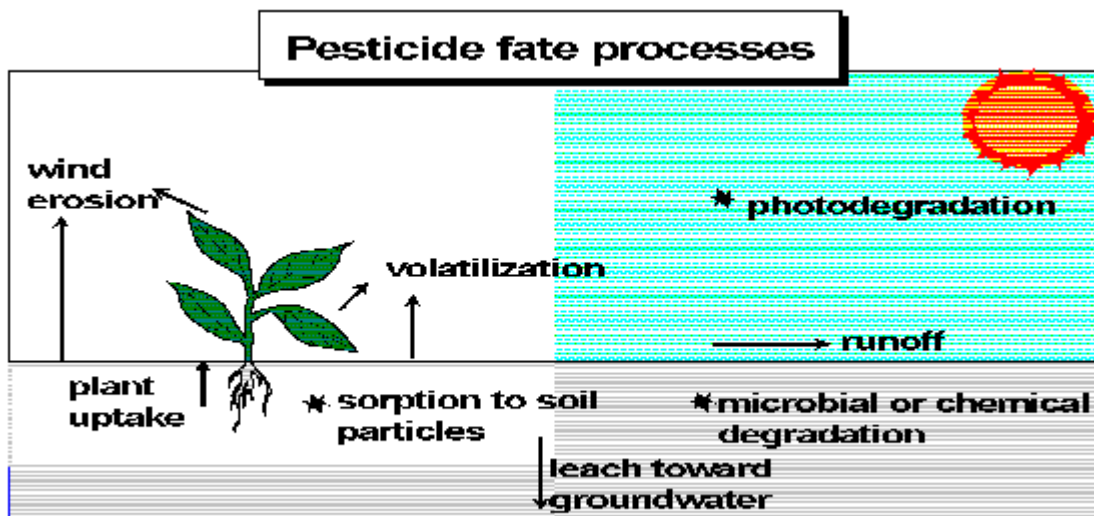
Organochlorines (insecticides: methoxychlor, endosulfan, aldrin, fungicides: captan, captafol)

- can be insecticides or fungicides
- all contain chlorine
- can be absorbed through skin, lungs or by mouth.
- they are a brain stimulant, leading to convulsions and lung failure
- body by-products are often stored in fat, where they "may" be inactive

Glyphosate (Roundup)

- Toxic to mammals
- Most toxic through inhalation
- Causes convulsions in humans and experimental rodents by brain cell glutamate receptor activation
- Toxic effects on mammalian sperm leading to sterility and birth defects
- Potential hormone disruptor
- Toxic to aquatic organisms
- Toxicity increased in combination with surfactant
- More toxic in warmer water
- Toxic to many predatory insects
- Toxic to soil microbes including nitrogen-fixing bacteria, mycorrhizae, actinomycetes, and yeast isolates:
- One study found that glyphosate inhibited the growth of 59% of selected naturally occurring soil microbes.
- Bound to soil particles may still be toxic and bioavailable to filter feeders, such as crustaceans and molluscs, and potentially other organisms that ingest significant quantities of soil during normal feeding, including bottom-feeding fish, shorebirds, amphibians, and some mammals
- Remains chemically unchanged in the environment for periods of up to a year
- Will cyclically "desorb" or lose its attraction to soil and become active as a herbicide
- The rate of glyphosate degradation in soil correlates with the respiration rate, an estimate of microbial activity
- With extensive glyphosate use, soil microbes are killed which degrade glyphosate, thus slowing degradation and increasing persistence.
- Much more persistent in anaerobic soils than aerobic
- By inhibiting the growth of some microbes allows the overgrowth of others. This includes microbial plant pathogens such as *Fusarium spp.*

MOVEMENT OF PESTICIDES IN THE ENVIRONMENT



INTRODUCTION

The widespread use and disposal of pesticides by farmers, institutions and the general public provide many possible sources of pesticides in the environment. Following release into the environment, pesticides may have many different fates. Pesticides which are sprayed can move through the air and may eventually end up in other parts of the environment, such as in soil or water. Pesticides which are applied directly to the soil may be washed off the soil into nearby bodies of surface water or may percolate through the soil to lower soil layers and groundwater. Pesticides which are injected into the soil may also be subject to the latter two fates. The application of pesticides directly to bodies of water for weed control, or indirectly as a result of leaching from boat paint, runoff from soil or other routes, may lead not only to build up of pesticides in water, but also may contribute to air levels through evaporation.

This incomplete list of possibilities suggests that the movement of pesticides in the environment is very complex with transfers occurring continually among different environmental compartments. In some cases, these exchanges occur not only between areas that are close together (such as a local pond receiving some of the herbicide application on adjacent land) but also may involve transportation of pesticides over long distances. The worldwide distribution of DDT and the presence of pesticides in bodies of water such as the Great Lakes far from their primary use areas are good examples of the vast potential of such movement.

While all of the above possibilities exist, this does not mean that all pesticides travel long distances or that all compounds are threats to groundwater. In order to understand which ones are of most concern, it is necessary to understand how pesticides move in the environment and what characteristics must be considered in evaluating contamination potential. Two things may happen to pesticides once they are released into the environment. They may be broken down, or degraded, by the action of sunlight, water or other chemicals, or microorganisms,

such as bacteria. This degradation process usually leads to the formation of less harmful breakdown products but in some instances can produce more toxic products.

The second possibility is that the pesticide will be very resistant to degradation by any means and thus remain unchanged in the environment for long periods of time. The ones that are most rapidly broken down have the shortest time to move or to have adverse effects on people or other organisms. The ones which last the longest, the so-called persistent pesticides, can move over long distances and can build up in the environment leading to greater potential for adverse effects to occur.

PROPERTIES OF PESTICIDES

In addition to resistance to degradation, there are a number of other properties of pesticides which determine their behavior and fate. One is how volatile they are; that is, how easily they evaporate. The ones that are most volatile have the greatest potential to go into the atmosphere and, if persistent, to move long distances. Another important property is solubility in water; or how easily they dissolve in water. If a pesticide is very soluble in water, it is more easily carried off with rainwater, as runoff or through the soil as a potential groundwater contaminant (leaching). In addition, the water-soluble pesticide is more likely to stay mixed in the surface water where it can have adverse effects on fish and other organisms. If the pesticide is very insoluble in water, it usually tends to stick to soil and also settle to the bottoms of bodies of surface water, making it less available to organisms.

ENVIRONMENTAL CHARACTERISTICS

From a knowledge of these and other characteristics, it is possible to predict in a general sense how a pesticide will behave. Unfortunately, more precise prediction is not possible because the environment itself is very complex. There are, for example, huge numbers of soil types varying in the amount of sand, organic matter, metal content, acidity, etc. All of these soil characteristics influence the behavior of a pesticide so that a pesticide which might be anticipated to contaminate groundwater in one soil may not do so in another.

Similarly, surface waters vary in their properties, such as acidity, depth, temperature, clarity (suspended soil particles or biological organisms), flow rate, and general chemistry. These properties and others can affect pesticide movement and fate. Everyone is familiar with the difficulties of forecasting weather, which is partly due to problems in predicting air flow patterns. As a result, determination of pesticide distribution in the atmosphere is subject to great uncertainty.

With such great complexity, scientists cannot determine exactly what will happen to a particular pesticide once it has entered the environment. However, they can divide pesticides into general categories with regard to, for example, persistence and potential for groundwater contamination and they can also provide some idea as to where the released pesticide will most likely be found at its highest levels. Thus, it is possible to gather information which can help make informed decisions about what pesticides to use in which situations and what possible risks are being faced due to a particular use.

MOVEMENT OF PESTICIDES IN SOIL

The table below lists some of the more commonly used pesticides with an estimate of their persistence in soil. In this table, persistence is measured as the time it takes for half of the initial amount of a pesticide to breakdown. Thus, if a pesticide's half-life is 30 days, half will be left after 30 days, one-quarter after 60 days, one-eighth after 90 days and so on. It might seem that a short half-life would mean a pesticide would not have a chance to move far in the environment. This is generally true; however, if it is also very soluble in water and the conditions are right, it can move rapidly through certain soils. As it moves away from the surface, it moves away from the agents which are degrading it such as sunlight and bacteria. As it gets deeper into the soil, it degrades more slowly and thus has a chance to get into groundwater. Our measures of soil persistence only describe pesticide behavior at or near the surface.

The downward movement of non-persistent pesticides is not an unlikely scenario and several pesticides with short half-lives, such as aldicarb, have been widely found in groundwater. In contrast, very persistent pesticides may have other properties which limit their potential for movement throughout the environment. Many of the chlorinated hydrocarbon pesticides are very persistent and slow to breakdown but also very water insoluble and tend not to move down through the soil into groundwater. They can, however, become problems in other ways since they remain on the surface for a long time where they may be subject to runoff and possible evaporation. Even if they are not very volatile, the tremendously long time that they persist can lead, over time, to measurable concentrations moving through the atmosphere and accumulating in remote areas.

PESTICIDE PERSISTENCE IN SOILS

<u>Low Persistence (half-life 30 days)</u>	<u>Moderate Persistence (half-life 30-100 days)</u>	<u>High Persistence (half-life >100 days)</u>
• Aldicarb • Captan • Dalapon • Dicamba • Malathion • Methyl Parathion • Oxamyl • 2,4-D • 2,4,5-T	• Aldrin • Atrazine • Carbaryl • Carbofuran • Diazinon • Endrin • Fonofos • Glyphosate • Heptachlor • Linuron • Parathion • Phorate • Simazine • Terbacil	• TCA • Picloram • Bromacil • Trifluralin • Chlordane • Paraquat • Lindane

ROLE OF LIVING ORGANISMS

So far, the discussion has focused on air, soil and water. However, living organisms may also play a significant role in pesticide distribution. This is particularly important for pesticides which can accumulate in living creatures. An example of accumulation is the uptake of a very water-insoluble pesticide, such as chlordane, by a creature living in water. Since this pesticide is stored in the organism, the pesticide accumulates and levels increase over time. If this organism is eaten by a higher organism which also can store this pesticide, levels can reach higher values in the higher organism than is present in the water in which it lives. Levels in fish, for example, can be tens to hundreds of thousands of times greater than ambient water levels of the same pesticide. This type of accumulation is called bioaccumulation.

In this regard, it should be remembered that humans are at the top of the food chain and so may be exposed to these high levels when they eat food animals which have bioaccumulated pesticides and other organic chemicals. It is not only fish but also domestic farm animals which can be accumulators of pesticides and so care must be used in the use of pesticides in agricultural situations.

SUMMARY

The release of pesticides into the environment may be followed by a very complex series of events which can transport the pesticide through the air or water, into the ground or even into living organisms. The most important route of distribution and the extent of distribution will be different for each pesticide. It will depend on the formulation of the pesticide (what it is combined with) and how and when it is released. Despite this complexity, it is possible to identify situations that can pose concern and to try to minimize them. However, there are significant gaps in the knowledge of pesticide movement and fate in the environment and so it is best to minimize unnecessary release of pesticides into the environment. The fewer pesticides that are unnecessarily released, the safer our environment will be.

It Is Possible to Maintain Watson Park Pesticide-free

- **Can It Be Done? Yes, It Can!**
- **Integrated Pest Management (IPM) Policies**
- **Pest Management Ordinances**
- **Healthy Turf**

Can it be done? Yes, It Can!

Chris Gerry, Landscape and Grounds Supervisor and IPM Coordinator, Carrboro NC

"Show this [Carrboro's IPM policy] to the folks that say it can't be done. We have six softball fields, two soccer fields and others. Our fields are in better condition now with zero pesticides than when we used chemicals.

Also tell the Lawrence Parks folks that this is the sunny south, with twice the fungal problems, insects and disease due to long growing season, rainfall, and temps. This is Spanish Moss and Scarlet O'Hara country. If we can do it they can do it.

We have a wildlife program, fishing program, town wide floral displays, foliage plants in the buildings(Sub-Tropical) and lots of public grounds, playgrounds, Farmer's Market and on and on. No Pesticides...

The county school system has adopted the field maint and mowing portion of our program. I could go on but I feel that the policy will be a guiding document for you to start with. It is an official gov. policy, adopted by our Board of Alderman.

We do not use chemicals and have been getting along fairly well for 5 years."

Allen Spalt, Carrboro City Alderman and Beyond Pesticides board member

"Yes, it is possible to maintain parks without pesticides. The town of Carrboro is one place that shows that. We adopted a "Least Toxic Integrated Pest Management (IPM) Policy" several years ago. Under that policy conventional pesticides, including herbicides, insecticides and fungicides, cannot be used except under extraordinary conditions. For several years they have not been used at all. It requires a change to a system of landscape maintenance that does not need pesticides.

The Waipuna hot water weed control equipment is one part of a program to replace the use of toxic glyphosate (active ingredient in Roundup) with water. The equipment is expensive, but is effective, safe, and flexible. It can be used even in the rain (one doesn't start on a rainy day but can finish a job if a shower starts while you are working without reducing effectiveness or fear of runoff). We have also used some corn gluten as an herbicide, and some flame weeders, but they have played a minor role.

The IPM program provided the impetus to complete purchase of reel (rather than rotary) mowing and aeration equipment and to incorporate it into the program. Perhaps the toughest test is that Carrboro now successfully maintains heavily used sports fields, most of which are not irrigated, without herbicides or other pesticides.

Town Hall lawn, which is one of our community gathering spaces for festivals throughout the year, is also maintained similarly. Kids playing with their pets while eating picnics get only grass stains on their clothes!

Chris Gerry had also instituted a system for maintaining the Town's ornamental plant beds that requires no pesticides. Rotation of plants, companion planting, removing diseased plants and replacing them with other that are not subject to the same pests or diseases, heavy mulching, and rotating planting soil are among the techniques and cultural practices involved.

We did not just remove them from a system that was dependent on them. We changed the system so that they were not required. Soil health, which may take time to restore, is essential for healthy plants. While somewhat arbitrary, transition from conventional to organic crop production takes three years for certification. One could expect that it would take that long for routinely treated soil to regain its balance of microbes, etc.

Former skeptics, including the head of the NC Turfgrass Council, now agree that our fields are as good or better than others, including many irrigated fields, a real achievement in this climate. Our flowers and plant beds are locally famous and enhanced, not diminished by the program."

Pesticide Watch

"There are several barriers that prevent many parks from using safer alternatives. The biggest one is often lack of education about the alternatives.

Many park managers and staff have been trained in pest management practices that stress the use of pesticides rather than other means of control.

They are often unaware of alternative methods.

This lack of education about alternatives often makes many park managers and staff hesitant to try a new approach."

Integrated Pest Management (IPM) Policies

Integrated Pest Management (IPM) Policies

- City of Carrboro, NC Integrated Pest Management Policy. Also Available at: <http://townofcarrboro.org/pw/ipm.htm>
- “Less-Toxic Pest Management: Better Ways To Control Weeds And Pests”
<http://www.sfgov.org/sfenvironment/aboutus/innovative/ipm/>
- “Integrated Pest Management”
<http://www.sfgov.org/sfenvironment/facts/ipm.htm>
- City of San Francisco, CA Pest Management Policy. Also Available at: <http://sfgov.org/sfenvironment/aboutus/policy/legislation/ipm.htm>

Additional References

- City of Santa Barbara, CA Integrated Pest Management Strategy http://www.ci.santa-barbara.ca.us/departments/parks_and_recreation/pdf/IPM%20Strategy%20Final%20Version.pdf
- City of Marblehead, MA Organic Pest Management Policy
<http://www.turi.org/community/pdf/Organic.pdf>
- City of Seattle, WA Pesticide Reduction Program
<http://www.cityofseattle.net/environment/pesticides.htm>
- City of Boulder, CO Integrated Pest Management Policy
<http://www3.ci.boulder.co.us/environmentalaffairs/ipm/IPM%20policy%20rev%202002%20final.pdf>

Public Works - Town of Carrboro

Least Toxic Integrated Pest Management Policy

Adopted March 2, 1999

Table of Contents

1. Introduction
2. Definition of Integrated Pest Management
3. Goal
4. Policy Applies to Town Property
5. Policy
6. Updating of IPM Program
7. Applicators
8. Role and Function
9. Participation of Town Staff
10. IPM Coordinator
11. Town employees responding to concerns and questions of the general public
12. IPM plans
13. Least Toxic IPM Manual
14. Policy, Applicable to Town Contractors
15. Hazard Categories
16. Hazard Category III Pesticides - Phasing Out
17. Use of Conventional Pesticides / Unusual Circumstances
18. Antimicrobials Not Included
19. General

Hot Water Weed Control - *Waipuna Steam Generator*

1. Introduction

Synthetic pesticides were first used primarily in agricultural and public health operations and not by the general public. Over the past decades, new products and new uses for old products have led to the widespread use of pesticides in urban and suburban as well as agricultural settings. Many government and public agencies have incorporated routine pesticide use into their public buildings and grounds maintenance programs.

In recent years, human health and environmental concerns have produced a heightened sensitivity to pesticide use. Such public concern has created an awareness of the need for alternatives to dependence on pesticides. A primary alternative approach is "integrated pest management", or IPM. Many public and private pest managers are adopting formal IPM policies and shifting their practices to IPM.

Table of Contents

2. Definition of Integrated Pest Management

IPM is a catchall term that has a variety of definitions. The State of New York defined IPM (in Senate Bill #7358A, April 22, 1998) as, "a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risk." "Least Toxic IPM", such as being implemented in Carrboro, gives preference to the safest control methods and uses conventional chemical pesticides only as a last resort.

IPM is a process rather than any specific actions. It is thoughtful and proactive rather than reactive. It seeks to understand the causes of pest problems, to implement long-term solutions, and to employ means of prevention rather than mere treatment of symptoms. It can best be understood as a series of steps, which constitute an IPM plan. Carrboro seeks to establish an integrated pest management program which:

- includes pre-implementation pest site inspection or assessment and a listing of non-chemical materials and methods proposed for use;
- establishes an inspection and monitoring program to identify infested zones, monitor pest levels, and set thresholds at which action should be taken;
- describes procedures for selecting the appropriate pest management technique(s) for the identified pest;
- provides education to employees and facility users to understand and help implement the program; and,
- emphasizes prevention and recommends appropriate changes in facility construction or maintenance to prevent re-infestation.

Table of Contents

3. Goal

The goal of the IPM policy is to develop a systematic course of action to prevent pest infestations, and to manage pests successfully, while minimizing adverse effects on people and the environment.

The IPM policy will be a cornerstone of the IPM program. The program will include all aspects of pest management, including pests of structures, rights-of-way, and parks and landscapes within the Town's maintenance jurisdiction.

The purpose of establishing an IPM program is to assure municipal employees, visitors, and residents that no unacceptable public or environmental health risk is taken to control pests.

The adoption of an IPM program will provide the Town with long-term cost-effective control of pests and invasive weeds as well as maintenance of rights-of-way, landscapes, and parks that have an impact on Town employees, residents, and visitors.

The Least Toxic IPM Manual will be a working document which provides pest management decision makers with information about pest biology, monitoring guidelines, options relative to action or treatment thresholds and pest management and general procedures. It will also include the Department IPM plans and specific site plans. The manual will be revised on an ongoing basis as the Town gains further experience with IPM in facing specific pest situations.

Table of Contents

4. Policy Applies to Town Property

The IPM policy applies only to town operations and not to those of its residents and businesses. It is hoped that it will serve as an example of how varied pest problems can be controlled with least toxic IPM that residents and others will follow voluntarily, though they are under no obligation to do so.

Table of Contents

5. Policy

- A. The Town of Carrboro's IPM policy and program is a comprehensive approach that gives priority to prevention and management of pests including insects, weeds and plant disease by the least toxic method. The policy will reduce the environmental health risk to municipal employees, visitors and town residents. The policy will result in greater safety of public grounds, buildings and sports fields, reduced exposure to chemical pesticides by those engaged in pest management and by the environment, and as an example to residents and others. The policy recognizes that there may occasionally be circumstances in which conventional pesticides may be required as a part of the IPM program and/or in the event of an urgent non-routine circumstance. As a matter of policy, the Town of Carrboro will not adopt any method that would pose an unacceptable public health or environmental risk in its pest management practices.
- B. The IPM Coordinator will develop a manual that will include a list of pesticides that may be used by the Town as needed that meet the US Environmental Protection Agency's "minimal risk" criteria and that have been substantially deregulated by the

EPA under FIFRA, the federal pesticide law (Section 25(B)). It will also include a procedure for approving the limited use of other pesticides in emergency and/or unusual situations as detailed in Section 16 of this policy.

As an example, weed control will be managed through the IPM program of least toxic weed control agents and the use of cultural practices designed to control or suppress weeds. However, if all practical non-chemical control methods fail, the use of least toxic pesticides (herbicides) may be deemed necessary.

Table of Contents

6. Updating of IPM Program

In practice, integrated pest management is continually evolving. The program/policy/manual should reflect such changes and be subject to regular review and revision.

Table of Contents

7. Applicators

- A. The IPM coordinator shall maintain relevant individual North Carolina pesticide application certifications and licenses. Other employees regularly involved in pesticide applications shall be encouraged to become certified as appropriate.
- B. Any pesticide application determined to be needed by the IPM Coordinator must be applied at the direction of the Coordinator.

Table of Contents

8. Role and Function

The cessation of pesticide use represents a major change in the way the Town manages pests in structures and landscape maintenance. Upon adoption of this IPM policy, all pesticide use will be phased out over the succeeding three to five years. All department heads and supervisors need some knowledge of and involvement in the program. Rather than depend on outside assistance for pest control, each department needs to take some responsibility for pest prevention. Each department or relevant section of town government should have an IPM coordinator, generally the department head or designee.

Table of Contents

9. Participation by Town Staff

Successful implementation of integrated pest management requires that all Town employees work together to identify, control and eliminate pests on Town owned properties within their scope of work. For most, this will be no more than an awareness of potential problems, means of prevention, and whom to notify of pest problems around their personal work spaces. Often, employees benefit directly from their efforts by adhering to proper food storage and housekeeping habits to protect their own work environment.

All Town staff will be given appropriate level of training to acquaint them with basic pest identification and control. Each department or relevant section of town government will designate an IPM coordinator who will consult with the Town IPM Coordinator concerning control procedures, prevention and implementation.

Table of Contents

10. IPM Coordinator

The Director of Public Works shall designate an IPM Coordinator for the town. The IPM coordinator will assist with and assure that the program functions smoothly. The coordinator will interact directly at the individual department level in pest prevention or control and conduct training sessions for the departments as needed.

The IPM coordinator shall:

- be a licensed and certified pesticide applicator by the North Carolina Department of Agriculture, in a major classifications such as agriculture pest, plants and horticulture
- assist each department or relevant section of town government with pest control management within their area and provide contact information for questions regarding pest management
- disseminate relevant information to departments and ensure employees can respond appropriately to concerns and questions posed by the general public or, if unable, to forward such concerns and questions to the IPM coordinator for a response
- maintain records of pest problems, prevention and control activities
- compile a list of successful least-toxic methods, to include least chemical cultural methods
- establish a data bank of pest control methods employed and their outcomes, with analysis where possible; make data bank accessible by internet to the North Carolina Department of Agriculture & Consumer Services (NCDA & CS) and NC Cooperative Extension; thus providing these agencies with training material
- ensure all department IPM coordinators have pesticide labels and Material Safety Data Sheets (MSDS) available in their departments for all pesticides used; this applies to applications by the town and by private contractors

for departments with significant public interest in their pest management program, such as the Recreation and Parks Department, organize a group of interested parties to discuss pest problems and their solutions; meetings may include the general public, town officials or interested town employees.

Table of Contents

11. Town employees responding to concerns and questions of the general public

The town has been following IPM practices and procedures for more than a decade. However, the adoption of a written policy by the Board of Aldermen will formalize such practices and instill greater public confidence that the town is and will continue to effectively promote least toxic methods in its structures, rights-of-way, landscape and park maintenance. In order for further public understanding of the program, it is imperative that town employees who respond to questions of the general public have an awareness of the IPM policy and program and can appropriately address such questions or refer the individual to those town employees who can. The town will develop a fact sheet on the program for use in answering basic questions which contains contact information for the IPM Coordinator and others involved with the program.

Table of Contents

12. IPM Plans

Each department or relevant section of town government as determined by the Manager and IPM Coordinator shall have a written IPM plan, which describes the unit's role in the program. Departmental plans shall be prepared in consultation with and reviewed by the IPM Coordinator.

- A. The Departmental plans may be simple and should include general housekeeping requirements and contact information for reporting situations that need attention. A typical plan could include information and/or policies on:
 - how snacks and other food are to be contained:
 - whether food is allowed at desks or work stations or only in break rooms
 - ensuring that window screens and windows are tight
 - containment of trash/ frequency of collection
 - policies for employee break areas frequency of cleaning
 - policy for containing and emptying recyclable (cans, bottles, newsprint, mixed paper)
 - responsibilities for seeing that the policies are carried out
 - information on the identification of the various pests likely to be encountered and
 - basic control strategies in an accessible way that will assist staff in their roles in the
 - IPM program.

- contact information for pests that need attention of the IPM coordinator
- contact information for repairs, such as drips or broken screens

Departments will maintain detailed records of pesticide applications and provide copies of such records to the IPM Coordinator within 5 business days of any pesticide application.

Departments will post a notice at major points of entry when pesticides are employed.

Table of Contents

13. **Least Toxic IPM Manual**

The IPM Coordinator shall prepare and be responsible for updating the overall IPM Manual. It shall include:

- A. The individual department or section IPM plans.
- B. Identification of each specific pest likely to be encountered (note, for example, that some ants and cockroaches have different subspecies that require different control methods)
- C. Description of Monitoring procedures
 - Traps
 - Sticky cards
 - Food lures
 - Chemical sex attractant
- D. Discussion of routine prevention and management practices. Description of routine management procedures for common pests using prevention and least toxic control methods. These methods include, for example, for buildings: caulking, crack and crevice applications of boric acid baits, improved sanitation, etc.; for landscaping: selecting resistant varieties, replacing pest infested plants, adjusting mowing heights and frequencies, use of flammables and mulch, etc.
- E. Discussion of procedures should conventional chemical control be necessary. If a situation dictates the use of chemical pesticides, the IPM coordinator will select the least toxic method to control the target pest. If a structural problem arises that requires a licensed structural applicator, the IPM coordinator will select a pest control contractor. Outside contractors must supply the IPM coordinator with a list of control recommendations including chemicals, baits or traps suggested for use. At all times the least toxic method will be chosen.
- F. Development of site specific policies for each pest problem or type of situation encountered with updates as necessary based on changing experience. Selection of methods to be used for pest management will be governed by considerations of risk and effectiveness. Least toxic methods will be given preference and conventional pesticides will be used only as a last resort under provisions of Section 17 of this policy.

Table of Contents

14. **Policy. Applicable to Town Contractors**

Pest control contractors who work for the town are required to understand and abide by this policy.

Such pest control contractor shall provide the IPM Coordinator with a copy of relevant North Carolina Department of Agriculture and Consumer Services (NCDA & CS) pesticide license, the names of the employees who will be applying any pesticides, a description of the methods proposed to be used including a list of all controls, chemical and non-chemical, and a report at the completion of the job of what was actually done including pesticides, if any, that were used with amounts and concentrations.

Table of Contents

15. **Hazard Categories**

Some factors which are used to categorize the relative danger/safety of pesticides:

1. Toxicity: the inherent capacity of a substance to produce an injury or death
2. Hazard: hazard is a function of toxicity and exposure; the potential threat that injury will result from the use of substance in a given formulation or quantity
3. Risk: the probability that an outcome may happen

The U.S. EPA groups pesticides into four basic categories based on their capacity to do harm. The categories emphasize "acute" toxicity--the ability to cause harm from a single exposure. Acute effects include damage to eyes, skin rashes, respiratory problems, nerve damage and death. The rankings are, however, influenced by "chronic" exposures, the ability to cause harm from repeated low dose exposures over time. Chronic effects include the ability to cause cancer, damage to organs such as the liver and kidneys, birth defects, genetic mutations, etc.

Category I:

- Environmental Protection Agency (EPA) lists as the most toxic
- "DANGER" product label; some must also say "poison" on label
- Most are classified as "restricted use pesticides" thus requiring a license to purchase, apply and store
- This category of pesticide has not been used by the town since 1987

Category II:

- Environmental Protection Agency (EPA) lists as the next most toxic (moderately toxic)
- "Warning" product label
- This category of pesticide has been minimally employed by the Town, less than 1 pint annually, and has never been applied to plant beds

Categories III & IV Least toxic categories:

- "Caution" product label
- The pesticides of this category employed by the town are primarily in the form of "Roundup" herbicide primarily for weed control under fences, street right-of-way and equipment storage areas

Common to all Categories of Pesticides:

- "Keep out of reach of children" must appear on label.
- Departments will post notices when pesticides are employed.

Table of Contents

16. Hazard Category III Pesticides - Phasing Out

Upon adoption of this IPM policy, the town will explore alternative methods to allow it to phase out the use of even Category III pesticides. It will, for example, explore the expanded use of methods already employed, such as mulches and string trimmers for weed control, as well as the use of alternatives including steam generators and propane torches ("flame weeders"). Such methods will be phased in over a 3 to 5 year period; experience must be gained by the town's staff to determine the effectiveness and application time of these different methods of weed control.

Fiscal Year

1999-2000	Procure and institute the use of steam equipment Continue to employ herbicide, "Roundup," as needed
2000-2001	Evaluate need to continue the employment of this category of pesticides Evaluate need to procure additional alternate eradication equipment

- 2001-2002 Determine if total elimination of this category of pesticides is possible
Provide a general overview of effectiveness

Table of Contents

17. Use of Conventional Pesticides / Unusual Circumstances

A goal of this program is to phase out the use of conventional pesticides. However, the town recognizes that certain rare circumstances may arise in which alternative methods may not be practical. If a situation is determined by the IPM Coordinator to be urgent and non-routine and requiring the use of a conventional pesticide to achieve satisfactory levels of control, then the following steps shall be followed:

- The IPM coordinator must receive approval from the Director of Public Works to employ conventional pesticides
- The Director of Public Works shall inform the Town Manager of his decision to employ to conventional pesticides at the time of or as soon as possible afterwards
- In the affected area, the IPM coordinator shall make a good faith effort to notify those employees and others who may be affected including the posting of notices at principal points of entry
- The use of occasional wasp or hornet sprays by employees or contractors who may otherwise be at risk of insect stings shall not be covered by this section except that reports of such use shall be made to the IPM Coordinator and persons who may be affected shall be given advance notice if time permits.
- The use of pesticides under Section 5.13. of this policy are not covered by this section.

Table of Contents

18. Antimicrobials Not Included

Antimicrobials, such as those used for cleaning as sterilizers in public facilities are not covered by this policy.

Table of Contents

19. General

- A. The State of North Carolina's Department of Agriculture & Consumer Services (NCDA & CS) separates pest control administratively and for types of licenses into two areas:

Structural: All pest control within or to protect a building; includes termite and cockroach control; the NC Structural Pest Committee adopts rules and sets license requirements for such applications. The structural pest control program is administered by the Structural Pest Control Division of the NCDA & CS.

Non-Structural: All other pest control and vegetation management in an outdoor environment, including agriculture and landscaping; the NC Pesticide Board adopts regulations and sets license requirements for such applications, which include "public operator licenses" for town employees. This pesticide program is administered by the Pesticide Section of the NCDA & CS.

Note: Licenses are not interchangeable but apply only to that specific category or class of application

B. Definitions

"Pesticides" are defined as "anything sold to kill or control or mitigate a pest." Hence they include "insecticides" for use against insects, "herbicides" for use against weeds, "fungicides" for use against plant diseases, and "rodenticides" which kill rats and mice. Such products must be registered by EPA under the Federal pesticide law (The Federal Insecticide, Fungicide and Rodenticide Act, or "FIFRA") and, in North Carolina, by the North Carolina Department of Agriculture and Consumer Services (NCDA & CS) under the NC Pesticide Law before, they can be legally sold or used. They each carry a label which prescribes how the product must be used: for what pests in what sites and at what rates. Use inconsistent with the label is a violation of state and federal law.

"Pests" are organisms where they are not wanted and which may cause economic (or aesthetic or ecological) damage. In this context, a "weed" is a social, economic, and legal term, not a biological one. Hence, an oak in a pine plantation can be a weed.

Table of Contents

Revised Friday, February 26, 1999

Carrboro Using Hot Water to Control Weeds

Leaders of Carrboro, North Carolina, have tested a weed control machine which uses hot water instead of herbicides to kill unwanted plants.

The equipment, made by Waipuna International Ltd. of New Zealand, superheats water and then dispenses it in a steady stream under low pressure. Weeds are killed when the waxy outer coating of their leaves is melted by hot water. The apparatus is self-contained and mounted on a small truck with insulated hoses connected to long-handled applicator wands. The water inside the machine is actually heated to a temperature as high as 220°F. Almost immediately upon contact, plants darken and wilt like cooked spinach. Within a few hours, sprayed plants turn brown, appearing similar to plants treated with a contact herbicide, however, with the added advantage of no pesticide residues being left behind.



Carrboro tested the equipment as part of implementation of the town's Least Toxic Integrated Pest Management policy adopted by the Town Council in March 1999. The policy seeks phasing out

the conventional use of pesticides on publicly owned property. Other approaches taken by the Public Works Department have included the use of a propane flamer to singe and kill unwanted plants and the application of a biodegradable pre-emergent herbicide made from corn gluten. Although the town leaders recognize that the cost of quality grounds maintenance will increase significantly due to the adopted policy, they feel that this approach is justified by a possible reduction in environmental contamination.

The hot water trials were conducted under the direction of Chris Gerry, Landscape and Grounds Supervisor of the Carrboro Public Works Department. Gerry concluded "everywhere we used it, it's done a yeoman's job. This is the least toxic approach to weeds that I can imagine. Our biggest weed problem is along miles of fences around sports fields and other facilities, and along roadsides where the grass encroaches onto the pavement. The flamer does a good job, but weather conditions have to be right; you can't use it when things are very dry and there's a risk of fire. This you can use just about any time."

"It's important to understand that it is not a panacea. It has its limitations; it's tethered to a truck, for one thing. But it is one of the tools, and it's done a great job for us so far."

For information on this equipment, contact:

Chris Gerry, Landscape and Grounds Supervisor
Public Works Department
301 Main Street
Carrboro, NC 27510
919-918-7431

OR

Allen Spalt, Director
Agricultural Resources Center
115 West Main Street
Carrboro, NC 27510

[Table of Contents](#)

Copyright © 2004 Town of Carrboro, NC
Direct site comments to:
webmaster@townofcarrboro.org

Less-toxic Pest Management

BETTER WAYS TO CONTROL WEEDS AND PESTS

Four-hundred hungry goats and tons of corn meal mulch prevent weeds from taking over City parks and watersheds, giant heaters kill termite colonies deep inside of building walls, and donut-shaped devices floating in City ponds release mosquito-eating microorganisms. San Francisco is pioneering environmentally sound ways to manage urban pests, and other city governments are taking notice.



City gardeners use flamers to control weeds, rather than toxic chemicals.

San Francisco adopted an Integrated Pest Management (IPM) ordinance in October 1996, which commits the City to a pest management approach on its own property that minimizes the use of toxic chemicals and gets rid of pests by methods that pose a lower risk to public and environmental health.

SF Environment coordinates the City's IPM program - one of the best of its kind anywhere in the world. Since the ordinance has been in place, we've reduced overall pesticide and herbicide use by more than 50% and have eliminated the use of products containing the most dangerous ingredients.

THE PROBLEM

The City of San Francisco manages a wide variety of pests, including insects, rodents and other animals, plant diseases, weeds, and germs. The most common approach to managing these pests in recent decades has been the use of pesticides of varying toxicity and hazard to public health.

WHAT WE'RE DOING ABOUT IT

SF Environment emphasizes education and developing less-harmful alternatives to toxic chemicals, such as mulching and hand-weeding; employing mechanical rather than chemical means of killing weeds, such as the use of flame and natural predators; and planting foliage with habits suitable to San Francisco's climate in order to increase resistance to pest infestation.

All of the most dangerous pesticides were banned for city use at the beginning of 1997 and for tenants on city property at the beginning of 1998. By January 1, 2000, only those chemicals considered as "reduced risk" and consistent with an IPM program may be used on City property.

For a city with 35,000 employees and nearly 80 separate departments, making the shift to IPM has been a noble challenge. City gardeners, facilities managers, custodians, pest management contractors, and even office staff have been exposed to an entirely new way of thinking about pesticides. For office staff and building managers, increased emphasis is put on sanitation and facilities maintenance. For people involved in landscape management, IPM options are myriad.

Integrated Pest Management

Background

San Francisco has the most progressive and innovative urban pesticide-reduction program in the country, radically reducing the exposure of its residents and visitors to unnecessary chemicals on City property.

Reducing pesticide use has human health benefits and a positive impact on the environment since fewer pollutants end up in the air or water.

San Francisco's Pesticide Program, established by the Integrated Pest Management (IPM) Ordinance, was enacted to regulate and reduce the use of chemical pesticides in and on city property by city departments, agencies, and contractors.

The IPM ordinance bans the use of the most toxic pesticides including carcinogens and reproductive toxins. The ordinance requires the posting of notices to inform the public whenever a pesticide is used on city property and requires a public access telephone number for questions regarding pesticide use.



IPM specialist Ralph Montana releases beneficial insects to fight pests in Golden Gate Park's Conservatory of Flowers. These natural enemies have replaced many of the insecticides formerly used against common pests of plants grown indoors.

Highlights

- **Phased reduction in pesticide use:** Most toxic (Category I) were banned in 1997, next most toxic (Category II) banned in 1998, and by January 2000, all pesticides were banned from use except those identified as reduced risk and consistent with an IPM program.
- **Departmental accountability:** City agencies are held accountable for their use of pesticides through monthly reporting to the Department of the Environment. In addition each department is required to submit an IPM implementation plan.
- **Reduction Achievements:** Use of the most toxic and harmful pesticides has been eliminated and in most areas of the city, overall pesticide use has dropped by over 50%.
- **Reduction Achievements:** The city's pest control contractor has eliminated the use of chemical pesticides in more than 70% of visits to city buildings.
- **New approaches:** City staff have received extensive training in alternative methods for controlling pests and are using such innovative tools as green flammables, containerized baiting systems, insect growth regulators, weed cloth, mulches, and compost tea.
- **Exemptions to the reduced risk list:** One-year, limited use, or emergency exemptions for the use of pesticides covered by the bans are considered by the Department of the Environment; departments or contractors for the city must prove they have made a good faith effort to find alternative approaches, but that no effective, economic alternatives exist

- **City-wide implementation program:** The Department of the Environment provides a central source of information on IPM and technical help to all departments. The Department of the Environment also works with other City departments to educate businesses, residences, and other communities on reduced risk and effective means of controlling pests.
- **Web Site:** The Department of the Environment's web site makes information about the program available to the public, as well as provides a central source of technical information to practitioners in the various departments.
- New and renewing City contractors are covered as of 1998.

The central program is funded by contributions from Recreation and Park Department, Department of Public Health, Department of Public Works, Public Utilities Commission, Municipal Railway, the Port, and the Airport. Representatives from each of these departments as well as outside IPM experts and community organizations make up the Technical Advisory Committee. This committee works closely with the Department of the Environment to guide program implementation.

The Department of the Environment administers and coordinates the Pesticide Reduction Program established by the Integrated Pest Management (IPM) Ordinance for the City and County of San Francisco. The Commission on the Environment provides program oversight and direction.

[sfgov](#) | [residents](#) | [business](#) | [government](#) | [visitors](#) | [online services](#) | [search](#) [Home](#) | [Articles & Press Releases](#) | [Directories](#) | [Events & Meetings](#) | [What's New](#) | [About Us](#) | [Fact Sheets](#) | [Green Links](#)**SF Environment**

San Francisco Integrated Pest Management Program - Chapter 39

[Sec. 39.1.Purpose and Findings.](#)[Sec. 39.2.Definitions.](#)[Sec. 39.3.Ban on Use of Toxicity Category I and Certain Other Pesticides.](#)[Sec. 39.4.Ban on Use of Toxicity Category II Pesticide Products; Total Pesticide Ban.](#)[Sec. 39.5.Notice of Pesticide Use.](#)[Sec. 39.6.Implementation of City Integrated Pest Management Policy.](#)[Sec. 39.7.Recordkeeping and Reporting.](#)[Sec. 39.8.Exemptions.](#)[Sec. 39.9.City Contracts.](#)[Sec. 39.10.Guidelines.](#)

SEC. 39.1. PURPOSE AND FINDINGS.

(a) The Board of Supervisors hereby finds and declares that it shall be the policy of the City and County of San Francisco for City departments and City contractors who apply pesticides to City property to eliminate or reduce pesticide applications on City property to the maximum extent feasible.

(b) Under this Chapter, the City and County of San Francisco wishes to exercise its power to make economic decisions involving its own funds as a participant in the marketplace and to conduct its own business as a municipal corporation to ensure that purchases and expenditures of public monies are made in a manner consistent with integrated pest management policies and practices.

(c) This Chapter 39 concerns the application of pesticides to property owned by the City and County of San Francisco only, and does not concern the application of pesticides to property that is not owned by the City and County of San Francisco.

(d) City departments shall implement the following City Integrated Pest Management (IPM) Policy:

CITY INTEGRATED PEST MANAGEMENT POLICY

The City, in carrying out its operations, shall assume pesticides are potentially hazardous to

human and environmental health. City departments shall give preference to reasonably available nonpesticide alternatives when considering the use of pesticides on City property. For all pest problems on City property, City departments shall follow the integrated pest management (IPM) approach outlined below.

(1) Monitor each pest ecosystem to determine pest population, size, occurrence, and natural enemy population, if present. Identify decisions and practices that could affect pest populations. Keep records of such monitoring;

(2) Set for each pest at each site and identify in an IPM implementation plan, an injury level, based on how much biological, aesthetic or economic damage the site can tolerate;

(3) Consider a range of potential treatments for the pest problem. Employ nonpesticide management tactics first. Consider the use of chemicals only as a last resort and select and use chemicals only within an IPM program and in accordance with the provisions of Chapter 39.

(A) Determine the most effective treatment time, based on pest biology and other variables, such as weather, seasonal changes in wildlife use and local conditions,

(B) Design and construct indoor and outdoor areas to reduce and eliminate pest habitats,

(C) Modify management practices, including watering, mulching, waste management, and food storage

(D) Modify pest ecosystems to reduce food and living space,

(E) Use physical controls such as hand-weeding, traps and barriers,

(F) Use biological controls (introducing or enhancing pests' natural enemies);

(4) Conduct ongoing educational programs:

(A) Acquaint staff with pest biologies, the IPM approach, new pest management strategies as they become known, and toxicology of pesticides proposed for use,

(B) Inform the public of the City's attempt to reduce pesticide use and respond to questions from the public about the City's pest management practices;

(5) Monitor treatment to evaluate effectiveness. Keep monitoring records and include them in the IPM implementation plan.

(e) Nothing in this Chapter is intended to apply to pesticide applications that are required to comply with federal, State or local laws or regulations. (Added by Ord. 401-96, App. 10/21/96; amended Ord. 274-97, App. 7/3/97)

SEC. 39.2. DEFINITIONS.

Whenever used in this Chapter, the following terms shall have the meanings set forth below.

(a) "City department" means any department of the City and County of San Francisco and includes any pesticide applicator hired by a City department to apply pesticides on City property. City department does not include any other local agency or any federal or State agency, including but not limited to the San Francisco School District, the San Francisco Community College District, the San Francisco Redevelopment

Agency and the San Francisco Housing Authority.

(b) "Commission" means the Commission on the Environment provided for by San Francisco Charter Section 4.118.

(c) "Contract" means a binding written agreement, including but not limited to a contract, lease, permit, license or easement between a person, firm, corporation or other entity, including a governmental entity, and a City department, which grants a right to use or occupy property of the City and County of San Francisco for a specified purpose or purposes.

(d) "Contractor" means a person, firm, corporation or other entity, including a governmental entity, that enters into a contract with a City department.

(e) "Department" means the Department of the Environment provided for by San Francisco Charter Section 4.118.

(f) "Integrated pest management" means a decision-making process for managing pests that uses monitoring to determine pest injury levels and combines biological, cultural, physical, and chemical tools to minimize health, environmental and financial risks. The method uses extensive knowledge about pests, such as infestation thresholds, life histories, environmental requirements and natural enemies to complement and facilitate biological and other natural control of pests. The method uses the least toxic synthetic pesticides only as a last resort to controlling pests.

(g) "Pesticide" means pesticide as defined in Section 12753 of Chapter 2 of Division 7 of the California Food and Agricultural Code, but does not include antimicrobial agents as defined by Section 21F.2(a) of the Administrative Code.

(h) "Toxicity Category I Pesticide Product" means any pesticide product that meets United States Environmental Protection Agency criteria for Toxicity Category I under Section 156.10 of Part 156 of Title 40 of the Code of Federal Regulations.

(i) "Toxicity Category II Pesticide Product" means any pesticide product that meets United States Environmental Protection Agency criteria for Toxicity Category II under Section 156.10 of Part 156 of Title 40 of the Code of Federal Regulations. (Added by Ord. 401-96, App. 10/21/96; amended Ord. 274-97, App. 7/3/97; Ord. 361-98, App. 12/11/98; Ord. 2-00, File No. 992000, App. 1/13/2000)

SEC. 39.3. BAN ON USE OF TOXICITY CATEGORY I AND CERTAIN OTHER PESTICIDES.

Except for pesticides granted an exemption pursuant to Section 39.8, effective January 1, 1997, no City department shall use any Toxicity Category I Pesticide Product, any pesticide containing a chemical identified by the State of California as a chemical known to the State to cause cancer or reproductive toxicity pursuant to the California Safe Drinking Water and Toxic Enforcement Act of 1986, and any pesticide classified as a human carcinogen, probable human carcinogen or possible human carcinogen by the United States Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances. (Added by Ord. 401-96, App. 10/21/96; amended Ord. 274-97, App. 7/3/97)

SEC. 39.4. BAN ON USE OF TOXICITY CATEGORY II PESTICIDE PRODUCTS; TOTAL PESTICIDE BAN.

(a) Except for pesticides granted an exemption pursuant to Section 39.8, effective January 1, 1998, no City department shall use any Toxicity Category II Pesticide Product.

(b) Except for pesticides granted an exemption pursuant to Section 39.8, by January 1, 2000, any City department that uses one or more pesticides not banned under Section 39.3 or Section 39.4(a), shall reduce by 100 percent the cumulative volume of such pesticides that it used in calendar year 1996. (Added by Ord. 401-96, App. 10/21/96; amended Ord. 274-97, App. 7/3/97)

SEC. 39.5. NOTICE OF PESTICIDE USE.

(a) Except as provided in Subdivisions (b) through (e) hereof, within 120 days of the effective date of this ordinance, any City department that uses any pesticide shall comply with the following notification procedures:

(1) Signs shall be posted at least three days before application of the pesticide product and remain posted at least four days after application of the pesticide.

(2) Signs shall be posted (i) at every entry point where the pesticide is applied if the pesticide is applied in an enclosed area, and (ii) in highly visible locations around the perimeter of the area where the pesticide is applied if the pesticide is applied in an open area.

(3) Signs shall be of a standardized design that are easily recognizable to the public and workers.

(4) Signs shall contain the name and active ingredient of the pesticide product, the target pest, the date of pesticide use, the signal word indicating the toxicity category of the pesticide product, the date for re-entry to the area treated, and the name and contact number for the City department responsible for the application.

(b) City departments shall not be required to post signs in accordance with Subsection (a) in right-of-way locations that the general public does not use for recreational purposes. However, each City department that uses pesticides in such right-of-way locations shall develop and maintain a public access telephone number about pesticide applications in the right-of-way areas. Information readily available by calling the public access number shall include for any pesticide that will be applied within the next three days or has been applied within the last four days: A description of the area of the pesticide application, the name and active ingredient of the pesticide product, the target pest, the date of pesticide use, the signal word indicating the toxicity category of the pesticide product, the re-entry period of the area treated and the name and contact number for the City department responsible for the application. Information about the public access telephone number shall be posted in a public location at the City department's main office building.

(c) City departments using baits or other pesticides granted an exemption by the Department pursuant to Subsection (e) shall not be required to post signs in accordance with Subsection (a). However, each City department that uses pesticidal baits or other pesticides granted an exemption by the Department pursuant to Subsection (e) shall post a permanent sign: (1) in each building or vehicle where such pesticides are used, (2) at the City department's main office or a similar location where the public obtains information regarding the building or vehicle, and (3) when such pesticides are used outdoors to control rats and other pests, in a conspicuous location outside of the area where they are used. The sign shall indicate the name and active ingredient of the pesticides used in and around the building or vehicle, the target pests, the signal word indicating the toxicity category of the pesticide product, the area or areas where the pesticides are commonly placed, and the contact number for the City department responsible for the application.

(d) City departments may obtain authorization from the Department to apply a pesticide without providing a three-day advance notification in the event of a public health emergency or to comply with worker safety

requirements. Signs meeting the requirements of Subsection (a)(2) through Subsection (a)(4) shall be posted at the time of application and remain posted four days following the application.

(e) The Department may grant exemptions to the notification requirements for one-time pesticide uses and may authorize permanent changes in the way City departments notify the public about pesticide use in specific circumstances, upon a finding that good cause exists to allow an exemption to the notification requirements. Prior to granting an exemption pursuant to this subsection, the City department requesting the exemption shall identify the specific situations in which it is not possible to comply with the notification requirements and propose alternative notification procedures. The Department shall review and approve the alternative notification procedures. (Added by Ord. 401-96, App. 10/21/96; amended Ord. 274-97, App. 7/3/97; Ord. 231-99, File No. 991246, App. 8/20/99; Ord. 2-00, File No. 992000, App. 1/13/2000)

SEC. 39.6. IMPLEMENTATION OF CITY INTEGRATED PEST MANAGEMENT POLICY.

(a) Within 90 days of the effective date of Section 39.1(d) each City department that uses pesticides shall submit to the Department a plan for implementing the City Integrated Pest Management (IPM) Policy. The Department may require periodic IPM plan updates. The IPM implementation plans and any periodic updates shall be consistent with the requirements of this Section and any guidelines developed by the Department pursuant to this Chapter.

(b) A City department IPM implementation plan shall outline the ways in which the City department shall comply with the City IPM Policy in Section 39.1(d). The City department IPM implementation plan shall include pesticide applications performed by pesticide applicators at the request of the City department. The IPM implementation plan shall contain a list of the types and quantities of chemicals used as of December 31, 1996, the types of pest problems, the alternatives adopted to date, alternatives proposed for adoption within the next six months, and the name of the IPM Coordinator for the City department.

(c) At the request of the Department, the Commission may determine that a City department's IPM implementation plan is not in conformity with the City IPM Policy. Upon a determination of nonconformity, the City department shall submit a revised plan to the Department in accordance with a schedule established by the Commission.

(d) The Department shall assist City departments in implementing the City IPM Policy by developing public educational information about IPM plans and programs and the City's IPM Policy.

(e) The Department shall establish an IPM Policy implementation program to assist City departments in implementing the City IPM Policy. The Department shall establish a data bank of information concerning pesticide use by City departments and the efficacy of alternatives used by City departments. All City departments that use pesticides shall participate in the Department's program by:

- (1) Identifying the types of pest problems that the City Department has;
- (2) Identifying types and quantities of pesticides currently in use by the City department;
- (3) Identifying the use of alternatives for banned pesticides;
- (4) Designating City department contact personnel who are responsible for the service for which the pesticides are used to regularly assess the efficacy of alternatives and to act as a resource for other City departments; and
- (5) Providing regular reports as required by the Department of the Environment on the City department's efforts to implement the City IPM Policy.

(f) The Department shall determine the cost of maintaining the IPM implementation program. The Department may request that the City departments that use pesticides provide work orders to the Department to cover the cost of maintaining the program.

(g) No later than July 1, 1997 and semi-annually thereafter, the Department shall report to the Commission on the status of City department efforts to implement the City IPM Policy. Such report shall include a summary of exemptions granted by the Department during the reporting period. The Department shall provide an annual report to the Board of Supervisors on the status of City department efforts. (Added by Ord. 401-96, App. 10/21/96; amended Ord. 274-97, App. 7/3/97; Ord. 231-99, File No. 991246, App. 8/20/99; Ord. 2-00, File No. 992000, App. 1/13/2000)

SEC. 39.7. RECORDKEEPING AND REPORTING.

(a) Each City department that uses pesticides shall keep records of all pest management activities. Each record shall include the following information:

- (1) The target pest;
 - (2) The type and quantity of pesticide used;
 - (3) The site of the pesticide application;
 - (4) The date the pesticide was used;
 - (5) The name of the pesticide applicator;
 - (6) The application equipment used;
 - (7) Prevention and other non-chemical methods of control used;
 - (8) Experimental efforts; and
 - (9) Exemptions granted by the Department pursuant to Section 39.5 or 39.8 for that application.
- (b) Each City department that uses pesticides shall submit the pest management record required by Subsection (a) to the Department on a monthly basis. The Department may reduce the submittal frequency.
- (c) Pest management records shall be made available to the public upon request in accordance with the provisions of the San Francisco Sunshine Ordinance, San Francisco Administrative Code, Chapter 67. (Added by Ord. 401-96, App. 10/21/96; amended Ord. 274-97, App. 7/3/97; Ord. 2-00, File No. 992000, App. 1/13/2000)

SEC. 39.8. EXEMPTIONS.

(a) Improving and maintaining water quality. Notwithstanding any other provision of this Chapter, this Chapter shall not apply to the use of any pesticide for the purpose of improving or maintaining water quality at:

- (1) Drinking water treatment plants;
- (2) Wastewater treatment plants;

(3) Reservoirs; and

(4) Related collection, distribution and treatment facilities.

(b) One-year exemptions. A City department may apply to the Department for up to a one-year exemption from the pesticide ban imposed by Sections 39.3 or 39.4 for use of a particular pesticide for a particular use. The application for an exemption shall be filed on a form specified by the Department and shall be signed by the City department's IPM Coordinator. The Department of the Environment may grant the one-year exemption upon a finding that the City department has:

(1) Made a good-faith effort to find alternatives to the banned pesticide;

(2) Demonstrated that effective, economic alternatives to the banned pesticide do not exist for the particular use; and

(3) Developed a reasonable plan for investigating alternatives to the banned pesticide during the exemption period.

(c) Limited use exemption. A City department may apply to the Department for a limited use exemption for a particular pesticide banned pursuant to Section 39.3 or Section 39.4 and not covered by a one-year exemption. The application for an exemption shall be filed on a form specified by the Department and shall be signed by the City department's IPM Coordinator. The Department may grant a limited-use exemption provided that the Department finds that the City department will use the pesticide for a specific and limited purpose and for a short and defined period and the City department has identified a compelling need to use the pesticide.

(d) Reduced-risk pesticide. The Commission on the Environment may exempt a reduced-risk pesticide from the ban imposed by Section 39.4 upon a finding that the reduced-risk pesticide is commonly used as part of an IPM strategy. Based on recommendations by the Department, the Commission shall maintain a list of reduced-risk pesticides granted an exemption pursuant to this subsection. The Commission shall review the list annually and make necessary changes. The Commission may review and revise the list more frequently upon recommendation by the Department.

(e) Emergency exemption. A City department may apply to the Department for an emergency exemption in the event that an emergency pest outbreak poses an immediate threat to public health or significant economic damage will result from failure to use a pesticide banned pursuant to Section 39.3 or Section 39.4. The application for an exemption shall be filed on a form specified by the Department. The Department shall respond to the application in a timely manner. If the requesting department is unable to reach the Department, the departmental IPM Coordinator may authorize the one-time emergency use of the required pesticide. The department IPM Coordinator must notify the Department of the determination to use the pesticide by facsimile prior to its application in the event that the department IPM Coordinator is unable to reach the Department. Signs meeting the requirements of Subsection (a)(2) through Subsection (a)(4) shall be posted at the time of application and remain posted four days following the application. The Department may impose additional conditions for emergency applications. (Added by Ord. 401-96, App. 10/21/96; amended Ord. 274-97, App. 7/3/97; Ord. 361-98, App. 12/11/98; Ord. 2-00, File No. 992000, App. 1/13/2000)

SEC. 39.9. CITY CONTRACTS.

(a) As of the effective date of this Section, when a City department enters into a new contract or extends the term of an existing contract, the contract shall obligate the contractor to comply with provisions of

this Section 39.9(a):

(1) Effective January 1, 1998, the contractor shall comply with Sections 39.3, 39.5 and 39.7. In addition, effective January 1, 1998, the contractor shall submit to the City department an IPM implementation plan that lists the types and estimated quantities, to the extent possible, of pesticides that the contractor may need to apply to City property during its contract, outlines actions the contractor will take to meet the City IPM Policy in Section 39.1 to the extent feasible, and identifies the primary IPM contact for the contractor.

(2) Effective January 1, 1999, the contractor shall comply with Section 39.4(a).

(3) Effective January 1, 2000, the contractor shall comply with Section 39.4(b).

(b) As of the effective date of this Section, when a City department enters into a new contract or extends the term of an existing contract that authorizes a contractor to apply pesticides to City property, the City department shall submit an IPM implementation plan update to the Commission on the Environment that incorporates the pesticide usage of the contractor into the City department's IPM implementation plan.

(c) A contractor, or City department on behalf of a contractor, may apply for any exemption authorized under Section 39.8. (Added by Ord. 274-97, App. 7/3/97)

SEC. 39.10. GUIDELINES.

The Department of the Environment may issue guidelines to assist City departments in the implementation of this Chapter. (Added by Ord. 274-97, App. 7/3/97)

SF Environment • 415-355-3700 • environment@sfgov.org • 11 Grove Street, San Francisco, CA 94102

[contact us](#) | [accessibility policy](#) | [disclaimer](#) | [privacy policy](#)

Pest Management Ordinances

Pest Management Ordinances

- City of Arcata, CA Pesticide Ordinance. “An Ordinance of the City Council of the City of Arcata Banning the Use of Pesticides on City Property and Directing the Creation of Pest Control Management Plan.” Ordinance 1300, *Title V: Sanitation and Health, Chapter 4.5: Pest Control*. Ordinance available via The City of Arcata, 736 F Street, Arcata, CA 95521; phone: (707) 822-5951; fax: (707) 822-8018, or <http://www.alternatives2toxics.org/ordinance.htm>
- City of Cleveland Heights, OH Pesticide Ordinance. “Application of Pesticides.” Part 17, Health Code, Chapter 1785. <http://www.beyondpesticides.org/lawn/activist/ClevelandHeights.Ordinance%20No.pdf>

Additional Reference

- City of San Francisco, CA Pesticide Ordinance. “City Pesticide Management” *Sections 39.1 through 39.8, Chapter 39* <http://www.mindfully.org/Pesticide/SF-Pesticide-Ordinance7oct96.htm>

Ordinance No. 1300

An Ordinance of the City Council Of the City of Arcata Banning the Use of Pesticides on City Property And Directing the Creation of Pest Control Management Plan

Title V: Sanitation and Health Chapter 4.5: Pest Control

The City Council of the City of Arcata does ordain as follows:

Section 1: Title V, Sanitation and Health, Chapter 4.5, Pest Control, of the Arcata Municipal Code, is hereby added to the Municipal Code as follows:

SEC. 5490. Findings and Purposes:

- A. Scientific research indicates that no pesticide is completely safe to human health and the environment, and various pesticides are hazardous to human health.
- B. The migration of pesticides into the City's watercourses, water bodies and wetlands poses a severe threat to the health of the environment.
- C. On May 7, 1986, the City Council declared a moratorium on the use of all pesticides in the City. The Council subsequently amended such declaration upon the recommendation of a specially created task force to allow the use of dolomark, dolomite, gypsum and fertilizers for making ball fields and preparing soils.
- D. Based on these findings, the purpose of this ordinance is to protect the public health, safety and welfare of the City of Arcata residents and environment through the adoption of regulations that prohibit the use of pesticides by the City on City Property.

SEC. 5491. Definitions.

Pesticide: For purposes herein, pesticide shall mean any spray adjuvant, substance or mixture of substances, which is intended to be used for defoliating plants, regulating plant growth or for preventing, destroying, repelling, or mitigating any pest which may infest or be detrimental to vegetation, man, animals or households, or be present in any agricultural or non-agricultural environment, including fungicides, herbicides, insecticides, nematicides, rodenticides, dessicants, defoliants, and plant growth regulators.

SEC. 5492. Pesticide Use Prohibited.

The City shall not use any pesticides on or in any City owned, operated or maintained property, building or facility except in accordance with the City's Pest Control Management Plan.

SEC. 5493. Pest Control Management Plan.

- A. The Director of Environmental Services shall, as soon as practicable, formulate and develop a Pest Control Plan for the City. The Pest Control Plan shall contain the following elements:
 - 1. A description of all materials and methods of permissible pest control for use on or in City owned, operated or maintained property, buildings or facilities, including sidewalk areas in the City's right-of-way;
 - 2. A methodology for educating the public about pest control management on or in private property using permissible pest control techniques; and

3. Guidance on preventative pest control measures, including but not limited to pest exclusion techniques for new and remodel building construction and for household and commercial sanitation.

B. The Pest Control Management Plan shall be revised and updated on a regular basis as needed by new and/or changing conditions.

C. The Pest Control Management Plan and all revisions thereto shall be adopted by the City Council after public hearing.

SEC. 5494. Implementation.

Until such time as the Pest Control Management Plan is approved, the City shall endeavor to implement the policy of the City to avoid the use of pesticides as reasonably as practicable.

Section 2: This Ordinance shall take effect thirty (30) days after the date of its adoption.

Dated: February 16, 2000

Ordinance No. 131-1995(PSH), As Amended

By Council Member Evans

As Ordinance enacting and adopting a new Chapter 1785, entitled "Application of Pesticides," to be contained in Part Seventeen - Health Code - of the Codified Ordinances of the City of Cleveland Heights; and declaring an emergency.

WHEREAS, relatively little is known about the long-term effects of pesticides upon human beings and the environment; and

WHEREAS, exposure to the toxic chemicals classified as pesticides can cause illness in susceptible persons; and

WHEREAS, exposure to pesticides can be particularly dangerous to children; and

WHEREAS, it is in the best interest of the City and its residents to reduce the risk of involuntary exposure to pesticides by prohibiting the use of said chemicals on public grounds, child day-care centers, schools and libraries.

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Cleveland Heights, Ohio, that:

SECTION 1. The following Ordinance shall be and hereby is adopted and enacted in its entirety as Chapter 1785 of the Codified Ordinances of the City of Cleveland Heights:

CHAPTER 1785
Application of Pesticides

1785.01 DEFINITIONS.

As used in this Chapter:

- (a) "Pesticide" means any substance produced or distributed for preventing, destroying or repelling any insects, weeds, rodents, fungi, nematodes, mites, spiders or other forms of plant or animal life or viruses (i.e., any herbicide, insecticide, acaricide, nematocide, rodenticide or fungicide), except viruses on or in living humans or other animals. This includes any fertilizer mixture which contains pesticides within it.
- (b) "Application of a pesticide" means the placement for effect of any pesticide at or on the exterior site where pest control or other response is desired.
- (c) "School" means any preschool, nursery school, kindergarten, elementary school, or high school.

- (d) "Child day-care" means administering to the needs of infants, toddlers, pre-school children and school children outside of school hours for consideration by persons other than their parents or guardians, custodians, or relatives by blood, marriage or adoption for any part of the twenty-four hour day in a place or residence other than a child's own home.
- (e) "Child day-care center" means any place in which child day-care is provided, excluding child day-care provided in the permanent residence of the provider if provided to no more than six children at one time, including any children of the provider who are under six years of age and on the premises, and no more than three of the children on the premises at any one time are under two years of age.
- (f) "Public property" means any land owned by the City or by any other governmental entity, including without limitation, public parks and public playgrounds.

1785.02 PROHIBITION ON PESTICIDE USE

Except as provided in Section 1785.03 of this Code, no person shall apply any pesticide on the gardens, lawns, lands, grounds or other exterior premises of any of the following facilities: Schools, child day-care centers, public properties or libraries.

1785.03 ENVIRONMENTAL REVIEW BOARD

An Environmental Review Board is hereby created to hear and determine requirements for permission to apply pesticides in specific cases. The Board shall consist of the City Manager and the Director of the Department of Community Services, or their representatives, and the Chairman of the Public Safety and Health Committee of Council, or a member of that Committee. The Board may grant permission for the application of pesticides under controlled and limited conditions when the Board determines that such application is necessary for the public health and safety or the preservation of property and will not pose a danger to City residents.

1785.04 PENALTY

A violation of this Chapter shall be a minor misdemeanor on the first offense, and a fourth degree misdemeanor on a second or subsequent offense.

SECTION 2. Notice of the passage of this Ordinance shall be given by publishing the title and abstract of its contents, prepared by the Director of Law, once in one newspaper of general circulation in the City of Cleveland Heights.

SECTION 3. This Ordinance is hereby declared to be an emergency measure immediately necessary for the preservation of the public peace, health and safety of the inhabitants of the City of Cleveland Heights, such emergency being the need to enact this Ordinance during the current yard-maintenance season. Wherefore, provided it receives the affirmative vote of five or more of the members elected or appointed to this Council, this Ordinance shall take effect and be in force immediately upon its passage; otherwise, it shall take effect and be in force from and after the earliest time allowed by law.

CAROL EDWARDS, Mayor
President of the Council

ROBERT B. CERTNER
Clerk of Council

PASSED: September 18, 1995

Healthy Turf

- “Tips for great looking, pesticide-free yards” Dr. Kamyar Enshayan
<http://www.uni.edu/yardsforkids/>
- Contributors Biographies
- Alternatives for Watson Park
- Least-Toxic Pest Management Products
- Least-Toxic Pest Management Methods

Tips for great looking, pesticide-free yards:



Mow High. This is the single most important thing you can do to create strong turf. This will lead to stronger, healthier grass and will shade out many weeds. In general, 3-4 inches is best. Cutting the grass too short will weaken your lawn

Don't bag it. Leave lawn clippings as long as they filter through into the grass and are not clumping together. Decomposing clippings provides nutrients, especially nitrogen, and reduce the need for fertilizer. Grass clippings do not add to thatch.

Use organic fertilizers if you have to fertilize. Fertilizers derived from compost, fish emulsion, seaweed, corn by-products, and poultry and cow manure are excellent lawn nutrient sources and are available for home and garden uses. Organic fertilizer, in addition to providing nutrients, add organic matter to the soil, improve soil structure, and aid water infiltration. Natural fertilizers are available at several area garden stores.

Reseed bare areas. Late August through September is a good time to repair bare spots.

Water Deeply, not often. Because rainfall in Iowa is plentiful, we rarely need to water our lawns. If you have to water, give your lawn a long slow deep drink of water as infrequently as possible, taking care not to wait so long that your lawn gets stressed by drought.

Mow with a sharp blade. Sharper mower blades make a clean cut while dull blades rip the grass, weakening your lawns natural defenses.

Go Native. Replace portions of your lawn with native Iowa prairie plants, shrubs and other perennials. These can attract birds, butterflies, beneficial insects and no fertilizing or mowing is required.

Be more tolerant of diversity in your lawn. Dandelions and violets offer the best UNI Panther colors. Ultimately what will need to change is our perception of what constitutes a beautiful lawn. Learning to tolerate a few weeds is crucial. Remember, they won't hurt anyone, but we know weed killers can.



Source: "Yards for Kids, Yards for Health, Yards for Nature" website of [Dr. Kamyar Enshayan](http://www.uni.edu/yardsforkids/)

Contributor Bios

Dr. Terry Shistar

KU Environmental Studies professor, former president and current board member of national organization Beyond Pesticides, local community activist

Richard Heckler

Owner of a local pesticide-free lawn care business, Recycling and Resource Conservation Advisory Board member, local community activist

Dr. Kamyar Enshayan

Agricultural Engineer, Environmental Studies professor for the University of Northern Iowa, Program Manager for UNI's Center for Energy and Environmental Education, Coordinator for UNI Energywise, Coordinator for community programs Buy Fresh, Buy Local and Yards for Kids, City Council Member for the City of Cedar Falls, IA

Dr. Rhonda Janke

KSU Associate Professor of Horticulture in Sustainable Cropping Systems

Ward Upham

K-State Research and Extension Horticulturalist, Head of KSU Master Gardener program

Bruce Chladny

K-State Research and Extension Horticulture Agent for Douglas County

Carrboro, NC

Chris Gerry

Landscape and Grounds Supervisor and IPM Coordinator for the City of Carrboro

Allen Spalt

Carrboro City Alderman, Beyond Pesticides board member, former Director of the Agricultural Resource Center in Carrboro

San Francisco

Deanna Simon

IPM Manager for the City of San Francisco

Chris Geiger

IPM Manager for the City of San Francisco

Seattle, WA

Barbara DeCaro

Resource Conservation Coordinator and IPM manager for the City of
Seattle

Waterloo, IA

Scot Destival

Golf Manager for the City of Waterloo

Boulder, CO

Alice Guthrie

IPM Coordinator for the City of Boulder

Santa Barbara, CA

Eric Cardenas

Citizens Pesticide Advisory Committee for the City of Santa Barbara,
Director of the Environmental Defense Center's Environmental Health
Program in Santa Barbara

Steve Takaya

Parks Supervisor for the City of Santa Barbara

Cleveland Heights, OH

Dan Krilner

Park Supervisor for the City of Cleveland Heights

Wichita, KS

Larry Hoetmer

Landscape Architect for the City of Wichita

Neil Vyff

North Maintenance Supervisor for the City of Wichita

Bob Witaker

Tree Supervisor for the City of Wichita

Watson Park - Current Pesticide Applications And Pesticide-free Alternatives

The following is a list of the current Watson Park Chemical Applications and some suggested Pesticide-free alternatives for each.

Crabgrass preventer (herbicide)	Applied to all turf areas once per year.
Product: Dimension or Team	

Pesticide-free Alternatives

Dr. Terry Shistar

- Set blades higher on mower to encourage fescue lawn and to choke out crabgrass.
- Remove excess thatch.
- Solarize new turf plantings to kill seeds before planting.
- Overseed with grass seed and aerate the soil.

Richard Heckler

- Overseed by applying grass seed two or three times per year.

Dr. Kamyar Enshayan

- Fertilize turf.
- Mow high.
- Seed with grass seed.

Dr. Rhonda Janke

- Crabgrass infestation is a symptom of unhealthy turf grass
- Promote turf health by switching to a better grass and mow high and frequently
- Accept mixed lawn

Bruce Chladny

- Weed infestation is a result of unhealthy turf. Weeds are not the cause of unhealthy turf.
- If desired turf grass is thick and healthy enough, then weed infestation will not be a problem.

Carrboro, NC

- Carrboro converted the fields to Bermuda grass and mow them with reels at $\frac{3}{4}$ ".

San Francisco

- Accept mixed lawn.
- Mow at the optimum height for your turfgrass.
- Fertilize while turf grass is actively growing.
- Select the best turf species for your area.
- Overseed to keep the turfgrass thick.
- Keep turf properly irrigated.

Seattle, WA

- Maintain turf health by
 - Fertilizing
 - Punching holes in turf and aerate
 - Top dressing turf to keep it level
 - Filling holes
 - Overseeding

Waterloo, IA

- Mow high
- Aerate the soil

Boulder, CO

- Use corn gluten

Cleveland Heights, OH

- Accept mixed lawn.

Wichita, KS

- Use warm season and native grasses
- Do controlled burns

Round-up (herbicide)	Spot sprayed around trees, poles, and fences
Product: Roundup Pro	to control vegetation growth in areas that
	cannot be mowed.

Pesticide-free Alternatives

Dr. Terry Shistar

- Pull weeds.
- Use hot water, radiant heat, or flame.
- Put concrete aprons under/around poles and fences to prevent growth of vegetation.
- Put down black weed cloth or black plastic.
- Use more mulch and add compost.

Richard Heckler

- Try Vinegar Solution which can be purchased from Bradfield in Wamego, Kansas.

Dr. Kamyar Enshayan

- Trim these areas without using pesticides

Dr. Rhonda Janke

- Use fabric weed barrier with gravel on top
- Flame weed
- Use spin trimmer

Bruce Chladny

- Use a string trimmer
- Mulch the bases of trees and poles

Carrboro, NC

- Use hot water machine (Waipuna).

San Francisco

- Weed flame torches
- Clove oil products like MantranII and EcoExempt HC

Seattle, WA

- Put concrete sill under fences and benches

Waterloo, IA

- Use weed whips
- Create mulched beds

Boulder, CO

- Use propane torch burner around fences
- Mulch around trees
- Carefully string trim around trees
- Use horticultural vinegar like Burnout. Works best on annual weeds but will kill back foliage on perennials as well.

Santa Barbara, CA

- Weed whips
- Aquicide steam sprayer
- Flame weeder
- Hand weed

Cleveland Heights, OH

- Manually Trim

Wichita, KS

- Use string trimmers

Broadleaf weed control (herbicide) Product: Powerzone or Trimec DSC	Spot sprayed as needed to control weed invasion in turf areas.
---	--

Pesticide-free Alternatives:

Dr. Terry Shistar

- Pull weeds
- Increase tolerance for weeds.
- Put signs up encouraging people to harvest edible “weeds”.
- Overseed with grass seed and aerate the soil.

Richard Heckler

- Overseed by applying grass seed two or three times per year.

Dr. Kamyar Enshayan

- Fertilize turf
- Mow high
- Seed with grass seed

Dr. Rhonda Janke

- Broadleaf weed infestation is a symptom of unhealthy grass
- Promote turf health by switching to a better grass and mow high and frequently
- Accept mixed lawn

Bruce Chladny

- Weed infestation is a result of unhealthy turf. Weeds are not the cause of unhealthy turf.
- If desired turf grass is thick and healthy enough, then weed infestation will not be a problem.
- Accept a few weeds here and there.

Carrboro, NC

- Use Hot Water Machine and cultural turf applications.

San Francisco

- Accept mixed lawn

Seattle, WA

- Maintain turf health by
 - Fertilizing
 - Punching holes in turf and aerate
 - Top dressing turf to keep it level
 - Filling holes
 - Overseeding

Waterloo, IA

- Mow high
- Aerate soil

Santa Barbara, CA

- Keep grass mowed and fertilized

Boulder, CO

- Fertilize and aerate turf
- Use soil building products like microrhyza

Cleveland Heights, OH

- Accept mixed lawn

Wichita, KS

- Accept mixed lawn
- Use warm season and native grasses
- Do controlled burns

Pre-emergent weed control Product: Surflan or Snapshot	Applied in flower and shrub beds to reduce weed invasion.
--	---

Pesticide-free Alternatives

Dr. Terry Shistar

- Increase mulch
- Pull weeds
- Increase tolerance for weeds
- Put up signs encouraging people to harvest edible “weeds”.

Richard Heckler

- Apply corn gluten which can be purchased from Bradfield in Wamego, Kansas.

Dr. Kamyar Enshayan

- Weed these areas without using pesticides

Dr. Rhonda Janke

- Hand weed
- Use Grass Clippings or other Mulch
- Use Corn Gluten which stops seeds from germinating

Bruce Chladny

- Use 2 to 3 inches of mulch in flowerbeds.

Carrboro, NC

- Use Hot water machine and cultural methods such as rotation of plants, companion planting, removing diseased plants and replacing them with others that are not subject to the same pests or diseases.
- Heavy mulching
- Rotating planting soil.

San Francisco

- Overplant
- Hand-weed
- Hoe
- Use weed fabric covered in mulch
- For new bed, use weed flamer to kill germinating weed seeds, repeat a few times until all seeds are sprouted out, then landscape the bed.

Seattle, WA

- Mulch

Waterloo, IA

- Hand-weed

Boulder, CO

- Corn gluten

Santa Barbara, CA

- Hand-weed and mulch

Cleveland Heights, OH

- Horticultural vinegar called BurnOut

Wichita, KS

- Hand-weed

Fungicide Application

Product: Cleary's 3336F

Applied to Austrian Pines and some shrubs to control things such as tip blight or mildew.

Pesticide-free Alternatives

Dr. Terry Shistar

- Pine tip blight: Plant less susceptible pines. Prune back affected twigs during dry autumn weather and burn prunings. Prevent stress to trees.
- Mildew: Prune for good air circulation. Avoid heavy fertilization and pruning during the growing season. Choose resistant varieties. Wash spores off plants. Mulch susceptible plants in fall and after pruning.

Dr. Rhonda Janke

- Plant trees and shrubs that are naturally resistant to disease. If a plant dies of disease, it probably wasn't the right plant for the situation.

Ward Upham

- Tip blight is hard to control with pesticides.
- Keep trees healthy by keeping them watered and mulched.

Dr. Kamyar Enshayan

- Plant trees and shrubs that don't require pesticides.

Carrboro, NC

- Not considered a big problem in Carrboro. Choose not to plant Austrian Pines.
- Instead, plant trees that are less susceptible to disease.

San Francisco

- Compost Tea
- EM1 (effective microorganisms)

Boulder, CO

- Search for natural product

Santa Barbara, CA

- Neem oil and/or citrus oil products may be helpful

Cleveland Heights, OH

- Trim trees and shrubs

Wichita, KS

- Not seen as a problem that needs treatment

Borer Control (pesticide)

Product: Astro

Applied only as needed to ash, redbuds, crabapples to control borer damage.

Pesticide-free Alternatives

Dr. Terry Shistar

- Keep trees healthy.
- Avoid injury from machinery.
- Apply white latex paint to lower part of trunk (dogwood borer).

Dr. Rhonda Janke

- Plant trees that are naturally resistant to borers. If a plant dies of borer damage, it probably wasn't the right plant for the situation.

Dr. Kamyar Enshayan

- Plant trees that don't require pesticides.

Ward Upham

- Healthy redbuds and crabapples should not be susceptible to borers.
- Keep trees healthy by keeping them watered and mulched.

Bruce Chladny

- Using pesticides for borers may not be anymore effective than alternative methods.

Carrboro, NC

- Not considered a big problem in Carrboro.
- Choose plants that are resistant to pest infestation.

San Francisco

- Healthy, fertilized, irrigated, actively growing trees are best defense.

Boulder, CO

- Soap spray
- Pheromone traps
- Neem

Wichita, KS

- Keep trees healthy and watered, and borers will not be a problem

Spider mite Control (pesticide)

Applied only as needed to control mite damage

Product: Avid 15EC

Pesticide-free Alternatives

Dr. Terry Shistar

- Spider mites are a secondary pest. Don't spray insecticides. Hose mites off or spray with soapy water.

Dr. Kamyar Enshayan

- Use plants that don't require pesticides.

Dr. Rhonda Janke

- Spider mites are a symptom of pesticide usage. If pesticide use is stopped, then predatory mites which feed upon spider mites have an opportunity return.

Ward Upham

- Release spider mite predators.

Bruce Chladny

- Spider mites will probably not cause long term damage
- Use horticultural soap and water and spray the mites.

Carrboro, NC

- Choose plants that are resistant to Spider mites. Use Ag soap for trees and apply it with a pressure washer.

San Francisco

- Make sure the area is well-irrigated
- Release predatory mites (*Phytoseilis persimilis*)
- Apply GC-Mite which contains cottonseed oil, clove oil, and garlic oil

Boulder, CO

- Water spray
- Insecticidal soap
- Oil product

Santa Barbara, CA

- Neem oil

Wichita, KS

- Not seen as a problem because healthy deciduous trees are strong enough to withstand spider mites and any defoliation that might occur.
- Could use a soap product

Fertilizer

Product: Varies with application site

Applied to turf areas, flower beds and shrubs to promote vigorous growth.

Natural Alternatives:

Dr. Terry Shistar

- Use organic fertilizers and mulches.

Richard Heckler

- Use natural/organic matter to rebuild soil health instead of just artificially stimulating growth

Dr. Kamyar Enshayan

- Pelletized manure or other natural fertilizer
- Use compost from city's composting program

Dr. Rhonda Janke

- Use compost from city's composting program
- Use 1 quart of compost with each transplant
- If a plant looks peaked mid-season, use alfalfa hay, rabbit food pellets, or fish emulsion

Bruce Chladny

- Alfalfa pellets
- Corn Gluten

San Francisco

- Compost
- Compost tea
- Mulch areas repeatedly

Boulder, CO

- Compost
- Compost tea has microorganisms that would help with turf disease

Santa Barbara, CA

- Feather meal
- Bone meal
- Kelp
- Potash

Least-Toxic Pest Management Products

- Waipuna Organic Hot Foam Weedcontrol System
<http://www.waipuna.com>

Additional References

- Biocontrol Network Product Line
<http://www.biconet.com/products.html>
- "Bonide Remedy Fungicide" BioControl Network
<http://www.biconet.com/disease/remedy.html>
- "Bradfield Natural Fertilizers" Bradfield Industries
<http://www.bradfieldind.com/products/index.html>



<u>Feature</u>	<u>Benefits</u>
<u>Environmental Friendly.</u>	• The <i>Waipuna System</i> does not use an herbicide. • Amongst the environmentally safest surfactants.
<u>Organic Foam</u>	• Does not require registration as an herbicide. • A 100% natural non-toxic extract from corn and coconut sugar that is fully biodegradable.
<u>Simple Application</u>	• No operator certification or special licences. • No need for sign posting, triple rinsing and paperwork associated with chemical pesticides.
<u>Obvious Coverage</u>	• The foam shows the area covered immediately.
<u>Instant Results</u>	• Heat breaks down the cellular structure of the plant, immediately starting the decomposition process. • The results can be clearly observed within hours of treatment. • The treated area can be played on, revegetated or used within minutes of treatment.
<u>Increased Productivity</u>	• Not weather dependent and can be used in windy conditions and light rain.
<u>Healthy and Safe</u>	• All necessary safety features are built into the machine. • No special safety equipment or clothing required.
<u>Cost Competitive</u>	• Compares favourably on cost with toxic herbicides. • Treatment period is similar to normal herbicides.
<u>Does Not Require Potable Water</u>	• Uses any relatively clean source of non-salt water—from wells, parks, clean canals, lakes and recycled.
<u>Simple Construction</u>	• Mechanically familiar, readily available and proven components.
<u>Proven Technology</u>	• Already successfully operating in Europe, USA, Australia and New Zealand.
<u>Proprietary System</u>	• Patents filed in the USA and elsewhere.

Specifications

Machine size:

1250^{mm} x 1000^{mm} x 825^{mm}
(l) (w) (h)

Machine weight:

485kgs

Fuel use per hour (diesel):

1 x burner = 6.6 lit

Foam solution use per hour:

1 x burner = 350-450 lit

Foam Product:

Natural sugar extract from corn and coconut

Width of treatment:

1 x burner = 60mm-250mm

Speed of treatment:

3-5km per hour

Average control period of weeds: 90-100 days before re-treatment required



Double Burner Machine.



Self Diagnostic Electronic Control System.



Heating Systems – top view.

Contact Details

New Zealand

Waipuna Systems Ltd
P.O. Box 62-158, Mt Wellington, Auckland
Telephone: 64-9-271 3565 E-mail: wsl@waipuna.com
Facsimile: 64-9-271 3566

Australia

SYDNEY
P.O. Box 80, Leichhardt, NSW 2040
Telephone: (0403) 823052 E-mail: wai@waipuna.com
Facsimile: 61-2-9610 9575
MELBOURNE
P.O. Box 438, Ringwood 3134, Melbourne
Telephone: 61-3-9874 5100 E-mail: janderson@waipuna.com
Facsimile: 61-3-9872 5588

Europe

Aisteder Grenze 64, Ibbenhuren 49477, **GERMANY**
Telephone: 49-5451-896 021 E-mail: gpoeter@waipuna.com

U.S.A.

1050 W. Ulysses Lane, Bolingbrook, Illinois 60440-3121
Telephone: (630) 759 8100 E-mail: wusa@waipuna.com
Facsimile: (630) 759 8155

Agent

WAITUNATM ORGANIC Hot Foam Weed Control

"FOR A PESTICIDE - FREE ENVIRONMENT"



100% Safe – for people, animals and the environment



Worldwide Users



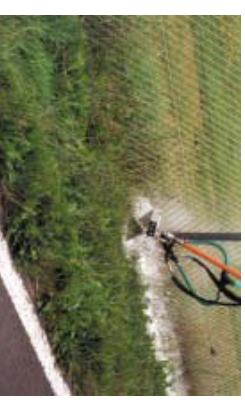
Santa Monica, USA.



Bondi Beach Australia during treatment.



Oxford UK after treatment.



Dual automated treatment head.
Airport Bremen, Germany.

Municipal Uses

- Schools
- Parks
- Gardens
- Golf Courses
- Roads & Motorways
- Airports
- Tennis Courts
- Industrial Areas
- Chewing Gum Removal
- Graffiti Removal & Protection
- Private Homes



Around tree during treatment.



After treatment.

Agriculture Uses

- Tree Crops
- Vineyards
- Vegetable Crops
- Flower Production
- Nurseries



Organic Aloe during treatment.



Organic Aloe after treatment.

The System

Waipuna supplies an environmentally friendly method of using heat to kill weeds. Heat is applied using a biodegradable Organic Hot Foam from a specially developed machine. The foam dissipates harmlessly after a few minutes.

AIRPORT BREMEN

"After 4 years of research of non-chemical weed control systems, Airport Bremen have selected Waipuna for our maintenance programmes."
 Marco Pleging
 Manager - Airport Development Environmental Control and Maintenance.



Presentation Airport Bremen 2001.

Least-Toxic Pest Management Methods

- “Better Ways to Control Weeds and Pests” City of San Francisco, CA
<http://www.sfgov.org/sfenvironment/aboutus/innovative/ipm>
- “Integrated Pest Management” City of San Francisco, CA
<http://www.sfgov.org/sfenvironment/facts/ipm.htm>
- “Pest Problem Solver Guide” BioControl Network
<http://www.biconet.com/pestList.html>
- “Pest Solution Table” BioControl Network
<http://www.biconet.com/solutionsmp.html>
- “Dynaweed Corn Gluten Weed Control” American Natural Products Co.
<http://www.americanatural.com/corglutweedc.html>
- Hickey, Dan. “Weed Control: Flamers!” National Gardening Association. 2000.
<http://doityourself.com/gardentools/weedcontrolflamers.htm>
- “Ecological Management of Invasive Weeds” Beyond Pesticides.
<http://www.beyondpesticides.org/weeds/index.htm>
- “Lawn Care: Pesticide Hazards and Alternatives” Beyond Pesticides.
<http://www.beyondpesticides.org/lawn/index.htm>
- "Least-toxic Lawn Care" Beyond Pesticides
<http://www.beyondpesticides.org/alternatives/factsheets/Least-toxic%20Lawn%20Care.pdf>
- "Least Least-toxic Control of Tree Tree-boring Caterpillars" Beyond Pesticides
<http://www.beyondpesticides.org/alternatives/factsheets/TREE%20BORING%20CATERPILLAR%20CONTROL.pdf>
- "Least Least-toxic Control of Bagworms" Beyond Pesticides
<http://www.beyondpesticides.org/alternatives/factsheets/BAGWORM%20CONTROL.pdf>
- Stouffer, Judy. B.S., M.S., SFO. "Least Toxic Weed Control for Broadleaf and Woody Landscape Weeds" Ecology Commission, St. Joseph Fraternity.
http://my.execpc.com/~mjstouff/articles/no_weeds.html
- Bio-Integral Resource Center (BIRC)
<http://www.birc.org/index.html>
- "Lawn Care/Weed Control" BioControl Network.
<http://www.biconet.com/lawn.html>
- “Soil Care” BioControl Network.
<http://www.biconet.com/soil.html>

- “Sustainable Turf Care” National Sustainable Agriculture Information Service.
<http://www.attra.org/attra-pub/turfcare.html>
- “Challenges of Sustainable Turf Management” Colorado State University Cooperative Extension.
<http://www.ext.colostate.edu/coop/02anrep04.pdf>

It Is Cost-effective

- Advice from Experts
- “Schools Save Money With Integrated Pest Management” Beyond Pesticides.
http://www.beyondpesticides.org/schools/publications/IPM_cost%20FS.pdf
- “Pesticides in Parks” Pesticide Watch.
<http://www.pesticidewatch.com/Html/Parks/Parks.htm>
- “Yards for Kids Program” Iowa State University Extension.
http://www.extension.iastate.edu/urbanag/featured/05-03-2004_yardsforkids.htm

Cost Effectiveness

Allen Spalt, Carrboro City Alderman and Beyond Pesticides board member

"I think it is safe to say that start-up costs are greater and long term costs are lower. Benefits of eliminating pesticide use are great but sometimes hard to quantify. Liability is one area where the town has substantially reduced its exposure. Staff does not have to be certified, trained or supervised in the use of pesticides, a distinct advantage. Ten years ago we needed substantial space for pesticide storage. When the program started, pesticides fit in a small locker. It is now down to practically nothing.

Our Town Commons is the host to a regional farmers market; many of the producers are organic or pesticide free. What would be the cost if they brought their wares to a place that had been maintained with herbicides? We also have not tried to quantify the value of the "Kids playing with their pets while eating picnics get only grass stains on their clothes" effect, though parents (i.e., voters) in the parks have been very supportive.

To accomplish pesticide free maintenance on the scale of a neighborhood park, should not require major equipment expense. Extra labor might be provided by neighbors who could volunteer to help with specific tasks or areas. North Carolina pioneered the 'Adopt a Highway' program, now widely used around the country. Adopt a Flower Bed would work just as well."

Isabelle Reining, Beyond Pesticides staffer

"The most useful resource I can give you on cost-effectiveness is an article from our magazine, "Pesticides and You," about the lower cost of Integrated Pest Management plans in schools. Here is a link to the article.

[http://www.beyondpesticides.org/schools/publications/IPM_cost%20 FS.pdf](http://www.beyondpesticides.org/schools/publications/IPM_cost%20FS.pdf)

While it is a little different from parks, there are many similarities and the same principles apply. Basically, being pesticide-free is cheaper in the long run, because organic pest management policies focus on the prevention of pest problems through developing a healthy and natural environment, which means that problems never arise in the first place, rather than dealing with them after the fact.

Conventional chemicals can also be costly, so money that would be spent on pesticides can be redirected to increased manual labor that may be required in a pesticide-free park. In addition, when you factor in costs to human health and the quality of our environment, surroundings and the world we

will pass on to our children, it is clearly much "cheaper" not to use pesticides."

Pesticide Watch:

"Switching away from pesticides may mean an initial investment in new equipment, staff, and training programs. Any new program requires an initial investment to get it off the ground, and using alternative methods for pest control is no different. Fortunately, switching to IPM may offer long-term cost reductions for park staff due to decreased costs in pesticide purchases and health care costs associated with the use of pesticides."

Also see article: <http://www.pesticidewatch.com/Html/Parks/Parks.htm>

Iowa State University Extension:

Practical and cost-effective alternatives to lawn pesticides do exist, Enshayan points out. Among them are mowing high, not bagging lawn clippings, using natural fertilizers and aerating the soil as needed. "A few dandelions won't harm you," he said, "but weed-killers and insecticides can."

Yards for Kids has had many successes. Enshayan cites two in particular: the City of Cedar Falls and the University of Northern Iowa. Cedar Falls has reduced the percentage of its parks sprayed with pesticides from 100 percent in 1998 to 5 percent today, at a savings of \$33,000 and 380 gallons of weed killer. UNI's Physical Plant now sprays about 20 percent of its grounds, compared with 100 percent four years ago.

Richard Heckler:

"I once had an instructor say one of the best weed controls is dense grass growth and a lawn mower. Here again why not overseed more often instead of using toxic cancer-causing chemicals and begin using corn gluten and natural/organic fertilizers? What's more important: money or our health? Park employees are being exposed and are they ALWAYS equipped properly to minimize their chances of being the next cancer victim? What about pregnant women and children?"

Windy days cause drift like tobacco smoke. I've observed park department staff riding around spraying pesticides (smell) from their motorized vehicle on windy days wearing normal clothing and no respirator. We have also at times noticed pre-emergent covering the walkways at South Park. Where does this go? How do they know?"

Schools Save Money With Integrated Pest Management

A Beyond Pesticides Fact Sheet

Integrated Pest Management (IPM) is a program of prevention, monitoring and control which offers the opportunity to eliminate or drastically reduce pesticides in schools, and to minimize the toxicity of and exposure to any products which are used. Habitat modification, the cornerstone to any IPM program, is key to eliminating and preventing pest outbreaks.

Because IPM focuses on prevention of the pest problem, and proper monitoring to determine the extent of the pest problem, school IPM programs can decrease the amount of money a school will spend on pest control in the long-term. Chemical-intensive methods, a symptomatic approach to managing pest problems, may only prove to be less expensive in the short-term. The long-term health of our children is not worth some short-term economic savings that just do not add up over time.

According to the U.S. Environmental Protection Agency, "Schools across the nation that have adopted such programs report successful, cost-effective conversion to IPM. IPM can reduce the use of chemicals and provide economical and effective pest suppression ... [P]reliminary indications from IPM programs ... suggest that long term costs of IPM may be less than a conventional pest control program."¹

In a report entitled, *Pesticide Use At New York Schools: Reducing the Risk*, the Attorney General of New York State, Eliot Spitzer, says the following:

We often hear that implementation of integrated pest management...can be expensive. Because it is easy to envision costs associated with establishing new policies and practices, re-training personnel and educating building occupants, this can be a powerful argument to school administrators trying to squeeze the most out of admittedly tight budgets. While the argument might have some initial appeal, experience tells a different story. In case after case, schools and other institutions have reduced their pest control costs early in the transition, often in the first year.²

The Washington State Department of Ecology has done a careful analysis of the costs of pest control that considers some of the "hidden" costs, such as regulatory compliance, waste disposal, insurance, and liability for health effects, environ-

mental damage and compliance violations.³

Depending on the school's current maintenance, sanitation and pest management practices, some economic investment is usually required at the outset of an IPM program. Short-term costs may include IPM training, purchasing new equipment, hiring an IPM coordinator, or making preliminary repairs to buildings. Whether the pest management services are contracted out, performed internally by school staff, or both may also affect the cost of implementing a school IPM program.

Activities that can be absorbed into a school's existing budget include training of maintenance, cleaning and food service staff and educating students and teachers to modify their behavior. In addition, some school maintenance and structural repair funds may already be budgeted for activities such as replacing water-damaged materials, landscaping, waste management, and physical barriers.

Monitoring is critical to reducing pest management costs because it helps pest managers determine if, when and where pest populations warrant action and therefore requires more precise and strategic pest management approaches. For example, instead of spraying the entire school building for a pest, monitoring may determine that the pest problem is concentrated in the food service area, thus decreasing the amount of resources needed to control the pest population. Without monitoring, conventional pest management spray programs tend to spend a lot of time spraying ma-

terials into all sites. Monitoring can also help determine if damage thought to be caused solely by pests is actually caused by other factors; like poor drainage or leaky pipes.

The fact that pest control is not often a large part of the school's budget should not hinder the school's transition to an IPM program. It is not necessary for the entire school to be monitored, just those areas with the potential for a pest problem, leaving the other areas to be monitored and managed on a complaint basis. In addition, certain facets of an IPM program could be implemented over time in order to keep costs down.

Pests can be managed effectively and economically without toxic chemicals through the implementation of a clearly defined IPM program. *For more information about IPM and school pest management, contact Beyond Pesticides.*

Integrated Pest Management

- a) eliminates or mitigates economic and health damage caused by pests;
- b) minimizes the use of pesticides and the risk to human health and the environment associated with pesticide applications; and,
- c) uses integrated methods, site or pest inspections, pest population monitoring, an evaluation of the need for pest control, and one or more pest control methods, including sanitation, structural repairs, mechanical and living biological controls, other non-chemical methods, and, if nontoxic options are unreasonable and have been exhausted, least toxic pesticides.

Examples of IPM as an Economical Approach to Pest Management

Across the country, schools and communities that are currently using IPM strategies indicate that a well-managed IPM program is saving them money. Following are just a few examples.

- A school board member in Illinois has stated that “most [of the] schools utilizing IPM strategies [in his school district state] that IPM does not cost more, it just costs differently. Thus, a school having a problem with mice might install door sweeps to deny access instead of continuously allocating funds for a pest control professional. Additionally, an IPM program need not be burdensome with regard to personnel. Typically, it will require some light training, and it then integrates seamlessly into existing roles and responsibilities.”⁴
- The Boulder Valley School District in Colorado has saved thousands of dollars for pest management after hiring a company that has successfully controlled the schools’ pest problems with the implementation of an IPM program that does not use any toxic pesticides.⁵
- Before Monroe County Schools in Bloomington, IN implemented an IPM program in 1995, it was spending about \$34,000 on pest management. With the hiring of an IPM Coordinator in 1997, and spending less than \$1,000 per year on products, the school district is saving around \$13,600 a year in pest management.⁶
- A survey of 21 Pennsylvania school districts found that 81 percent were able to control pest problems using IPM with little or no change in costs.⁷
- At Vista de las Cruces School in Santa Barbara, California, pest management was contracted out with a pest control company for \$1,740 per year for routine pesticide applications. After the school switched to an IPM program, their costs were reduced to a total of \$270 over two years.⁸
- A school in Susquehanna, New York implemented an IPM program after students were poisoned from a pesticide misapplication. The school engineer states that they have cut costs by more than \$1,000 per year “and the turf looks better than ever.”⁹
- Mt. Lebanon School District in Pittsburgh, Pennsylvania’s IPM program is “manageable and no more expensive than using pesticides.” The school district has implemented their IPM program since 2000 “at a relatively low cost with improved playing surfaces.”¹⁰
- A well-known example of school IPM is the Montgomery County, Maryland public schools. The IPM program in Montgomery County covers 200 sites used by over 110,000 students and 12,000 employees. Although German cockroaches are the biggest problem the county faces, they also manage rodents, termites, and stored food pests. The county successfully reduced pesticide use from 5,000 applications in 1985 to none four years later, saving the school district \$1,800 per school and \$30,000 at the food service warehouse.¹¹
- In another county in Maryland, the Anne Arundel School District reduced its pest control budget from \$46,000 to \$14,000 after its first year of IPM implementation.¹²
- An IPM program at the University of Rochester resulted in a 50 percent reduction in material costs and a substantial reduction in personnel costs.¹³
- The City of Santa Monica, California’s IPM program for the city’s public buildings and grounds reduced the cost of pest control services by 30 percent.¹⁴
- Albert Greene, Ph.D., National IPM Coordinator for the U.S. General Services Administration, has implemented IPM in 30 million square feet, approximately 7,000 federal buildings, in the U.S. capital area without spraying toxic insecticides. Dr. Greene states that IPM, “can be pragmatic, economical and effective on a massive scale.”¹⁵

- ¹ U.S. EPA. 1993. *Pest Control in the School Environment: Adopting Integrated Pest Management*. 735-F-93-012. Office of Pesticide Programs. Washington, DC.
- ² Spitzer, E. 2000. *Pesticides Use at New York Schools: Reducing the Risk*. Environmental Protection Bureau, Attorney General of New York State, p.20.
- ³ Washington State Department of Ecology. 1999. *Calculating the True Costs of Pest Control*. Publication No. 99-433. Olympia, WA.
- ⁴ Kusel, R. 2001. Member of the Board of Education, East Prairie District #73, Skokie, IL. Letter to U.S. House of Representatives Agriculture Committee.
- ⁵ Gilpin, T. 2002. Personal Communication. Native Solutions, Inc., Boulder, CO.
- ⁶ Carter, J. 2001. Personal Communication. Director of Planning, Monroe County Community School Corporation, Bloomington, IN.
- ⁷ Wendelgass, B. 1997. *Evaluation of Integrated Pest Management Use in Pennsylvania School Districts*. Clean Water Action and Clean Water Fund. Philadelphia, PA.
- ⁸ Boise, P. et al. 1999. *Reducing Pesticides in Schools: How Two Elementary Schools Control Common Pests Using Integrated Pest Management Strategies*. Community Environmental Council. Santa Barbara, CA.
- ⁹ Safer Pest Control Project. 1998. *Cost of IPM in Schools*. Chicago, IL. Citing Angelo Ranieri. 1998. Building Engineer, Susquehanna, NY. Personal Communication.
- ¹⁰ Smartschan, G.F. 2000. Superintendent of Schools, Mt. Lebanon School District, Pittsburgh, PA. Letter to U.S. Senator James Jeffords.
- ¹¹ Schubert, S. et al. 1996. *Voices for Pesticide Reform: The Case for Safe Practices and Sound Policy*. Beyond Pesticides, National Coalition Against the Misuse of Pesticides and Northwest Coalition for Alternatives to Pesticides. Washington, DC.
- ¹² Washington State Department of Ecology. 1999. *Calculating the True Costs of Pest Control*. Publication No. 99-433. Olympia, WA.
- ¹³ Spitzer, E. 2000. Citing Castronovo, P. 1999. Personal Communication. University of Rochester.
- ¹⁴ Washington State Department of Ecology. 1999. Citing U.S. EPA. 1998. *The City of Santa Monica’s Environmental Purchasing – A Case Study*. EPA 742-R-98-001.
- ¹⁵ Greene, A. 1993. “Integrated Pest Management for Buildings.” *Pesticides and You* 13(2-3). Washington, DC.

Pesticides in Parks

Most people think of parks as safe havens for their children and pets. However, the truth is that we are unnecessarily and unknowingly being exposed to pesticides in our parks that threaten human health and the environment.

People are largely unaware of the level of pesticide use in our parks because so few park departments notify park users of their use. Although most parks use pesticides, it is very rare to see a sign indicating what pesticides are being used and when. As we have learned, what we don't know can harm us.

Parks - pesticide use

The common approach to pest management in most parks is to spray pesticides as soon as a pest problem occurs or to spray preventively whether a problem exists or not. This approach not only threatens public health and the environment, but fails to provide long-term solutions to the problems it is trying to solve. The use of pesticides often kills non-target species that may be beneficial to controlling the pest problem. Moreover, many pests have developed tolerances to pesticides, requiring more and often more toxic applications of pesticides to control the problem.

If pesticides are so hazardous, why do they continue to be used in parks? There are several barriers that prevent many parks from using safer alternatives. The biggest one is often lack of education about the alternatives. Many park managers and staff have been trained in pest management practices that stress the use of pesticides rather than other means of control. They are often unaware of alternative methods. This lack of education about alternatives often makes many park managers and staff hesitant to try a new approach.

The second major barrier to change is money. Switching away from pesticides may mean an initial investment in new equipment, staff, and training programs. Any new program requires an initial investment to get it off the ground, and using alternative methods for pest control is no different. Fortunately, switching to IPM may offer long-term cost reductions for park staff due to decreased costs in pesticide purchases and health care costs associated with the use of pesticides.



Extension Urban Agriculture

IOWA STATE UNIVERSITY
University Extension

Urban Agriculture: In Your Home and Garden | In Your Community | In Your School

[Home](#)

Programs

Quick Answers

Publications

Newsletters

Links

Upcoming Programs and Activities

About Us

Iowa State University Extension

◆ Archived Features

"Yards for Kids" Program

A University of Northern Iowa faculty member was honored in 2004 by the Office of the Governor of Iowa for going "above and beyond" ordinary actions to raise environmental awareness and promote environmental projects among children and teenagers.

Kamyar Enshayan, program manager at UNI's Center for Energy and Environmental Education, initiated and runs "Yards for Kids," a community health education program that aims to significantly reduce the use of lawn pesticides. "Children are the reason for the program because they are exposed to lawn chemicals more than grownups," he said. "Our goal is to reduce children's exposure to pesticides in the urban environment."



Practical and cost-effective alternatives to lawn pesticides do exist, Enshayan points out. Among them are mowing high, not bagging lawn clippings, using natural fertilizers and aerating the soil as needed. "A few dandelions won't harm you," he said, "but weed-killers and insecticides can."

Yards for Kids has had many successes. Enshayan cites two in particular: the City of Cedar Falls and the University of Northern Iowa. Cedar Falls has reduced the percentage of its parks sprayed with pesticides from 100 percent in 1998 to 5 percent today, at a savings of \$33,000 and 380 gallons of weed killer. UNI's Physical Plant now sprays about 20 percent of its grounds, compared with 100 percent four years ago.

Enshayan and his students focus mostly on parks and schools in the Cedar Valley. About 20 governmental, educational and private groups collaborate with Yards for Kids, and almost 30 businesses and churches have pledged either to not spray or significantly reduce spraying weed killers.

Through publications, presentations to groups and a Web site, www.uni.edu/yardsforkids, the program provides information on commonly used pesticides and their effects on children and water quality, how to have a great-looking lawn without pesticides, and information on educational resources and ecological lawn and garden products and services.

Programs | Quick Answers | Publications | Newsletters | Links |
Upcoming Programs and Activities | About Us | Iowa State University Extension |
URBAN AGRICULTURE in Your Home and Garden | In Your Community |
In Your School

Comments on LPRD's Chemical Usage in Parks Report

- Comments
- LPRD Report

Comments on Chemical Usage in Parks Report

1. Comment

This report does not at all address LPRD's notification and posting policy when pesticides are used.

2. p.2 "...the parks that receive the most application are those that tend to be the higher profile, high-use areas. These areas usually have high concentrations of landscape plantings, manicured turf and are high visibility facilities (athletic fields, City Hall, trails, traffic islands, downtown planters, park shelters, gardens)."

Comments

"High-use areas" are the last place that pesticides should be used. LPRD wants to convey the appearance of health while at the same time applying toxic poisons to these high-use areas without displaying the big warning signs necessary to protect the public from harm. LPRD does not seem to want the public to know when or where pesticides are applied or what the health risks associated with the pesticides are.

3. p.2 "There is a public expectation that high profile, high use parks properties have a minimum of weeds, pests, and other detractors. In the past, allowing these detractors to go untreated in these areas has not been acceptable to most of the citizens of Lawrence (public complaints). To further emphasize this point, results of both parks and recreation comprehensive plan surveys (1993 and update in 2000) have expressed high expectations and satisfaction with public landscaping/flower gardens and maintenance of parks from the public."

Comments

We cannot assume that most citizens are comfortable with pesticides in our parks just because some citizens have complained to LPRD about dandelions. We also cannot assume that most citizens are comfortable with pesticides just because some people have said that they are satisfied with park appearances. Citizens are not being informed of the dangers of pesticides, nor are citizens being properly informed when and where pesticides are applied.

4. p.2 "The City of Seattle, Washington has done some work with chemical reduction that is very similar to our practices."

Comments

Lawrence's pesticide policies are not like those of Seattle. Seattle has an Integrated Pest Management policy, an IPM coordinator, and a strong Pesticide-free Parks program which citizens are able to support through a volunteer program. LPRD has none of this.

5. p.3 "We have such a wide variety of noxious weeds, plant diseases and insect problems that can appear in any park area without warning. If left unchecked, these diseases and insects can devastate the appearance of a park or even spread to adjacent property owners. The adjacent property owner is usually the one that will file a complaint if we are not responding to a problem. Another unintended consequence of leaving a disease, weed, or insect problem unchecked in a public park is the financial impact associated with the eventual degradation of a landscaped area and/or public asset, such as a stand of trees or large plantings."

Comments

It seems that LPRD believes that there are no alternatives to pesticides. Choosing not to use pesticides doesn't mean that problems will just have to be ignored. Use alternatives.

6. p.3 "We have found, though, that the use of chemicals is in most cases the most efficient and cost effective way to deal with a problem. If we resort to more labor-intensive methods of control, we would need to evaluate the need for the problem area. Example: The only way that we can maintain the hundreds of landscaped areas & flowerbeds in the city is to use pre-emergent and post-emergent herbicides to control weeds in the beds. We do not have the operating budget it would take to manually pull weeds at all of these locations. Therefore, we would be forced to eliminate most of our landscape areas and flowerbeds citywide until we have adjusted the workload to a manageable level that could be accomplished with existing staff or add staff to perform the labor."

Comments

Developing a volunteer program like Seattle has done would be an excellent idea for saving LPRD time and money. Involving the community is a much more productive way to deal with weeds than spraying carcinogens on them.

7. p.3 "In order to continue the concept of chemical free parks, we would recommend looking at parks that receive little or no spraying now and consider placing them on our list of chemical free parks (we would still need to post and spray for noxious weeds).

Some parks that may be considered:

Riverfront Park – except for levee maintenance required by the Corps of Engineers

Clinton Park

Deerfield Park

Parkhill Park

Martin Park

Walnut Park

Naismith Valley Park

McGrew Nature Area

Pat Dawson Billing Nature Area

Kanza Southwind Nature Area

Clinton Parkway - was originally designated as chemical free but had to be removed from the list due to yearly noxious weed problems"

Comments

First of all, the state of Kansas DOES NOT require anyone to apply pesticides to noxious weeds. All that is required is that the noxious weed be removed. Mowing and hoeing are just two acceptable removal techniques.

Second, let's take the Pesticide-free Parks program seriously and add this list of parks to it. It has been almost three years since LPRD started its program with three very small parks. Today, only two parks remain and none have been added.

8. p.3 "We would have a much better chance of gaining public support for managing areas on this list without the use of chemicals than we would taking something that is maintained at a very high level and reducing it down to a lower maintenance level to fit it into budget constraints."

Comments

An endorsement from the Old West Lawrence Association (OWLA) IS public support. Since we met with Parks and Recreation management in October of 2003, East Lawrence Neighborhood Association, Brook Creek Neighborhood Association, Pinckney Neighborhood Association, and Breezedale Neighborhood Association have also agreed to support the Pesticide-Free Parks effort. There is tremendous public support for Pesticide-free Parks.

In addition, Parks and Recreation management assumes that going pesticide-free automatically makes the effort more expensive. This just isn't the case. Money that would be spent on pesticides can be used for pesticide-free park maintenance.

9. p. 4-9 Pictures



"Weeds in landscape beds – Dad Perry Park – spaying area like this is the most effective means of controlling the problem."

Comments

This area is right next to a sidewalk. People and pets will be walking through this area, tracking pesticides into their cars and homes.



"Weeds & vines in fence line of tennis courts – Veterans Park – weed control is necessary to preserve the fence structure"

Comments

If weed control is desired, then control them WITHOUT pesticides.



"Weeds in landscape bed - 19th & Moodie – spraying is a more effective control than pulling these weeds"

Comments

LPRD has not begun to explore the many alternatives to pesticides.



"Flowerbed where herbicide and woodchips were applied at time of planting to control weeds - South Park"

Comments

Many community events are held here in South Park by the gazebo like the Summer Concert Series, Art in the Park, and Earth Day. It is very common for children to play in these areas.



"Thistle treatment (Noxious weed)- Dad Perry Park"

Comments

It is not required that noxious weeds be sprayed with pesticides. LPRD chooses to manage noxious weeds in this way. Also, pesticides do not keep noxious weeds from continually coming up in the same areas.



"Landscape at 15th & Iowa – Areas like this are treated to reduce weed competition until shrubs can establish"

Comments

Use alternatives.



"Bagworms on junipers – needs sprayed or plant will die"

Comments

Junipers do not NEED to be sprayed with pesticides. I have included in the alternatives reference section a different way to treat this issue.



"Princeton Ave island was treated to control dandelions (neighborhood complaint)"

Comments

Just because someone complains about dandelions doesn't mean that pesticides are the answer.



"Mite damage on junipers Watson Park – If left untreated the plant will die"

Comments

Spider mite infestation is a symptom of pesticide use. Stop applying pesticides, and the predatory mites that feed on spider mites will have a chance to return.



"Weeds in sidewalk – Watson Park – Unsightly, and can damage sidewalk"

Comments

I find pesticide residue on sidewalks not only unsightly but dangerous as well. Children, adults, and pets walk through this pesticide residue and track it into their cars and homes. Pesticide residue is often light green in color.



"Tip Blight on Pine – Holcom Park - is controlled by application of fungicide in the spring"

Comments

Use alternatives.



"Fence line at Holcom Park – Needs to be sprayed with Round-up to eliminate weeds in fence"

Comments

This fence does not NEED to be treated with Round-up. LPRD chooses to address their weed issues in this way.



"High use turf areas (CLSC outfield) receive application of herbicide & pesticides to maintain high quality turf"

Comments

People, including children, run, jump, and roll through these areas. I don't consider a turf that has been poisoned to be high quality. Carrboro, NC maintains city athletic fields without pesticides.



"Fence lines and skinned infields, chemicals are used to control weeds in unwanted areas."

Comments

People, including children, use these areas and are being exposed unknowingly.



"Warning tracks (CLSC) and fence lines on athletic fields will receive treatment to control unwanted weed invasion"

Comments

People, including children, use these areas and are being exposed unknowingly.



"Newly planted tree are mulched and sprayed around to eliminate weed completion."

Comments

Use alternatives.



"Establish tree will have a ring sprayed around the base to reduce labor in trimming"

Comments

Use alternatives.



"Ludlam Park (Pesticide Free Park). The entire area between the bench and the swing is supposed to be a wood chipped fall zone maintained free of vegetation. Since this is a chemical free park our only means of control is to mechanically remove the vegetation once or twice a year."

Comments

I found this to be the most disturbing portion of the report. LPRD is saying that all the park playground areas in Lawrence, except for two very small seldom-used parks, are sprayed with pesticides. Very young children use these areas and their developing bodies and nervous systems are at risk.



Park & Maintenance Division

Date: 07/08/2004

To: Fred DeVictor, Parks & Rec Director

From: Mark Hecker, Parks & Maintenance Superintendent

RE: Chemical Usage in Parks – Commission Requested Report

In response to a request from Commissioner Dunfield, the following has been developed to report on the current status of chemical usage in the maintenance of City owned parks properties. Please note – parks properties as described and referred to herein are defined as public parks, athletic fields, and landscaped public areas within the City limits under the care of the Parks and Recreation Department but does not include the Eagle Bend Golf Course.

History

In 2002 a group of citizens approached the City with a concern about the use of chemicals in parks properties. This concern prompted an in-depth study of departmental policies and practices and also prompted the City to invite an outside consultant to come in and look at specific operations. After reviewing departmental management practices, the consultant was impressed with staff's level of knowledge of pesticide reduction techniques (see attached Feb. 16, 2002 newspaper article). Also in 2002, the department developed written policies to further clarify appropriate handling of chemicals used in the maintenance of public parks (attached). These policies are based on "best practices" that exist regarding the safe and appropriate application of pesticide/herbicide/fungicide.

Current Policy

Since 2002, the practice of applying chemicals only as a last resort to address specific plant problem in the parks has been maintained. A large percentage of applications are responses to public complaints (poison ivy, dandelions, ticks, bag worms, mites, etc.) or a state mandated control issue such as noxious weeds. If a particular application does not fall into one of these categories, it would be considered a management tool to reduce labor (spraying of round-up around fences to reduce trimming) or to prevent a known pest from devastating a valuable city asset (landscaped areas, trees, etc.). A list of chemical applications over the past year follows:

Date	Type*	Problem that is being addressed	Location
Parks			
March. 04	Herbicide Round-up /Surflan	Vegetation control around fences, signs, & park facilities	Most high traffic parks
March. 04	Herbicide Power Zone	Public complaint about dandelions (spot applications)	Oakhill Cemetery
May-04	Herbicide Power Zone	Public Complaint about dandelions (spot treatment)	Veterans, Watson, South Park
Sept. 03	Herbicide Round –up Pro	Kill Bermuda grass in areas to be seeded	South Park & Watson Park
Sept. 03	Herbicide Trimec Plus	Broadleaf weed control in turf Outdoor Pool	Watson Park
March-04	Herbicide Plateau	Prepare native grass area for seeding	Pat Dawson Billings Nature Area

May-04	Herbicide Trimec Plus	Public complaints about dandelions	Traffic Islands (West Lawrence)
May-04	Insecticide Sevin	Public complaints about ticks on trails	Dad Perry Park
May-04	Fungicide Cleary's 3336	Controls needle blight on Pine trees	Parks & Landscape Areas
May-04	Herbicide Weed Destroy 40	Control of Noxious weeds (state mandated)	Unmowed parks & right-of-ways
<u>Landscape Areas</u>			
Sept. 03	Herbicide Round-up /Surflan	Weed control in mulched landscape beds	Landscape beds (all city)
Nov. 03	Herbicide Trimec Plus	Broadleaf weed control in high profile turf areas	City Hall, Depot, Airport, Town Ctr
April. 04	Herbicide Snapshot	Preemergent herbicide for weed control	Landscape beds (all city)
April. 04	Herbicide Power Zone	Broadleaf weed control in high profile turf areas	City Hall, Depot, Airport, Town Ctr
April. 04	Herbicide Dimension	Crabgrass control on high profile turf	City Hall, Depot, Airport, Town Ctr
May-04	Insecticide Avid	Spider mite control on shrubs (used only as needed)	Landscape beds and planter
<u>Athletic Fields</u>			
March-04	Herbicide Manage	Nut Sedge	Athletic Fields
	Herbicide Pendulum	Weed control in fence lines	Athletic Fields
	Insecticide Tall Star	Grub treatment	Athletic Fields
	Herbicide 10% Dimension	Crabgrass Control	Athletic Fields

The department maintains over 3000 acres of parks property and a very small percentage receives any type of chemical application on an annual basis. Ironically, the parks that receive the most application are those that tend to be the higher profile, high-use areas. These areas usually have high concentrations of landscape plantings, manicured turf and are high visibility facilities (athletic fields, City Hall, trails, traffic islands, downtown planters, park shelters, gardens). There is a public expectation that high profile, high use parks properties have a minimum of weeds, pests, and other detractors. In the past, allowing these detractors to go untreated in these areas has not been acceptable to most of the citizens of Lawrence (public complaints). To further emphasize this point, results of both parks and recreation comprehensive plan surveys (1993 and update in 2000) have expressed high expectations and satisfaction with public landscaping/flower gardens and maintenance of parks from the public.

How do we compare??

We surveyed surrounding cities to see what issues they have encountered with the use of chemicals in parks and to see if they had any written policies established. We requested information from the following governmental entities: cities of Topeka, Overland Park, Lenexa, Manhattan, Salina, and Leavenworth; Shawnee County, Johnson County, Douglas County, US Army Corp of Engineers, and USD 497. All responded that they have not had a community push for a reduction of chemical usage or pesticide free areas. Most did not have written policies (USD 497 has some written administrative procedures). Like us, most required applicators to be licensed and most were doing as little spraying as possible, but for budgetary reasons, not as a result of public pressure.

The City of Wichita has about the same program that we do, see article on this web site. <http://www.f5wichita.com/news/index.php?pubdate=2003-05-08&story=401>

The City of Seattle, Washington has done some work with chemical reduction that is very similar to our practices. Additional details of their program can be found on their web site <http://www.cityofseattle.net/parks/faq.htm>.

Conclusion and Recommendation

Much has been accomplished by this department in the area of chemical reduction in parks recently. The concept of a completely chemical free park is an appealing concept to some of our citizens, and one that we can state we have achieved in most of our parks on a year by year basis. However, it is very difficult to manage a particular piece of

property 100% chemical free year after year due to the climate and environment experienced in Kansas. We have such a wide variety of noxious weeds, plant diseases and insect problems that can appear in any park area without warning. If left unchecked, these diseases and insects can devastate the appearance of a park or even spread to adjacent property owners. The adjacent property owner is usually the one that will file a complaint if we are not responding to a problem. Another unintended consequence of leaving a disease, weed, or insect problem unchecked in a public park is the financial impact associated with the eventual degradation of a landscaped area and/or public asset, such as a stand of trees or large plantings.

Staff continues to research alternate methods of dealing with problems that in the past have been controlled by the use of chemicals. We have found, though, that the use of chemicals is in most cases the most efficient and cost effective way to deal with a problem. If we resort to more labor-intensive methods of control, we would need to evaluate the need for the problem area. Example: The only way that we can maintain the hundreds of landscaped areas & flowerbeds in the city is to use pre-emergent and post-emergent herbicides to control weeds in the beds. We do not have the operating budget it would take to manually pull weeds at all of these locations. Therefore, we would be forced to eliminate most of our landscape areas and flowerbeds citywide until we have adjusted the workload to a manageable level that could be accomplished with existing staff or add staff to perform the labor.

The department operating budget cannot maintain high profile parks such as Watson Park, South Park, and Veteran's Park in their current condition without the use of chemicals. In order to continue the concept of chemical free parks, we would recommend looking at parks that receive little or no spraying now and consider placing them on our list of chemical free parks (we would still need to post and spray for noxious weeds).

Some parks that may be considered:

Riverfront Park – except for levee maintenance required by the Corps of Engineers

Clinton Park

Deerfield Park

Parkhill Park

Martin Park

Walnut Park

Naismith Valley Park

McGrew Nature Area

Pat Dawson Billing Nature Area

Kanza Southwind Nature Area

Clinton Parkway - was originally designated as chemical free but had to be removed from the list due to yearly noxious weed problems

We would have a much better chance of gaining public support for managing areas on this list without the use of chemicals than we would taking something that is maintained at a very high level and reducing it down to a lower maintenance level to fit it into budget constraints.

Following are some examples of where spray application occasionally takes place.



Weeds in landscape beds – Dad Perry Park – spraying area like this is the most effective means of controlling the problem.



Weeds & vines in fence line of tennis courts – Veterans Park – weed control is necessary to preserve the fence structure



Weeds in landscape bed - 19th & Moodie – spraying is a more effective control than pulling these weeds



Flowerbed where herbicide and woodchips were applied at time of planting to control weeds - South Park



Thistle treatment (Noxious weed)- Dad Perry Park



Landscape at 15th & Iowa – Areas like this are treated to reduce weed competition until shrubs can establish



Bagworms on junipers – needs sprayed or plant will die



Princeton Ave island was treated to control dandelions (neighborhood complaint)



Mite damage on junipers Watson Park – If left untreated the plant will die



Weeds in sidewalk – Watson Park – Unsightly, and can damage sidewalk



Tip Blight on Pine – Holcom Park - is controlled by application of fungicide in the spring



Fence line at Holcom Park – Needs to be sprayed with Round-up to eliminate weeds in fence



High use turf areas (CLSC outfield) receive application of herbicide & pesticides to maintain high quality turf



Fence lines and skinned infields, chemicals are used to control weeds in unwanted areas.



Warning tracks (CLSC) and fence lines on athletic fields will receive treatment to control unwanted weed invasion



Newly planted tree are mulched and sprayed around to eliminate weed completion.



Establish tree will have a ring sprayed around the base to reduce labor in trimming



Ludlam Park (Pesticide Free Park). The entire area between the bench and the swing is supposed to be a wood chipped fall zone maintained free of vegetation. Since this is a chemical free park our only means of control is to mechanically remove the vegetation once or twice a year.

Pictures of Pesticide-Free Parks

Seattle, WA



Webster Playground



Meridian Park



Bradner Gardens Park



West Montlake

Cedar Falls/Waterloo, IA Area



Seerley Park

Marblehead, MA



Devereux Beach



Seaside Park

Santa Barbara, CA



Alice Keck Park



Chase Palm Park



Soccer Field - Chase Palm Park



Picnic Area - Chase Palm Park



A.C. Postel Rose Garden



La Mesa Park

Carrboro, NC



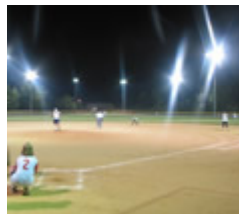
Town Commons



Flower Bed



Sports Fields



Dog Park

