Pesticide Reduction Resource Guide

For Citizens and Municipalities of Massachusetts

May, 2002

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Introduction

About This Guide

Concern over the adverse health and environmental effects of pesticide is motivating municipalities nationwide to act to reduce the amount of pesticides applied to their lands.

This guide is a step-by-step manual to help concerned citizens, cities, and towns begin local pesticide use reduction programs. There are many ways to achieve pesticide reduction, but this manual focuses on two straightforward, concrete goals, 1) educate the town's citizens, and 2) adopt a municipal pesticide reduction policy.

This guide is organized around a "12-step" program for municipal pesticide use reduction, and a quick-reference card is included which provides a simple outline of the steps.

This guide provides statements, policies, and research from professionals who have expertise on health, the environment, and pesticides. It also gives examples of advocacy literature which present this information to the public in the form of flyers, brochures, and articles. Web links are provided which lead to more information.

Consider this guide a starting point in your efforts to reduce pesticide use. Working together, we can begin reducing pesticides and improving public health in Massachusetts.

Massachusetts Pesticide Awareness Collaborative

The Massachusetts Pesticide Awareness Collaborative (MPAC) is a collection of citizens and health officers from Massachusetts who are interested in reducing pesticide use in their own communities and in our State. Participants share information and resources to expedite education of citizens and adoption of municipal pesticide reduction policies. Any town is welcome to join by sending an e-mail or phoning the Wellesley Natural Resources Commission (see title page for contact info). Currently participating towns are, as of April 2002: Andover, Ashland, Lexington, Lincoln, Pittsfield, Plymouth, Marblehead, Natick, Needham, Newton, Norwood, Sherborn, Southborough, Sudbury, Swampscott, Waltham, Weston, Watertown, Wayland, Wellesley, and Westwood.

What's Inside?

We first provide summary statements on pesticides from experts in the health field, and also a statement from this project outlining important issues surrounding pesticide use reduction.

Next is a brief summary of some of the laws and regulations you will need to be aware of. Following this we outline the step-by-step program for municipal pesticide use reduction.

Finally, we provide examples to use, copy, or follow which are organized around the step-by–step outline. These include statements on health effects of pesticides, sensible pest control methods which don't involve pesticides, advocacy literature, scientific references, and town policies for reducing and eliminating pesticide use.

Sample brochures for educating the public about pesticide use reduction and for alternatives to pesticides are provided in the pocket of this binder. These brochures may be reproduced or ordered in bulk. Contact the agencies that produced the brochures for ordering information.

Summary Statements on Pesticides

Health effects of contemporary-use pesticides

- "Exposure to contemporary-use pesticides is greater than most people realize. Many populations of wildlife and humans are exposed.
- Exposure often occurs without the exposed individual's knowledge.
- A general lack of understanding by the public about pesticides and pesticide approval procedures has led to a false sense of security or to fear about the use of pesticides, both of which preclude rational analysis of the problem.
- Many contemporary-use pesticides adversely affect the reproductive, nervous, immune, endocrine, and metabolic systems."

This is a consensus statement by an expert group of 22 US and international scientists on the health effects of contemporary-use pesticides created at a Wingspread conference in 1996.
http://www.worldwildlife.org/toxics/progareas/ed/con_6.htm

Pesticides and Childhood Cancer

"Many of the cancers associated with pesticides among children, such as leukemia, brain cancer, non-Hodgkin's lymphoma, soft-tissue sarcoma, and Hodgkin's disease, are the same cancers that are repeatedly associated with pesticide exposure among adults, suggesting that a role among children is highly plausible. Furthermore, although the research has been limited by nonspecific pesticide exposure information, small numbers of exposed subjects, potential for recall bias, and a small number of studies for most cancers, the magnitude of the risks is often greater than among adults, indicating greater susceptibility...

…Although research is underway to characterize the risks of childhood cancer associated with pesticides and identify the specific pesticides responsible, it is prudent to reduce or, where possible, eliminate pesticide exposure to children, given their increased vulnerability and susceptibility. **In particular, efforts should be focused to reduce exposure to pesticides used in homes and gardens and on lawns and public lands, which are the major sources of pesticide exposure for most children.** "

From: Pesticides and Childhood Cancer By Shelia Hoar Zahm and Mary H. Ward Occupational Epidemiology Branch, Division of Cancer Etiology, National Cancer Institute, Rockville, Maryland Environmental Health Perspectives 106, Supplement 3, June 1998
http://ehpnet1.niehs.nih.gov/child1998/full/Suppl-3/893-908zahm/zahm-full.html

Wellesley 2002 Toxics Use Reduction Institute Project

Pesticides aren't just insecticides

Pesticides are defined by the Federal Insecticide, Fungicide & Rodenticide Act to include any chemical used against a pest. Some examples are insecticides, repellents, herbicides, pre-emergents, fungicides, rodenticides, algicides and antimicrobials.

Pesticide use poses a risk to human health

Pesticide exposure in humans has been associated with birth defects, learning disorders, respiratory illness, brain cancer, leukemia, non-Hodgkins lymphoma, neurological disorders including Parkinson's disease, brain damage, hyperactivity, attention deficit disorder symptoms, low sperm count, testicular cancer, male infertility, immune system problems, and hormonal activity.

Health organizations advocate pesticide use reduction

Many organizations recommend avoiding pesticide exposure. Some examples are the American Academy of Pediatrics, American Public Health Association, Lymphoma Foundation of America, American Brain Tumor Association, March of Dimes, National Academy of Sciences, Massachusetts Senate and House of Representative, General Accounting Office, and the Environmental Protection Agency.

Many people are not aware of the hazards

Newton's GreenDecade Committee for Alternatives to Pesticides learned through a survey that many people in our area are not aware that the chemicals they or their contractors use are pesticides, nor can they identify the chemicals or their hazards. However, they learned that most people would not use pesticides if they knew about safe, effective and economical alternatives for landscaping and pest control.

Pesticides can be avoided

The United States Environmental Protection Agency promotes alternatives to pesticides under their Integrated Pest Management and Bio-pesticide programs. These techniques have proven to be very successful and to save money. Many books and articles have been written by horticulturalist, scientists, landscapers, and agricultural experts on non-chemical control of a multitude of human pests.

It Takes a Village to Prevent Contamination from Pesticides

Reducing the use of pesticides at the community and neighborhood level depends on the enlightened cooperation of everyone - building managers and occupants, sports leagues and the Parks Department, family members and neighbors, landscaping and pest control professionals and consumers, and citizens and public agencies.

Stay informed

The field of pesticide alternatives and pesticide health effects is continually developing as more research is conducted. It is important for town officials to attend seminars in non-toxic pest control and on the health effects of toxic chemicals.

Laws and Regulations

Federal

Environmental Protection Agency

In the United States, the Office of Pesticide Programs (703-305-7695, www.epa.gov/pesticides) of the Environmental Protection Agency is chiefly responsible for regulating pesticides. The regulations are based on the Federal Insecticide, Fungicide & Rodenticide Act (FIFRA).

Labeling

Under FIFRA, no one may sell, distribute, or use a pesticide unless it is registered by the EPA. Registration includes approval by the EPA of the pesticide's label, which must give detailed instructions for its safe use. New chemicals are registered with only limited safety data and are initially used by certified applicators only. Certain biological and food-grade pest control materials, such as lady bugs or mint oil, are exempt from EPA registration.

Importantly, EPA registration does not mean EPA “approved.” The EPA categorizes the toxicity of the pesticide and assures that the statements on the label reflect this. It is a violation of federal law to use a pesticide in a way which is inconsistent with its labeling. It is also dangerous. However, so many people who use pesticides don’t read the label that the EPA has launched a read-the-label public education campaign.

It is a violation of Federal law to use a pesticide NOT in accordance with its label.

The “inert” ingredients listed on a label may comprise up to 99% of a pesticide product, but are considered trade secrets so are not disclosed. These inerts may be highly toxic. “Since neither the federal law nor the regulations define the term "inert" on the basis of toxicity, hazard or risk to humans, non-target species, or the environment, it should not be assumed that all inert ingredients are non-toxic,” -U.S. EPA.

Bans

Occasionally, after enough scientific studies are done, the EPA will adjust the toxicity category or ban a pesticide which has been proven to pose unacceptably high risks to health or the environment. Most pesticides in use today have not undergone such extensive studies, and the risks are largely unknown. However, two of the most widely used pesticides in the U.S. have recently been banned, diazinon and chlorpyriphos as posing unacceptable health risks to children.

IPM

Because it is widely recognized that pesticides are overused, the General Accounting Office has charged the EPA and the USDA with promoting pesticide use reduction through integrated pest management programs (IPM) which control pests without relying primarily on pesticides. Integrated pest management methods begins with non-chemical pest management practices such as improving the soil and protecting beneficial organisms. The National Academy of Sciences, the American Crop Protection Association and others have concluded that IPM leads to more effective long-term pest management than chemical controls alone.

State

Pesticide Bureau

In Massachusetts, the Pesticide Bureau, (617-626-1781, www.state.ma.us/dfa/pesticides) in the Division of Regulatory Services of the Department of Food and Agriculture carries out the day to day responsibilities of regulating pesticides. The Pesticide Bureau must enforce the Massachusetts Pesticide Control Act (MPCA) and the regulations 333 CMR. This includes the recently enacted Act Protecting Children and Their Families from Harmful Pesticides which restricts pesticide use on property used by school children and requires parental notification for school outdoor pesticide use. In addition the Department is designated by the US EPA as the state lead agency of the federal pesticide statute (FIFRA).

False and Misleading Statements

It is a violation of Massachusetts State Law to make false or fraudulent claims about pesticides, including verbally. "12) All persons shall: c) Make no false or fraudulent claims. The term **fraud includes misrepresentation personally** or through the media, falsified records, invoices or reports," -333 CMR 13.03 Massachusetts Pesticide Regulations.

Pesticide violations

Inspectors respond to allegations of pesticide misuse and inspect dealer establishments, pest control businesses and pesticide producer establishments. To file a complaint with the Pesticide Bureau call 617-626-1781.

Federal law does NOT preempt State regulation of pesticides

FIFRA does not preempt the regulation of pesticides by state governments. (http://laws.lp.findlaw.com/getcase/US/501/597.html)

State law DOES preempt Municipal regulation of pesticides

The Massachusetts Pesticide Control Act places the exclusive authority in regulating the labeling, distribution, sale, storage, transportation, use and application, and disposal of pesticides in the commonwealth with the Pesticide Board (Chapter 132B, Section 1).

Local Municipalities

Town Departments

Municipalities in Massachusetts can implement pesticide use reduction by 1) adopting town policies governing pesticide use on town-owned land, 2) implementing the State required school IPM plans and prohibiting the use of pesticides for purely aesthetic reasons on all public and private school properties, and 3) educating the public about alternatives to pesticides.

Municipalities, under the current Massachusetts law, cannot regulate pesticide use by private homeowners or by landscape professionals on private land.

School IPM Help

Mass DFA guidance on how to develop your indoor and outdoor school IPM plans
http://www.state.ma.us/dfa/cpa/ipmplan.htm

Mass DFA frequently asked questions about school IPM law – very useful.
http://www.state.ma.us/dfa/cpa/guidance.pdf

Step-by-Step Outline for Municipal Pesticide Use Reduction

1. **Read Introduction** to this Guide.----------**Page 4**
2. **Identify one key person** within the Town and one from the community who will advocate and work for pesticide use reduction; or cultivate those people.
3. **Meet to develop a pesticide use reduction strategy**. ----------**Page 12**
   - Identify key departments who need to be brought on board; e.g. health department and those involved with maintenance of fields and buildings.
   - Identify secondary departments who need to be involved; typically town leader(s), recreation department, schools, natural resources.
   - Outline steps to take and time line for action.
4. **Get a list of chemicals** used on town land and buildings; or found in local hardware or garden supply stores. Find out how much your town spends on pesticides and/or contractors who are applying pesticides.
5. **Look up chemical health effects** for each chemical.----------**Page 22**
   www.scorecard.org/chemical-profiles/; or http://data.pesticideinfo.org/; or http://ace.orst.edu/info/extoxnet/pips/ghindex.html
6. **Look up alternatives** http://www.pesticide.org/factsheets.html ----------**Page 38**
7. **Develop presentation** packet to present to key departments, include:----------**Page 46**
   - Your goals (e.g. adopt an organic pest management policy for town-owned land; send yearly notices to residents; take diazinon off shelves).
   - Health hazards and financial cost of pesticides used in your town.
   - Describe alternatives.
   - Statements from individuals and organizations in support of your position.
8. **Meet with key departments,** present information packet, bring them onboard.
9. **Design flyer** from Health Department to send to all residents.----------**Page 70**
10. **Send flyer** to residents of your town from your Health Department.
11. **Draft town pest mgmt. policy** which restricts pesticide use on town property.--**Page 92**
12. **Adopt policy** and get it signed by key departments.
13. **Maintain information resource center** in Town department.
14. **Develop long-term strategy** for continued education of the public and training for town employees. Beyond sending a yearly flyer, this might include:
    - Hosting health awareness or organic lawn care talks.
    - Handing out organic landscaping brochures to residents.
    - Writing newspaper articles.
    - Involving the schools by putting pesticide awareness into the curriculum.
    - Getting local garden supply stores to sell non-toxic pest control products.
15. **Stay informed** about pesticide alternatives and adverse health effects.

Wellesley Strategic Plan

Draft

2001 Strategic Plan and Integrated Pest Management Policy
for Pesticide Use Reduction in the Town of Wellesley, Massachusetts
Wellesley Health Department
Natural Resources Commission
Department of Public Works
School Department

CONTENTS:

Section 1: Mission Statement

The Town of Wellesley agrees with the U.S. Environmental Protection Agency (EPA) that "all pesticides are toxic to some degree…, and the commonplace, widespread use of pesticides is both a major environmental problem and a public health issue."

The Town of Wellesley also recognizes that all citizens, particularly children, have a right to protection from exposure to hazardous chemicals and pesticides in particular.

Furthermore, the Town of Wellesley recognizes that it is in the best interest of public health to eliminate the use of toxic pesticides in Wellesley and to introduce natural, organic cultural and management practices to prevent, and when necessary, address pest problems.

The Town of Wellesley supports the *Precautionary Principle (as defined by the Wingspread Statement of January 1998)* as the basis for its Organic Pest Management Policy. The Precautionary Principle states *"When an activity raises threats of harm to the environment or human health, precautionary measures should be taken, even if some cause and effect relationships are not yet fully established."*

Section 2: Policy Summary

The Organic Pest Management (OPM) Policy for Turf and Landscape mandates the following:

- That the use and application of toxic chemical pesticides, either by Town of Wellesley employees or by private contractors, is prohibited on all Town owned lands, including school fields which shall comply with the School IPM plan.
- That natural, organic turf and landscape cultural practices and maintenance shall be the method of choice to understand, prevent, and control potential pest problems
- That all control products used under the terms of this policy shall be in keeping with, but not limited to, those products on the approved list of NOFA/Mass. (Northeast Organic Farmers' Association/Mass.) as stated in their Standards for Organic Land Care, and/or the Organic Materials Review Institute of Eugene, OR;
- That an OPM Advisory Committee shall be formed including members of the school IPM Committee.
- That Town of Wellesley employees who work with turf grass and the landscape receive education and training in natural, organic turf and landscape management.
- That a listing of all Town owned lands affected by this policy be made available to the public.
- That a registry of all pesticides currently stored on Town owned premises be compiled, with a goal of proper disposal through a Hazardous Wastes Collection program.
- That Town compost shall be tested on a yearly basis for contaminants, including, but not limited to, heavy metals and pesticides, as decided by the Health Department.
- The Town water shall be tested for pesticides at least every three years based upon recommendations by the OPM Advisory Committee.

Section 3: Signatory Page

Section 4: Summary

This document presents a strategic plan for the Town of Wellesley to reduce the use of pesticides on both town-owned and private lands in Wellesley. The strategic plan is divided into two sections, one addressing town-owned land such as parks, sidewalks, roads, traffic islands, playing fields, and open space; and the second addressing private lands.

The strategy for town-owned land focuses on a series of steps to bring together town departments to agree on an organic pest management policy, assign responsibility for implementing the policy, and provide training in pesticide alternatives to assure a successful land-care program. The departments and respective Boards include the Health Department, the Natural Resources Commission, the Department of Public Works, the Recreation Department, and the School Department.

The strategy for privately owned lands focuses on a pesticide awareness campaign initiated this year but continuing with a cycle of yearly events and publicity. Partners in this campaign include non-town organizations such as the Wellesley Cancer Prevention Program, Charles River Watershed Association, the Northeast Organic Farming Association, and the Needham Garden Center. Additional partners will be solicited from local organizations and businesses.

Central to the campaign will be the consolidation of information on pesticide hazards and alternative products into the Town web site, a presentation booth at local events, a town-wide flyer sent from the Board of Health, and publicity in local media. In the fall of 2000 the Pesticide Awareness Campaign received an 8 month grant of $7000 from the Toxics Use Reduction Institute of the University of Massachusetts at Lowell .

Section 5: Town-Owned Land

The town of Wellesley has been concerned about pesticide use since the early 1970's. The Natural Resources Commission was formed, in part, to help with pesticide use reduction. The Department of Public Works has been continually and successfully looking for ways to reduce their reliance on pesticides for maintaining town land.

In 1992, Town Meeting approved the formation of a Pesticide Applications Study Committee, which conducted a town-wide survey of pesticide use and began a public pesticide reduction educational campaign along with the Natural Resources Commission. Based on the Committee's findings (see Appendix I), it recommended that the Boards of Health, Public Works, and Natural Resources sign a policy (see attachment 1) for pesticide reduction and Integrated Pest Management (IPM). This policy was never signed.

Pest management policy

A cornerstone of this strategic plan is putting in place a least-toxic pest management policy which can be agreed upon by the NRC, the BOH, and the DPW. The signing of a policy is one of the most important steps to developing the town's strategic plan for pesticide use reduction.

In light of new evidence in the past several years on the hazards of pesticides, a more comprehensive policy is being proposed here, called an Organic Pest Management Policy. The term "organic" as it applies to agriculture is currently being defined at a federal level by the US Department of Agriculture. National organic standards are expected to be enacted by 2001. The term organic as it applies to land care is not defined on a National level, but for

purposes here it refers generally to non-synthetic materials which have less toxicity and lower ecological impact than many synthetic pesticides and fertilizers.

The reason we are proposing an organic pest management policy, rather than an integrated pest management policy, is that we would like pesticide use to be at or near zero, and for pesticide use to be a rare exception for unusual pest situations, rather than the usual treatment for chronic pest problems.

Pesticide Advisory Committee

In order to maintain this Strategic Plan, an Organic Pest Management Advisory Committee needs to be formed to ensure that efforts to keep pesticide use at near zero levels are maintained for years to come. The Advisory Committee can oversee and assist in the implementation of the pest management policy, and advise the Town of any problems encountered or amendments required to achieve the full and successful implementation of this Strategic Plan.

Membership on the Advisory Committee could consist of representatives of the Health Department, Natural Resources Commission, Department of Public Works, School Department, Recreation Department, and sport groups, and several citizens at-large.

Monitoring of town water supplies

The Pesticide Applications Study Committee also recommended the monitoring of town water supplies for the presence of pesticides. The town wells were tested in 1992 and again in 1997 for levels of certain types of pesticides include on an EPA list. The results exempted Wellesley from further testing. Clearly, because pesticides are still in use, further testing should be done on a regular basis. However, the list of chemicals used on lawns and regulated by the EPA is continually changing, and the knowledge of toxic levels of these chemicals is also changing, which makes using standard tests difficult. Therefore, as part of this Strategic Plan, we suggest that every three years, the Pesticide Advisory Committee actively research the current state of knowledge of pesticide contamination of drinking water supplies, and make recommendations to the DPW about whether testing is required, and what chemicals should be tested for.

Assessing pesticide use by the town

There are clear benefits of continually assessing pesticide use and seeking alternative management techniques. Therefore, the Strategy calls for the yearly assessment of DPW pesticide use, and for the Pesticide Advisory Committee and DPW to research and try non-pesticide alternatives in order to keep pesticide use at or near zero.

Ongoing education program in organic land care techniques

Recognizing that pest control is an evolving subject, the Strategy calls for support of yearly courses on organic land care techniques made available to town employees and open to the public.

Tracking and reporting

Recognizing that a record of pest problems and solutions can help reduce the need for pesticides, the Strategy calls for ongoing reporting and monitoring of pest problems, solutions, and the use of pesticides and pesticide alternatives

Section 6: Organic Pest Management Policy
The Strategic Plan offers the following policy as a working draft of a Pest Management Policy to be signed by the Town's Departments of Health, Public Works and Natural Resources.

The Organic Pest Management (OPM) Policy for Turf and Landscape mandates the following:

- That the use and application of toxic chemical pesticides, either by Town of Wellesley employees or by private contractors, is prohibited on all Town owned lands, including school fields which shall comply with the School IPM plan.
- That natural, organic turf and landscape cultural practices and maintenance shall be the method of choice to understand, prevent, and control potential pest problems
- That all control products used under the terms of this policy shall be in keeping with, but not limited to, those products on the approved list of NOFA/Mass. (Northeast Organic Farmers' Association/Mass.) as stated in their Standards for Organic Land Care, and/or the Organic Materials Review Institute of Eugene, OR;
- That an OPM Advisory Committee shall be formed including members of the school IPM Committee.
- That Town of Wellesley employees who work with turf grass and the landscape receive education and training in natural, organic turf and landscape management.
- That a listing of all Town owned lands affected by this policy be made available to the public.
- That a registry of all pesticides currently stored on Town owned premises be compiled, with a goal of proper disposal through a Hazardous Wastes Collection program.
- That Town compost shall be tested on a yearly basis for contaminants, including, but not limited to, heavy metals and pesticides, as decided by the Health Department.
- The Town water shall be tested for pesticides at least every three years based upon recommendations by the OPM Advisory Committee.

Pests And Pesticides Defined

For the purpose of this policy, pests and pesticides are defined as follows. Pests are and may be known as undesirable plants, insects, fungi, bacteria, and rodents. Common examples in turf grass and the landscape can be, but are not limited to, crabgrass, knotweed, poison ivy, chinch bugs, grubs, and a variety of plant pathogens.

Pesticides are defined by the Massachusetts Department of Food and Agriculture Pesticide Bureau as "substances or mixtures of substances that prevent, destroy, repel, or mitigate pests, or defoliate, desiccate, or regulate plants. Pesticides are poisonous substances that can have an adverse effect on the environment or impair human health…." Herbicides, fungicides, insecticides, miticides, and rodenticides are all considered pesticides.

Under this policy, pesticides classified as known, likely, or probable human carcinogens, or those pesticides that meet the criteria for Toxicity Category I or Toxicity Category II, as defined by the United States Environmental Protection Act (EPA) in section 156.10 of Part 156 of Title 40 of the Code of Federal Regulations can no longer be applied to any Town of Wellesley owned lands. A list of the pesticides in the EPA's Toxicity

Categories I and II will be periodically updated and maintained at the offices of the Town of Wellesley Board of Health.

Organic Pest Management (OPM) Defined

Organic Pest Management is a problem solving strategy that prioritizes a non-toxic, natural, organic approach to turf grass and landscape management without the use of toxic pesticides. It mandates the use of natural, organic cultural practices that promote healthy soil and plant life as a preventative measure against the onset of turf and landscape pest problems.

Essential OPM practices include, but are not limited to:

- regular soil testing
- addition of approved soil amendments
- selection of plantings using criteria of hardiness, suitability to native conditions, drought resistance, and ease of maintenance
- modification of outdoor management practices to comply with organic horticultural science, including scouting, monitoring, watering, mowing, pruning, and mulching
- the use of physical controls, including hand-weeding and over-seeding
- the use of biological controls, including the introduction of natural predators and enhancing the environment of a pest's natural enemies
- through observation, determining the most effective treatment time, based on pest biology and other variables, such as weather and local conditions
- eliminating pest habitats and conditions supportive of pest propagation

OPM dictates the use of chemical controls only in the event of a public emergency as determined by the Board of Health, in consult with the OPM Advisory Board.

Exemptions

All outdoor pest management activities taking place on Town of Wellesley land shall be subject to this OPM policy, except as follows:

1. Pesticides otherwise lawfully used for the purpose of maintaining a safe drinking water supply at drinking water treatment plants and at wastewater treatment plants and related collection, distribution , and treatment facilities.
2. Pesticides in contained baits or traps for the purpose of rodent control.
3. Pesticides classified by the United States Environmental Protection Agency as exempt materials under 40CRF 152.25,or those pesticides of a character not requiring FIFRA regulation.

OPM Advisory Committee

An OPM Advisory Committee shall act as a "Pest Management Board" to oversee and assist in the implementation of the OPM policy, to develop an OPM program consistent with this policy, and to advise the Town of Wellesley Board of Health of any problems encountered or amendments required to achieve the full and successful implementation of this policy.

The Advisory Committee will seek the participation, advice, and counsel of experts in the fields of organic turf and landscape management and IPM protocol. Broad community participation, including parents, schools, advocates, and local landscaping businesses will be encouraged on a non-voting basis. Membership on the OPM Advisory Committee shall be comprised of:

- Town of Wellesley, Board of Health
- Town of Wellesley, Natural Resources Commission

- Town of Wellesley, School Department
- Town of Wellesley, Recreation Department
- Town of Wellesley, Department of Public Works
- Up to 3 Citizen Representatives, knowledgeable about organic approaches to pest problems and organic horticulture.

Training And Education

All Town of Wellesley personnel involved in the evaluation, approval, or implementation of organic turf and landscape maintenance and/or outdoor pest control, should receive regular hands-on training and education in natural, organic cultural and technical methods.

Emergency Waivers

If an emergency situation warrants the use of pesticides which would otherwise not be permitted under this policy, the Town of Wellesley Board of Health shall have the authority to grant a temporary waiver for a period of thirty days. Notice of the waiver request shall be given to the OPM Advisory Committee for advice on resolving the problem without the use of pesticides. The waiver may be extended for an additional period not to exceed six months. Nothing in this waiver provision prohibits the Town of Wellesley from adopting additional waiver resolutions for as long as the condition exists, again not to exceed six months for any individual resolution.

Any waiver granting the use of pesticides on Town land shall require the use of Integrated Pest Management protocol as it pertains to the least toxic material chosen for any given application (see below for IPM definition).

The Board of Health shall determine if such a waiver is warranted based on the following criteria:

1. The pest situation poses an immediate threat to human health and/or environmental quality, not to exclude flora and fauna.
2. Viable alternatives consistent with this OPM policy do not exist.

Any Town department using a pesticide under such a waiver must comply with the laws of the Commonwealth of Massachusetts regarding notification to site users and abutters, the Act Protecting Children and their Families from Harmful Pesticides, as well as any additional notification requirements that may be established by the OPM Advisory Committee.

Integrated Pest Management (Defined)

Organic Pest Management strives first and foremost to prevent pest problems through the application of natural, organic horticultural and maintenance practices. OPM can incorporate some of the principles of Integrated Pest Management (IPM) in its program as is deemed suitable and necessary by the OPM Advisory Committee.

IPM is an ecologically-sound approach to suppressing and eliminating pest populations to keep them from causing health, economic, or aesthetic injury. IPM utilizes site-specific information about pest biology and behavior, environmental conditions, and the dynamics of human characteristics and activities in dealing with the prevention and control of pests that interfere with the purpose and use of a particular site.

The following steps outline the basic approach used in an IPM program.

- Monitoring and scouting the turf or landscape in question
- Accurate record-keeping documenting any potential pest problems

- Evaluation of the site with regard to any injury caused by a pest in question and a determination made on which actions to follow
- Chosen method to be the least damaging to the general environment and one that best preserves the natural ecosystem
- Chosen method to be the most likely to produce long-term reductions in pest control requirements.
- Chosen method must minimize negative impact to non-target organisms.
- Chosen method must be the least disruptive of natural controls available.
- Chosen method must be the least hazardous to human health.

Section 7: Privately Owned Lands

The Wellesley Pesticide Awareness Campaign (WPAC) refers primarily to the publicity campaign to educate landowners to eliminate pesticide use on privately owned lands. The long-range objective of this project is to reduce the exposure of children and adults to pesticides and pesticide breakdown products which are known or probable health hazards, to protect Wellesley's water supply, and to restore Wellesley's land use style to healthier and less toxic land care practices.

In November, 2000, the WPAC received a grant from the Toxics Use Reduction Institute (TURI) at the University of Massachusetts, Lowell, to fund the creation of a strategic plan for pesticide reduction, and literature and other media in support of the WPAC. The TURI project has a duration of eight months, and requires the completion of 5 deliverables, listed below under "TURI Requirements" by June of 2001. A series of additional steps are outlined in this Strategy, and these steps include activities to be done on a yearly basis as well as one-time efforts. Although the WPAC is designed to continue year after year, a number of the initiatives for the pesticide awareness campaign need only be done once during the start up. The efforts are listed in order of priority. [] denotes possible items.

TURI Requirements

The WPAC deliverables for the TURI grant: 1) a town pesticide use reduction strategy, 2) a website on pesticide hazards and alternatives, 3) a demonstration booth, 4) a town-wide mailing from the Board of Health, and 5) raised public awareness about pesticide hazards and alternatives.

One-time Efforts

Web site design and layout.
Demonstration booth design and manufacture.
    Logo design for campaign.
    T-shirt, refrigerator magnets, lollipops.
    Brochure on organic lawn care design.
Wellhead protection study
    Mailing.
    Notification.
    Sign posting.
Design of New Resident packet of information.
Design of "Dear Neighbor" letter.

Create school pesticide awareness curriculum.
[League of Women Voters' pesticide study]

Annual Efforts

Revisit strategy and modify if necessary.
Conduct lawn and garden supply store survey of organic products, publish and disseminate results via partners' newsletters.
Update list of organic landscapers, publish and disseminate results via partners' newsletters.
Conduct school curriculum program in pesticide awareness.
Coordinate public information with Hazardous Waste Day (in May).
Arrange for library speaker.
Arrange for garden club speaker.
Provide library display of pesticide awareness materials.
March in Wellesley parade.
Mail Health Department flyer.
Attend annual Wellesley events with demonstration booth.
Cable TV show of environmental videos.
[Fundraiser – children's show?]
[Annual Organic Lawn Care fair]
[Senior outreach]
[Outsmarting West Nile Virus]
[Advertise in Junior Women's Club phone book]

Approximately Monthly Efforts

Web site update
Townsman articles
E-mail newsletter
Brochure distribute to businesses and physicians' offices

Miscellaneous

TURN progress and final reports
Organic garden tours
Organic training
Enforcement of pesticide laws
Volunteer coordination
Golf courses
[Organic lawn demonstration plot]

Appendix I: Pesticide Study Committee Final Report

Town of Wellesley
Pesticide Applications Study Committee
Final Report March 1995

The Pesticide Applications Study Committee was established by Annual Town Meeting in 1992 under Article 44, at which time a town wide survey of pesticide use was undertaken and an educational program was conducted at the Recycling and Disposal Facility on Hazardous Waste Day.

The Committee's term was extended under ATM93 Article 15, and the sum of $1500 was voted to the Committee to continue its efforts to develop a town pesticide use education program, provide insight into new pest management technologies, work toward annual testing of town wells for common lawncare chemicals, and evaluate pesticide usage by institutions and commercial property owners.

In 1994 under ATM Article 16, a new Article 51 was added to the Town Bylaws requiring commercial pesticide applicators to register with the town Board of Health and provide evidence of licensure by the state [this was later deemed un enforceable as state law do not allow towns to regulate pesticides]. In the first year of operation of Bylaw Article 51, following a delayed start, 29 pesticide applicators registered with the Board of Health. An education brochure was created and circulated to all town residents with the utility bills. Reference materials on pesticides and pesticide user were gathered and are available to the public in the Natural Resources office.

Now, as the Committee completes its charge, we wish to reiterate our continuing concern for the widespread use of pesticides in a town dependent on groundwater resources. We commend Joseph Duggan, Superintendent o the Public Works Water and Sewer Division, for his sensitivity to this issue and encourage him to continue his work toward testing the town's drinking water for common lawn care chemicals [this was done only once in about 1995].

We want to emphasize the fact that the federal government is woefully behind in its program o testing pesticides under federal law (FIFRA). We reiterate that neither federal nor state standards call for m monitoring municipal water supplies for lawn care chemicals in common use. Now that the Commonwealth has severely limited municipal pesticide regulation under legislation passed during the last session, we can only hope that the state will be able to exercise due diligence in this regard. Lack of resources has limited statewide effort in the past.

In conclusion, the Pesticide Applications Study Committee finds that the current federal ands state regulations are not sufficient to protect Wellesley residents from the cumulative impacts of lawn care chemical use. Until the town's water supply is periodically tested for lawn care chemicals in common use, the health of Wellesley residents may be at risk.

Therefore we recommend:
1. That the Board of Public Works establish a protocol for testing the water supply for lawn care chemicals in common use [this did not happen, since the single testing found no positive samples, and thus the state or(?) federal law exempted further testing]
2. That the Board of Public Works consider employing a consultant to evaluate the impact of pesticide use on town wells and/or susceptibility of town wells to contamination thereby; [as far as I know this did not happen]
3. That the Board of Public Works evaluate pesticide use by the Department of Public Works;
4. And that the NRC, Wetlands Protection Committee, Board of Public Works, and Board of Health mutually establish an on-going public education program for town residents that encourages the planting of buffer strips along all town ponds and streams; that encourages alternatives to lawns; that reduces the use of inorganic fertilizers; that outlines the hazards of continued pesticide use; and that identifies non-toxic or less toxic alternatives.

Appendix II: Materials and Methods, and Prohibited List

See Standards for Organic Land Care, NOFA, August 2001

Chemical Effects on Health

Contents:

Web Resources:

Extoxnet, pesticide database for use with Children and Families Protection Act
http://ace.orst.edu/info/extoxnet/pips/ghindex.html

Environmental Defense pesticide profiles
www.scorecard.org/chemical-profiles

Pesticide Action Network pesticide database (chemicals or product names)
http://data.pesticideinfo.org

Journal of Pesticide Reform fact sheets on pesticide toxicology
www.pesticide.org/factsheets.html

Environmental Health Information Service of the National Institutes for Health
http://ehis.niehs.nih.gov/

Health effects of pesticides, presented by Rachel Massey

Presented at the Regional Pesticide Awareness Workshop, Wellesley, MA
February 7, 2002

Pesticides are made to kill living things, such as plants, fungi, insects, or rodents. Unfortunately, chemicals designed to kill plants or animals are often dangerous for humans too. Fetuses, babies, and children are especially vulnerable to the toxic effects of pesticides. This information sheet explains some of the health problems that can result from pesticide exposures.

Acute, chronic, and developmental effects

Pesticides can cause health problems that are either *acute* (short term) or *chronic* (long term). They can also disrupt fetal, infant, and child development.

Cancer

Pesticides can act as *carcinogens* (cause cancer) by causing mutations in cells' genetic material; by changing the activity of hormones; by interfering with the action of systems that normally prevent tumors from developing in our bodies; and in other ways, not all of which are understood. Examples include:

- Studies have linked pesticide exposure to increased likelihood of childhood brain cancer. One study found that using "pesticide bombs" and "no-pest" strips in the homes during pregnancy can increase the likelihood of childhood brain cancer five to six fold. [2, pp. 120-121]
- Pesticide exposure, including use of home or garden pesticides, is associated with increased likelihood of childhood leukemia.[2, pp. 120-121]

Neurotoxicity

Some pesticides are *neurotoxins*, which means that they are toxic to the brain and nervous system. *Developmental neurotoxins* interfere with brain and nervous system development in fetuses, infants, or children.

- The most commonly used category of insecticides are *organophosphates.* Organophosphates are toxic to the nervous system. They can produce acute poisoning symptoms including nausea, diahrrea, muscle spasms and weakness, excess salivation and tearing; and respiratory failure. Organophosphate poisoning can be fatal.[3]
- Some pesticide exposures can interfere with children's ability to learn and play normally. A study conducted in Mexico compared two groups of children with similar ethnic, economic, and cultural profiles but very different levels of pesticide exposures. The researchers found that the children with high pesticide exposures had lower stamina and coordination than children with low exposures. They also had more memory problems than the unexposed children and had trouble drawing a picture of a person. [1, pp. 82-83]

Birth defects

Some pesticides are *teratogens*, which means that they cause birth defects.

- One study found that birth defects were 1.4 times more likely in children of male pesticide appliers than in the general population. These children were also 1.7 times as likely as the general population to have circulatory or respiratory defects, and 1.7 times as likely to have urogenital defects. [2, p. 117]

Endocrine disruption

Some pesticides act as *endocrine disrupters*, which means that they interfere with the action of hormones in our bodies. Endocrine disrupters can promote development of hormone-responsive tumors, and can interfere with sexual development in fetuses, infants, and children. Examples include:

- The insecticide methoxychlor is used on some fruits and vegetables. Methoxychlor is converted within the bodies of birds and mammals to a compound that behaves like the female sex hormone, estrogen. [2, p. 183]
- The herbicide Roundup is often used in gardens and around homes. A laboratory study has found that Roundup disrupts the production of sex hormones in cells taken from testicular tumors in mice.[4]

Special vulnerability of fetuses, infants, and children

Small amounts of a pesticide, which might not affect an adult, can have devastating effects on a developing fetus, infant, or child. Fetuses, infants, and children are especially vulnerable to toxic exposures for several reasons[5]:

- Their organs are developing rapidly. A toxic exposure during a crucial day, month, or week of development can permanently alter brain development, for example.
- Babies and children take in more air, food, and water per unit of body weight than adults.
- Babies and children have less ability than adults to metabolize and excrete toxic substances.
- Babies and children play on the floor, chew or suck on toys, and put their hands in their mouths, so they are likely to take in pesticides found on household surfaces.

Sources:
[1] Ted Schettler and others, *In Harm's Way: Toxic Threats to Child Development* (Cambridge, MA: Greater Boston Physicians for Social Responsibility, 2000).
[2] Ted Schettler and others, *Generations at Risk: Reproductive Health and the Environment* (Cambridge, MA: MIT Press, 1999).
[3] U.S. Environmental Protection Agency (EPA) Office of Pesticide Programs, *Recognition and Management of Pesticide Poisonings*, 5th Edition. Available at http://www.epa.gov/oppfead1/safety/healthcare/handbook/Chap04.pdf, visited February 5, 200.
[4] L.P. Walsh and others, "Roundup inhibits steroidogenesis by disrupting steroidogenic acute regulatory (StAR) protein expression." *Environmental Health Perspectives* Vol. 108, pp. 769-776.
[5] National Research Council, Pesticides in the Diets of Infants and Children (Washington, DC: National Academy Press, 1993).

Philip J. Landrigan, M.D.

Professor of Pediatrics, Chair of Community Medicine, and Director of Environmental and Occupational Medicine at the Mount Sinai School of Medicine in New York City. He directed a major study at the National Academy of Sciences on pesticides in children's diets and he has testified before congress on childhood lead poisoning, air pollution and the health hazards of asbestos. Co-author of *Raising Children Toxic Free: How to Keep Your Child Safe from Lead, Asbestos, pesticides and Other Environmental Hazards.*

"As a pediatrician, I urge all parents to reduce pesticide use as much as possible – especially from lawn services. Children's health is more important than a few weeds."

"Children form a unique subgroup within the population who require special consideration in risk assessment. Children are not little adults. Their tissues and organs grow rapidly, developing and differentiating."

"These development processes create windows of great vulnerability to environmental toxicants."

Abstract from - The International Conference of the Institute for Health and the Environment Conference on *Environmental Threats to the Health of Children,* April 2000, *Risk Assessment for Children and Other Sensitive Populations* *www.albany.edu/ihe/serv01.htm*

"… (it is) **"highly likely that environmental toxins have contributed to increasing rates of cancer.** (He provided a list of statistics describing) **"….the rising incidence of asthma and breast and pediatric cancer."**

"Today we are at risk of exposure to over 85,000 synthetic chemicals, most of which did not exist in 1950. Fewer than one-half have been tested."

Abstract from -- Hearing Before the Senate Committee on Environment and Public Works -- June 11, 2001, *Environmental Contamination and Chronic Diseases and Disease Clusters* *http://olpa.od.nih.gov/OLPAReports/061101EnvironChronicDis.htm*

Massachusetts Poison Control: Pesticides

Pesticides can dangerous, especially harmful to young children

Harm to the body can occur within minutes of being poisoned by a chemical pesticide!

Symptoms that could be signs of poisoning include: headache, nausea, diarrhea, stomachache, & flu like symptoms.
Poisoning can occur through ingestion, inhalation, or skin contact.

Some simple precautions can help prevent children and adults from being poisoned by pesticides

Prevention tips:

- Follow the directions on the container!
- Keep children, toys and pets well away from chemically treated lawns and flower beds.
- When using pesticides at home; store chemicals in original containers. Lock away safely, out of sight; out of reach.
- When applying pesticides be sure your skin is covered: wear gloves, glasses, long sleeves, and pants.
- Only use pesticides in a well ventilated area.
- Before using pesticides, clear area of all furniture, toys, and food.
- After using pesticides, clean up the area and wipe down any household or garden tools that have been exposed, dispose of the remaining pesticide as directed and rinse out any containers that have been emptied.
- If you spill chemicals on skin, wash immediately with lots of clean water; be sure to keep chemicals out of children's reach while you are washing.

If you suspect a chemical pesticide poisoning has occurred, immediately call:

The Massachusetts Poison Control System
300 Longwood Ave.
Boston, MA 02115
(617) 232-2120
(800) 682-9211 Toll-free number
(888) 244-5313 Hearing Impaired number

Excerpts from Basic Guide to Pesticides: Their Characteristics and Hazards

by Shirley A. Briggs and Rachel Carson Council, Inc.

http://members.aol.com/rccouncil/ourpage/samples.htm

Selected Chemical Classes of Pesticides

This section provides more information on the effects of several chemical classes of pesticides on mammals (humans and warm-blooded animals) so poisoning can be recognized. They are the reactions that can occur, in varying degrees of severity. Not all would be likely to occur in any one case. Immediate effects can also include death in severe cases. For complete information on chemical classes and their effects please refer to the *Basic Guide to Pesticides*.

Organochlorine ***(Chlorinated hydrocarbons)***

examples of pesticides in this class: aldrin, benzene hexachloride, carbon tetrachloride, chlordane, chloroform, chloroneb, chloropicrin, 4-CPA, D-D, DBCP, DDD, DDE, DDT, dicamba, dicofol, dieldrin, endosulfan, fenac, heptachlor, hexachlorobenzene, hexachlorophene, lindane, methoxychlor, mirex, paradichlorobenzene, PCB, PCNB, pentachlorophenol, tetrachloroethylene, toxaphene, triclopyr

mode of action: Interferes with transmissions of nerve impulses across axons disrupting primarily the central nervous system.

immediate effects: Convulsions (may occur for several days after exposure); uncoordination; induces rapid metabolism of drugs and naturally occurring steroid hormones; hypersensitivity of skin or face and extremities; headache; dizziness; nausea; vomiting; tremors; confusion; muscle weakness; involuntary eye movements; slurred speech; pain in chest and joints; skin rash; labored breathing; central nervous system stimulation followed by depression; diarrhea; brain wave disturbances; hyperthermia; hypertension; salivation; sweating.

long-term effects: Cumulative; transfers through placenta to fetus; found in mother's milk; carcinogens; suspect teratogens; suspect mutagens; fetotoxins; aplastic anemia; "reproductive effects"; testicular damage; eye damage; affects hormone levels; central nervous system damage; bladder, kidney, liver, lung and thyroid damage; blood and spleen damage; anemia; recurrent asthma; irregular hearbeat; atrophy of adrenal cortex; behavior changes in young of mother exposed at even low levels during pregnancy; embryotoxin; decreased fertility; immunotoxin; abnormal brain waves;

increased mortality in young; teratogens; porphyria cutanea tarda; sleep disturbance; hallucinations.

environmental effects: Bioaccumulate; persistent; many are volatile, traveling long distances in the atmosphere and settling in distant locations; decreased fertility in birds; egg-shell thinning in birds; groundwater contaminants.

Organophosphate

examples of pesticides in this class: acephate, acephate-met, azinphos-ethyl, azinphos-methyl, bensulide, chlorpyrifos, cythioate, diazinon, dichlorvos, dimethoate, ethoprop, fenamiphos, fosetyl-al, glyphosate, isazophos, isofenphos, malathion, methyl parathion, monocrotofos, naled, omethoate, parathion, phosmet, ronnel, sulfoTEPP, temephos, TEPP, trichlorfon, vamidothion

mode of action: Acetocholinesterase inhibitor, damaging nerve function, except for glyphosate.

immediate effects: Behavioral disturbances; uncoordination; muscle twitching; headache; dizziness; nausea; anxiety; irritability; loss of memory; sleep pattern change; restlessness; weakness; tremor; abdominal cramps; diarrhea; sweating; salivation; tearing; excessive nasal discharge; blurred vision; constriction of pupil; slowed heartbeat; confusion; incontinence; hypertension.

long-term effects: Delayed neurotoxicity ["...tingling and burning sensations in the limb extremities followed by weakness in the lower limbs and ataxia. This progresses to paralysis, which in several cases, affect the upper limbs also...Recovery is seldom complete in adults; with the passage of time the clinical picture changes from flaccid to a spastic type paralysis" WHO (1986, p. 59)]; some are cumulative; persistent anorexia; weakness; malaise; nerve damage via destruction of myelin sheath around nerve fibers; carcinogens; mutagens; fetotoxins; hormonal inhibition; eye damage; suspect mutagens; suspect carcinogens; sterility and impotence; embryotoxins; suspect teratogens; immunotoxins; indication of bone marrow damage and aplastic anemia; kills white blood cells; sperm and other reproductive abnormalities; suspect viral enhancers; ulcers; abnormal brain waves; reduced protein synthesis in fetus; liver damage; kidney damage; suppressed antibody production; decreased auditory attention, visual memory, problem solving, balance, and dexterity.

environmental effects: Responsible for the deaths of large numbers of birds on turf and in agriculture; affect breeding success in birds; embryotoxins in birds; can change feeding habits in birds. Surface water contaminants.

Carbamate

examples of pesticides in this class: aldicarb, asulam, barban, bendiocarb, carbaryl, carbofuran, dioxacarb, diram, ethiofencarb, fosamine ammonium, methiocarb, methomyl, propham, propoxur, thiophanate ethyl, thiophanate methyl, trimethacarb

mode of action: Inhibits acetocholinesterase and so damages nerve function.

immediate effects: Sensory and behavioral disturbances; uncoordination; depressed motor functions; malaise; muscle weakness; dizziness; sweating; headache; salivation; nausea; vomiting; abdominal pain; slurred speech; difficult breathing;

blurred vision; muscle twitching; spasms; convulsions; diarrhea; depression of cholinesterases even more prominently in fetus; skin sensitization.

long-term effects: Memory loss; behavioral defects; suspect mutagens; mutagens; carcinogens; cataracts; suspect carcinogens; teratogens; spleen, bone marrow, liver and testes damage; reduced sperm levels; fetotoxins; suspect viral enhancers; increased organ weights; decreased body weights; anemia; decreased hemoglobin; decreased fertility from ovary and testes damage; may convert to *N*-nitroso compounds in soil and in vivo with saliva.

environmental effects: Can disrupt schooling behavior of fish; teratogens in fish; toxic to earthworms (thiophanate methyl); reduction in earthworm and invertebrate populations (WHO 1986, pp. 56-57); groundwater contaminants.

Phenoxy

examples of pesticides in this class: 2,4-D, 2,4,5-T (Agent Orange), CNP, dichlorprop, MCPA, MCPP, mecoprop, silvex

mode of action: Act as synthetic growth hormones in plants; in animals it is poorly understood.

immediate effects: Skin and mucous membrane irritation; dizziness with prolonged inhalation; vomiting; chest pain; diarrhea; headache; confusion; muscular stiffness; unconsciousness; increased acidity of blood; hyperventilation; nerve damage; brain wave changes; eye irritation; swelling of extremities; incontinence; sweating; stupor; respiratory depression.

long-term effects: Carcinogens; heart, liver, and kidney damage; delayed fetal development; suspect mutagens; teratogens; fetotoxins; anorexia; ulceration of mouth and throat; immunotoxin; nerve damage. Several pesticides in this class are contaminated with dioxins.

environmental effects: Groundwater contaminants.

Triazine

examples of pesticides in this class: ametryn, anilazine, atrazine, chlorinated isocyanurates, cyanazine, promaton, prematryn, propazine, simazine, terbutryn

mode of action: May disturb the metabolism of vitamins.

immediate effects: Skin and eye irritation; nausea; vomiting; diarrhea; muscular weakness; salivation.

long-term effects: Carcinogens; suspect mutagens; immunotoxin; adrenal damage; kidney and urinary tract stone formation; teratogens; lung damage; suspect fetotoxins; liver and kidney damage; disturbances in sperm production.

environmental effects: Groundwater contaminants.

Amide

examples of pesticides in this class: acetochlor, alachlor, benzadox, butachlor, butam, carboxim, CDAA, chlordimeform, cycloheximide, DEET, fomesafen, iprodione, isoxaben, metalachlor, pronamide, propachlor, propanil, vinclozolin

mode of action: Not fully understood.

immediate effects: Skin irritant and sensitizer; irritating to eyes and respiratory tract; nausea; headache; uncoordination; stiffness of movement; salivation; tremors; muscle weakness, sensitivity to light.

long-term effects: Chloracne via dioxin contamination (propanil); carcinogens; mutagens; irreversible eye damage; kidney and liver damage; suspect teratogens; immunotoxins; cardiovascular effects; embryotoxins; sperm damage.

environmental effects: Groundwater contaminants, *N*-nitroso contaminants.

Benzimidazole

examples of pesticides in this class: benomyl, carbendazim, fenazaflor, thiabendazole

mode of action: Interferes with cellular respiration.

immediate effects: Dizziness; nausea; vomiting; tremors; convulsions; decreased respiratory rate; lethargy; pupil dilation; eye irritation.

long-term effects: Defective or incomplete development of bone marrow; suspect carcinogens; suspect mutagens; testicular damage; mutagens; anemia; teratogens; liver damage; reduced sperm; blood damage.

environmental effects: Groundwater contaminants.

Benzonitrile

examples of pesticides in this class: bromoxynil, chlorothalonil, dichlobenil, ioxynil

mode of action: May be due to uncoupling of oxydative phosphorylation and inhibiting of electron transport, with inhibition of some enzymes.

immediate effects: Irritation of skin and mucous membranes; dermatitis;
Bromoxynil: dizziness; elevation of some enzymes; headache; hyperthermia; muscle pain; thirst; vomiting; weakness; weight loss; anorexia.
Chlorothalonil: hyperexcitability.
Ioxynil: excess blood in all organs; edema of lungs and brain.

long-term effects: Carcinogens; teratogen; skin, eye, and kidney damage;
Chlorothalonil: growth suppression; pre- and postnatal damage; kidney destruction.
Suspected - dichlobenil: anorexia; blood in urine; kidney damage; liver damage; reproductive changes with postnatal damage.

environmental effects: Groundwater contaminants.

Dinitroaniline

examples of pesticides in this class: benefin, butralin, dinitramine, ethafluralin, isopropalin, oryzalin, pendimethalin, trifluralin

mode of action: Interfere with cell respiration.

immediate effects: Skin and eye irritation.

long-term effects: Cataracts; suspect mutagen; liver and kidney damage; carcinogens; teratogens; fetotoxins.

environmental effects: Groundwater contaminants.

Phthalate

examples of pesticides in this class: captafol, captan, DCPA, dibutyl phthalate, dimethyl phthalate, endothall, folpet

mode of action: Interfere with cell respiration.

immediate effects: Skin, eye and respiratory tract irritants; hypothermia; irritability; listlessness; blood in urine; death due to heart or lung failure; convulsions; may depress central nervous system.

long-term effects: Skin sensitizers; anorexia; carcinogens; mutagens; teratogens; fetotoxins; immunotoxins; testicular atrophy.

environmental effects: unknown at this time

Pyrethroid

examples of pesticides in this class: allethrin, bioresmethrin, cismethrin, cyfluthrin, cypermethrin, fenvalerate, flucythrinate, fluvalinate, permethrin, resmethrin, synthetic pyrethrum and/or pyrethrins

mode of action: Pyrethroids inhibit sodium and potassium conduction in nerve cells and block nerve impulse transmission. Many times pyrethroids are mixed with piperonyl butoxide in formulations.

immediate effects: Symptoms similar to DDT poisoning (see organochlorine).
T-syndrome: tremors; exaggerated startle response; hyperthermia.
CS-syndrome: excessive writhing and salivation; decreased startle response; increase in adrenalin and blood sugar.
Other possible effects: convulsions; diarrhea; headache; vomiting; labored breathing; excessive nasal mucous discharge; irritability; sweating; sudden swelling of face, eyelids, lips, mouth, and throat tissues; hay-fever like symptoms; elevated pulse.

long-term effects: Suspect mutagens; suspect teratogens; suspect carcinogens; immunotoxins; decreased hormone release from brain; some may be cumulative.

environmental effects: Highly toxic to fish, bees, and aquatic arthropods.

Thiocarbamate

examples of pesticides in this class: amobam, butylate, cartap, CDEC, diallate, disulfiram, EPTC, ethiolate, ferbam, mancozeb, maneb, metam sodium, metiram, nabam, thiram, triallate, vernolate, zineb, ziram

mode of action: Inhibits acetaldehyde dehydrogenase, which is essential in conversion of acetaldehyde to acetic acid.

immediate effects: Skin, eye and respiratory tract irritants; skin sensitizers; hyperactivity; central nervous system depression; bloody diarrhea; general weakness.

Thiram is the methyl analog of disulfiram, used in drug therapy for alcoholics. In combination with alcohol, disulfiram quickly induces flushing, restlessness, anxiety, headache, nausea, vomiting, hyperventilation, constriction sensation in the neck, chest pain, sweating, thirst, weakness, vertigo, and possible circulatory collapse, coma, and death. These reactions may occur when **thiram and alcohol exposure** coincide.

long-term effects: Protein-deficient animals are more susceptible to toxicity of some thiocarbamates; carcinogens; mutagens; delayed neurotoxicity; testicular and ovarian effects; kidney damage; sperm damage; teratogen; fetotoxin; anemia. Ethylene thiourea (ETU), a transformation product of some thiocarbamates, is characterized as a carcinogen, mutagen, teratogen, and goiterogen (causes thyroid damage).

environmental effects: ETU is a groundwater contaminant.

Triazole

examples of pesticides in this class: amitrole, flusilazole, triadimefon

mode of action: Inhibition of liver enzymes.

immediate effects: unknown at this time

long-term effects: Carcinogens; suspect mutagens; may affect growth rate; goiter producing; fetotoxins; liver damage.

Botanicals -- Pyrethrum, Rotenone, Ryania, and Sabadilla

Pyrethrum

mode of action: Blocks nerve impulse transmission.

immediate effects: Skin irritation; asthmatic reactions (those with asthma problems should avoid pyrethrum use, high doses yield tremors, ataxia, labored breathing, and salivation); numbness of lips and tongue; vomiting; diarrhea; headache; uncoordination; stupor. Allergic reactions as from other *Compositae* such as ragweed and chrysanthemum.

long-term effects: Piperonyl butoxide, carbamates, and organophosphates may be combined with pyrethrum in various formulations. These added ingredients may result in symptoms listed under the appropriate class description.

environmental effects: Highly toxic to fish and bees.

Rotenone

mode of action: Inhibits cell respiration and blocks conduction of nerve impulses.

immediate effects: Numbness of mouth and tongue; nausea; vomiting; gastric pain; muscle tremors; uncoordination; irritation of skin and respiratory tract; respiratory stimulation followed by depression and death.

long-term effects: May be mixed with piperonyl butoxide in various formulations resulting in symptoms of that compound; suspect carcinogen; suspect teratogen; suspect fetotoxin; liver and kidney damage.

Ryania

immediate effects: Retraction of eyes into socket; vomiting; weakness; diarrhea; slow deep breathing; salivation; central nervous system depression; coma; death due to respiratory failure.

Sabadilla

mode of action: Similar to that of digitalis.

immediate effects: Irritating to upper respiratory tract and skin; vomiting; headache; giddiness; weakness; twitching; convulsions; hypothermia; death due to respiratory or cardiovascular failure.

Lawn Care Pesticide Clusters

18 Major Lawn Care Pesticides

atrazine **	DCPA	MCPA **
benefin	diazinon **	mecoprop (MCPP) **
carbaryl **	dicamba **	MSMA
chlorothalonil **	glyphosate	oryzalin **
chlorpyrifos **	iprodione **	pendimethalin **
2,4-D **	isofenphos **	trichlorfon **

27 Minor Lawn Care Pesticides

acephate **	ethoprop **	metalaxyl	propoxur **
anilazine **	fenarimol **	oxadiazon	simazine **
bendiocarb **	fosetyl-al	PCNB	thiram **
benomyl **	isazophos	permethrin **	triadimefon **
bensulide	malathion **	pronamide **	triclopyr **
bentazon	mancozeb	propamocarb	trifluralin **
chloroneb	maneb **	propiconazole **	

Note: ** = pesticides listed on the EPA's Toxics Release Inventory

Some examples are given here.

The full list can be seen on the website:
http://members.aol.com/rccouncil/ourpage/samples.htm

chlorpyrifos ***CAS # 2921-88-2***

chemical class: organophosphate
principal use: insecticide; virtually all homeowner uses of chlorpyrifos are banned in the U.S. as of December 31, 2001

detected in groundwater, and in surface water
listed on the EPA's Toxics Release Inventory

long-term effects on mammals: cumulative; fetotoxin; delayed neurotoxin; sterility and impotence in bulls

effects on non-target species:

immediate toxicity very high for: molluscs, fish, crustaceans, bees, aquatic insects;
high to very high for birds;
low to high for amphibians

long-term toxicity: birds - leg weakness, delayed neurotoxicity; fish - affects growth; crustaceans - affects reproduction and equilibrium; toxic to some plants

transformation product: pyridinol

common trade names: Dursban; Dowco 179; Lepister (with flucythrinate); Lorsban; Pyrinex; Salut (with dimethoate)

2,4-D ***CAS # 94-75-7***

chemical class: phenoxy
principal use: herbicide

detected in groundwater, and in surface water
endocrine disrupting effect
listed on the EPA's Toxics Release Inventory

long-term effects on mammals: carcinogen; suspect mutagen; teratogen; suspect fetotoxin; immunotoxin; toxic injury to liver, kidney, and central nervous system

effects on non-target species:

immediate toxicity: low to very high for fish, crustaceans;
low to high for birds, non-target insects;
low to medium for amphibians, bees; medium for molluscs;
low for soil organisms

long-term toxicity: birds - can affect egg production;
fish - cumulative;
amphibians - inhibits frog egg development;
crustaceans - may significantly reduce population;
molluscs - reduction in population, cumulative;
plants - leaf malformation;
soil organisms - may inhibit growth;
can favor growth of insects and pathogens

transformation products: 2,7-dichlorodibenzo-p-dioxin; 1,3,7-trichlorodibenzo-p-dioxin; 1,3,6,8-tetrachlorodibenzo-p-dioxin; 1,3,7,9-tetrachlorodibenzo-dioxin; TCDD; 2,4-dichlorophenol

common trade names: Agricorn D; Agrotect; Amidox; Cloroxone; College Brand Weed Killer; Ded-Weed Aero Ester; Demise; Dicotox; Dinoxol; Dymec; Esteron 44; Fersone; Green Cross Amine 80; Hormotox; Lawn-Keep; Lithane; Miracle; Niagara Am Sol; Plantgard; Raid Weed Killer; Weedone; Weed-B-Gon; (many other names)

diazinon ***CAS # 333-41-5***

chemical class: organophosphate
principal use: insecticide; banned from use on golf courses and turf farms in USA

detected in groundwater, and in surface water
listed on the EPA's Toxics Release Inventory

long-term effects on mammals: suspect mutagen; fetotoxin; suspect neurotoxin; allergic dermatitis; conjunctivitis; immunotoxin

effects on non-target species:

immediate toxicity: very high for birds, fish, amphibians, crustaceans, bees, aquatic insects;
toxic to some plants

long-term toxicity: birds - teratogen

transformation products: sulfoTEPP; TEPP

common trade names: Bug-B-Gon; Spectracide; AG 500; Alfa-Tox; Basudin; Dazzel; Diazajet; Diazatol; Diazide; Diazinon; Diazitol; Diazol; dimpylate; Dipofene; G 24480; GardenTox; Knox Out 2FM; Neocidol; Nipsan; Sarolex

isopropylamine salt of glyphosate ***CAS # 38641-94-0***

chemical class: organophosphate (non-acetocholinesterase inhibitor)
principal use: herbicide

long-term effects on mammals: suspect carcinogen (*RCC carcinogenicity rating*); suspect mutagen
transformation product (formaldehyde): carcinogen; suspect mutagen; liver damage; eye damage from transformation to formic acid
transformation product (*N*-nitrosoglyphosate): suspect carcinogen; suspect mutagen
contaminant of surfactant: carcinogen

effects on non-target species:

immediate toxicity: low for bees and birds; low to medium for fish and crustaceans
surfactant: medium to high for fish

long-term toxicity: plants - mutagen

transformation products: formaldehyde; *N*-nitrosoglyphosate (in contact with nitric acid)

surfactant: polyoxyethyleneamine
contaminant of surfactant: 1,4-dioxane

common trade names - isopropylamine salt of glyphosate: Pondmaster; Rattler; Rodeo; Roundup; Roundup L&G; Shackle; Shacklet C; Spasor; Sting; Vision

common trade names - glyphosate (CAS # 1071-83-6): CP67573; Fallow Master (with dicamba); Landmaster (with 2,4-D); Mon 0573

common trade names - sodium salt of glyphosate (CAS # 70393-85-0): Palado

common trade names - glyphosate trimesium (CAS # 81591-81-3): Touchdown

Iprodione ***CAS # 36734-19-7***
chemical class: amide
principal use: fungicide

listed on the EPA's Toxics Release Inventory

long-term effects on mammals: unknown at this time

effects on non-target species:

immediate toxicity: low to medium for birds; medium for fish; low to high for crustaceans

common trade names: Chipko-26019; glycophene; Kidan; Rovral

malathion ***CAS # 121-75-5***
chemical class: organophosphate
principal use: insecticide

detected in groundwater
endocrine disrupting effect
listed on the EPA's Toxics Release Inventory

long-term effects on mammals: suspect mutagen; suspect teratogen; delayed neurotoxin; allergic reactions; behavior effects; ulcers, gastrointestinal inflammation; damage to eyesight; abnormal brain waves; immunosuppression

effects on non-target species:

immediate toxicity: very high for bees (nectar of treated plants toxic), amphibians, aquatic insects;
medium to very high for crustaceans;
medium to high for birds, fish;
high for earthworms;
medium for aquatic worms

transformation products: malaoxon; O,O,S-trimethyl phosphorothioate

common trade names: AC 4049; Carbofos; Cythion; Cyuthion; EmmatosAC 4049; For-Mal; Fyfanon; Kop-Thion; Kypfos; Malagram; Malakill; Malamar; Malaphos; Malatal; Malathion; Malathiozoo; Malaude; Malmed; mercaptothion (South Africa); MLT; Zithiol

permethrin ***CAS # 52645-53-1***

chemical class: pyrethroid
principal use: insecticide, acaricide

detected in surface water
endocrine disrupting effect
listed on the EPA's Toxics Release Inventory

long-term effects on mammals: blood damage

effects on non-target species:

immediate toxicity: very high for fish and marine invertebrates; toxic to bees; practically non-toxic to birds

common trade names: Ambush; Atroban; Bio Flydown; Corsair; Dragon; Ectiban; Expar; Gard-Star; Hard-Hitter; Insectiban; Jureong; Kafil; Nix; Over-Time; Permectrin; Pounce; Quamlin; Rondo; Stockade; Tornade; Torpedo

trifluralin ***CAS # 1582-09-8***

chemical class: dinitroaniline
principal use: herbicide, cancelled most uses USA, 1982 (but still being used)

detected in groundwater, and in surface water
endocrine disrupting effect
listed on the EPA's Toxics Release Inventory

long-term effects on mammals: suspect carcinogen; suspect mutagen; suspect teratogen; fetotoxin
contaminant: carcinogen; mutagen

effects on non-target species:

immediate toxicity: very high for amphibians; high to very high for fish and crustaceans;
medium for aquatic insects; low to medium for bees; low for birds

contaminant: *N*-nitroso-di-*n*-propylamine

common trade names: All American Crabgrass Preventer Plus Lawn Food (with benefin); Buckle (with triallate); Cannon (with alachlor); Carpidor; Commence (with clomazone); Fertilome Crabgrass Preventer Plus Lawn Food (with benefin); Green Light First Down Crabgrass Control (with benefin); Greenskote (with benefin); Hi-Yield Crabgrass Preventer (with benefin); Ipersan; Janus; Laurel; Lextra (with linuron); Mudekan; Preen; Salute (with metribuzin); Setre XL 2G (with benefin); Su Seguro Cardidor; Team (with benefin); Trefanocide; Treficon; Treflan; trifluraline (France)

Alternatives to Pesticides: Organic Land Care and Non-Toxic Pest Control

Contents:

In Binder Pocket:

Northeast Organic Farming Association (www.massorganic.org)

Home Composting (www.state.ma.us/dep/dephome.htm)

Don't Trash Grass (www.state.ma.us/dep/dephome.htm)

Beautiful Lawns Naturally booklet (www.ci.wellesley.ma.us/nrc/pesticide)

Healthy Lawns and Landscapes (www.ci.wellesley.ma.us/nrc/pesticide)

Web Resources:

Northeast Organic Farming Association (NOFA)
www.massorganic.org

Solving Ant Problems Non-chemically, Journal of Pesticide Reform,
http://www.pesticide.org/ants.pdf

Wellesley Pesticide Awareness Campaign/NOFA "Beautiful Lawns Naturally."
www.ci.wellesley.ma.us/nrc/pesticide Click on Organic Lawn Care Guide.

Journal of Pesticide Reform fact sheets on safer alternatives to pesticides.
www.pesticide.org/factsheets.html

Wisconsin's School Integrated Pest Management Manual
http://ipcm.wisc.edu/programs/school

How To Implement An IPM Plan In Your Building(s) www.massdfa.org/publications.htm

Ecological roadside vegetation management (Federal Highway Administration)
www.fhwa.dot.gov/environment/veg_mgt.htm

Least Toxic Pest Control from BIRC (subscription service)
www.birc.org

Non-toxic or less toxic pest management services:

Northeast Organic Farming Association, list of accredited organic landscapers
www.massorganic.org

Ecological Landscaping Association, list of ecologically minded landscapers
www.ela-ecolandscapingassn.org

Resources on Composting and Organic Gardening

Massachusetts Department of Environmental Protection, One Winter St., Boston, MA 02108; www.mass.gov/dep/recycle, or call Ann McGovern (617) 292-5834;

Biocycle, pub. JG Press. Trade journal for composting and other organic recycling methods. Excellent source for the latest developments in the field. www.biocycle.net.

Organic Gardening, pub. Rodale, Inc., Emmaus PA. A good, practical magazine, full of information about organic gardening techniques. J. I. Rodale, founder of *Organic Gardening*, was one of the most ardent promoters of using compost to improve soil. The magazine regularly includes articles on composting.

Rodale Guide to Composting, Rodale Press. A composting "bible;" good source of information about the role of compost in soil health.

www.soilfoodweb.com - Informative web site by soil microbiologist Elaine Ingham of Oregon State University.

www.mastercomposter.com - Informative web site about home composting managed by Mary Tynes, Master Composter from Plano, TX.

What is Organic Land Care?

In chemistry, any molecule that contains a carbon atom is organic. NOFA, the Northeast Organic Farming Association, refers to a different meaning of organic, used to refer to food, farming, and now land care. By organic, we mean that no synthetic pesticides or synthetic fertilizers are used and that the land care practices used on a property will benefit the whole ecosystem.

In the past, organic land care was a term that had no specific definition or standards. To parallel the stringent standards farmers must meet to be certified as “organic,” the NOFA Organic Land Care Committee has developed standards for organic land care. These standards have adapted the principles used in organic agriculture to the special challenges of designing and maintaining landscapes.

The guiding principle of organic land care is to protect and enhance the natural ecosystem and to DO NO HARM. Another guiding principle is that plant health depends on growing the plant in the right place and in healthy soil appropriate to the habitat and needs of the plant. Important goals of organic land care include:

- Working with natural systems to enhance biological cycles rather than seeking to dominate them.
- Maintaining and improving the long-term health of soils.
- Avoiding pollution when creating or caring for landscapes.

Land care or landscaping consists of many different elements. Lawns, gardens, specimen trees and shrubs and natural areas are all landscaping. Land care also includes different activities such as installing new plants, maintaining existing ones, and removing diseased, dying or undesirable plants.

Organic Land Care Standards

Members of the Connecticut and Massachusetts Chapters of NOFA have created Standards for Organic Land Care: Practices for Design and Maintenance of Ecological Landscapes. This NOFA Organic Land Care Committee worked for two years to write the standards, which are the first of their kind in this country.

The NOFA Organic Land Care standards cover all aspects of land care, including: site analysis, soil health, fertilizers and soil amendments, planting and plant care, lawn and lawn alternatives, invasive plants, weeds, mulches, pest management, wildlife management, and disease control.

According to Kim Stoner, Ph.D., the chair of the committee, "These standards are just as rigorous as those set for organic agriculture by Connecticut and Massachusetts NOFA chapters, but they have also been adapted to address the special issues and challenges of designing and maintaining landscapes."

The 60-page standards spell out recommended, allowed, and prohibited practices and materials according to what the committee, consisting of land care professionals, scientists, educators, and activists, finds to be ecologically appropriate. Printed copies of the standards are now available for $20 each from NOFA/Mass, 411 Sheldon Road, Barre, MA 01005; 978-355-2853.

The Organic Land Care Standards Committee has adopted the following mission statement:

Education of land care professionals and concerned citizens in the methods, benefits and limitations of organic and sustainable land care, with the goal of eliminating pesticide and synthetic chemical use, improving the soil, increasing landscape diversity, and improving the health of people and all living organisms that make up the web of life on the earth.

We intend to accomplish this mission by creating a professional accreditation program beginning in spring 2002 and a public information workshop on the basics of organic land care. A brochure for concerned citizens is now available. To request a copy contact the Mass. Organic Land Care Administrator, Marilyn Castriotta, at castriotta@aol.com

Compost Provides an Alternative to Pesticides and Fertilizers

Massachusetts Department of Environmental Protection May 2002

How Does Compost Provide an Alternative to Pesticides and Fertilizers?

Good quality compost is the cornerstone of organic gardening and landscaping. The simple truth is that healthy, vigorous plants resist pests and diseases. The best way to raise healthy plants is to have healthy soil, and the best way to have healthy soil is to use compost.

Benefits of Using Compost:

- Adds organic matter, which improves soil structure (increases water and nutrient-holding capacity of sandy soils and helps lighten heavy, clayey soils);
- Provides nutrients, moisture retention and porosity needed to support plant and soil life;
- Provides continuous release of the types and amounts of macro and micronutrients plants need in a form they can absorb for about one year;
- Increases biodiversity by adding microbes to the soil, as well as earthworms, nematodes, fungi and a host of other soil dwelling organisms;
- Helps plants resist disease;
- Buffers the soil (helps soil maintain a neutral pH, neither too acidic nor too alkaline).

Biodiversity in the Soil

Biodiversity is one of the foundations of organic gardening and yard care because organic gardening relies on natural systems to manage pests and enhance growth. Biodiversity makes it possible to control pests without chemicals. Every organism has a natural enemy. If we encourage an environment that is conducive to all species, the pests' natural enemies will keep potential pest populations in check, and none will be able to dominate. Organic practices require tolerance for all creatures and recognition that all have a role to play. As long as biodiversity is maintained, it is unlikely that any species will threaten the overall health of the garden or landscape.

Synergistic Effect of Compost Results in Healthy Plants

Compost's powerful effect on plant health and vigor comes from the combination of benefits it provides, which cannot be artificially replicated as successfully, cost-effectively or sustainably. There are no synthetic products that provide all the beneficial and synergistic effects that compost imparts to the soil and the plants growing in it. Not only does compost

supply a whole ecosystem of beneficial soil organisms, it also provides all the things they need to thrive and multiply – food, moisture-holding humic substances, buffering qualities and enough diversity so none can take over. That is why using high quality compost eliminates the need for synthetic fertilizers and pesticides in our lawns, gardens and landscapes.

On top of all these horticultural benefits, composting enables us to organically recycle as much as 50% of our household waste.

Municipal Composting Strategies

Municipal composting is a cost-effective and environmentally sound way to recycle your community's leaves and yard waste. It provides a way for the municipality and its residents to comply with the statewide ban on disposal of yard waste and converts organic debris into a beneficial soil amendment that may be used to improve growing conditions on municipal and residential property. Adding good quality compost to the soil results in healthy plants, essentially eliminating the need for pesticides and fertilizers.

Develop a municipal composting program and register it with the Massachusetts Department of Environmental Protection (DEP)

DEP provides technical assistance to help develop or improve municipal composting programs. See contact information below.

Develop a strategy for keeping municipal compost pesticide-free

This may entail educating the public about persistent herbicides and discouraging users of the municipal compost site from bringing grass clippings that have been treated with persistent herbicides to the site. Promote on-site management of grass clippings (see below).

Provide education on home composting and leaving clippings on lawns

Home made compost can be kept free of contaminants by the resident. Home composting also provides residents with a way to recycle additional organic waste, such as fruit and vegetable scraps and soiled paper. Lawn clippings that may contain herbicides are better left on residents' lawns.

- Provide composting information. DEP provides home composting brochures through the Municipal Recycling Grant program to all municipalities that request them.
- Provide information describing how and why to leave grass clippings on the lawn. DEP provides a "Don't Trash Grass" brochure through the Municipal Recycling Grant program to all municipalities that request them. Encouraging residents to leave clippings on their lawns is a key alternative to accepting grass clippings at municipal compost sites. The more outreach you provide, the more successful you will be at reducing this portion of the waste stream without managing it on the municipal level.

Provide physical resources for composting

- Provide compost bins through DEP's Municipal Recycling Grants and publicize your program effectively and regularly.
- Provide municipal compost to residents to encourage sustainable, pesticide-free yard care practices.

Northeast Organic Farming Association Articles

The New Job Where Organic Isn’t about Food

by Jonathan von Ranson, Editor
NOFA/Mass News

The new position of NOFA/Mass Land Care Coordinator is now filled, and the person who occupies it, Marilyn Castriotta, says a few years ago she dedicated the rest of her life to protecting the environment.

"I literally actually woke up one day realizing this was it," she said. "Like a light went off." She has her masters in anatomy and physiology and had been doing diagnostic medical work in hospitals for ten years. Now, since moving out more into the environment, she wonders why she didn’t "realize this earlier... "I’m more of a preventative person!"

Marilyn, who lives in Cambridge but grew up in Barre, said another flash of insight came when she learned that there’s more non-farm land than farmland under active management in the Northeast. "I always thought I’d work with organic food," she said. But she realized all the organic agriculture in the world wouldn’t improve the treatment that land got from non-farmer owners and professional landscape maintainers and forestry people. This summer she joined the land care crew of Priscilla Williams’ Pumpkin Brook Organic Gardening. Priscilla is the NOFA/Mass member who, along with Don Bishop of Gardens Are... played a key role in the development of the new NOFA-administered program. That’s where Marilyn heard about the position, funded for its startup year by Massachusetts Environmental Trust and New England Grassroots Environment Fund.

She started two months ago overseeing the training program for land care professionals to become accredited organic. That allows them to offer land care labeled organic in Massachusetts and Connecticut. She is also responsible to educate wider and wider circles of landowners about the benefits of non-toxic, indigenous-oriented, low-energy approaches to landscaping and land care. She says it’s "very exciting to be meeting people who really want to do it. It seems like the audience is gathering itself."

At the same time, there’s much need for information. "People will earnestly go to a garden center wanting to do things less toxically and sometimes get the wrong information because the people giving the information haven’t been taught the answers."

Organic land care isn’t just about the fertilizer and pesticide issue; it’s an effort to lighten the energy impact of land care by lighter use of power equipment, more nearby sources of fertilizer (compost), etc. In general, it’s about increasing the consciousness of property owners about the life of the land entrusted to their care and the ways they can let it do its ecological job better, themselves and through enlightened land care professionals.

"The awareness of the great need for protecting the Earth is starting to take hold," Marilyn said. Already in her job, she sees "the great number of non-related activities, all of the people from different parts of the picture, their interests converging. That’s where I hope the spirit of change will make a difference," she said, "in our interconnectedness."

Impressions of the First Organic Garden Tour – [Excerpts]

Cheryl Hill, Watertown, NOFA Board of Directors

The First Organic Garden Tour couldn't have been more perfect for me. On a hot July day [2002], while my husband and son were out of town, just me and the dog cruising around the towns of Newton, Needham and Wellesley. Dropping in on some very knowledgeable and passionately organic gardeners who are reaping the rewards of their thorough research into sustainable gardening methods. Low cost. Low impact. Superb results.

At the first stop, despite the close suburban quarters, I saw a large butterfly garden, shaded perennials, and useful medicinal herbs. Now I know I'm not the only one with an old-fashioned push-type mower and rain-collection system.

At the fourth site, I learned that roses love coffee grounds and garlic. Daffodils planted with any member of the allium family (onions) will not be bothered by squirrels. Covering bulbs with chicken wire and a little more mulch or compost will also keep the squirrels at bay. And cinderblocks make a strong border for raised beds that won't fall apart like wood.

Site 5 bordered the Charles River Reservation. Their solution for poison ivy was a wide black plastic path covered with mulch, which allowed the owners to put their kayak and canoes in the water without the itch. Corn gluten keeps the pH of the lawn just right for fescue (drought-tolerant grass) and deters crabgrass, mold, etc. Astilbe makes a nice ground cover for a shady area. A woman from the Waltham Garden Club said one rule for dividing perennials is "Roots Not Fruit in the Fall."

Site 7 was truly amazing (read engineering and horticultural marvels). A passive solar heating system provides 60% of the home heat and hot water. Although most of the back wall of the house is glass, with tile floors, because of the sun's seasonal angles, direct light penetrates only 1 foot during the summer but all the way to the front wall in winter. Green leaf mold (www.greenleafcompost.com) and household compost keeps the asparagus, kiwi, Asian Pears, high bush cranberry, strawberry, jostenberry, raspberry, blueberry, oriental chestnut tree, peach trees, apple tree, and many other delightful and edible species happy. Tomatoes like red plastic for ground cover—something about the light-wave spectrum. Copper sulfate keeps fungus off the peach trees. This was a wonderful example of how to blend solar heating with low-growing shade/fruit trees and full-sun crops on a suburban plot. President Bush and the oil lobby must be scared to death. Alternative energy is here. You can have it all!

Site 9 was an inspirational lesson in what is possible in an average-size yard owned by someone with allergies and a house that needs regular repainting. I had seen some incredible Japanese gardens during my twelve years in Japan, but this English theme with many Japanese species was true stunner. One hundred forty different Rhododendrons, 48 Conifers, 9 types of Japanese maples, spring bulbs, and 13 "other trees of note" are crammed into a yard overlooking the Newton train stop.

Books

Tiny Game Hunting: Environmentally Healthy Ways To Trap And Kill The Pests In Your House And Garden New Edition
by Hilary Dole Klein, Adrian M. Wenner, Courtlandt Johnson. This book, appealing to the hunter in us all, shows how to triumph in combat with pests without losing the war to toxic chemicals. Tiny Game Hunting, written in a lively and entertaining style and illustrated with detailed drawings, gives more than two hundred tried-and-true ways to control or kill common household and garden pests without using toxic pesticides. Softcover, 275 pages, $14.95

Common-Sense Pest Control by William Olkowski, Sheila Daar, Helga Olkowski, If you have a home, an apartment, a garden, or a pet, you've probably got pests. And if you want to control pests, there's no need to poison yourself. While the Green Revolution and DDT and other pesticides dominated the world of agribusiness, thoughtful scientists world-wide were simultaneously and silently working on "Integrated Pest Management", which is often as effective as pesticides at reducing or eliminating pests. From ridding your apartment of cockroaches to dealing with the regional deforestation threats of Gypsy Moths, this is the authoritative book on how to control pests by using the natural mechanisms of control that have kept our planet from being savaged, prior to our human disruptions. Hardcover, 712 pages, $39.95

Edaphos: Dynamics Of A Natural Soil System 2nd Edition by Paul D. Sachs. If you have ever wondered why the soil and plants respond the way they do to the many different treatments we apply, then EDAPHOS is the book for you. Author Paul Sachs spent sixteen years studying soil system dynamics and translated it all into a non-technical, non-boring book for anyone interested in knowing the finer details of how the soil system works. This book covers and connects the often difficult to understand subjects of soil chemistry, soil biology and soil physics (to name only a few) into an interesting and very clear story of how the soil machine runs. Softcover, 206 pgs, $14.95.

Handbook Of $uccessful Ecological Lawn CarE by Paul D. Sachs. Although written for professionals, this handbook offers vital information to any serious lawn steward interested in reducing or eliminating chemicals without sacrificing turf quality. It is guaranteed to make lawn care professionals think about the way in which they do business, both at the site and in the office. This book contains some very new information on lawn care alternatives. See the enclosed brochure for more information on this title. Softcover, 284 pages, $18.95.

Ecological Golf Course Management by Paul D. Sachs and Richard T. Luff is the most comprehensive work ever done on ecological turf management. It's a must-have for any superintendent interested in reducing or eliminating chemical pesticide use. *Ecological Golf Course Management* addresses the concerns of both the superintendent and the environmentalist. This book approaches quality turf management through an understanding of turf ecosystem dynamics conveyed in easy-to-read text. The turf manager will gain critical knowledge of natural soil system dynamics that has never been discussed in turf books before. It points out ways to exploit natural plant defense systems that have been largely ignored and to engage many of the powerful allies that live above and below ground. Hardcover, 200 pages, $59.95.

Presentation Packet

Here is an *Example* of an informational packet to present to a Board of Health or other Town Department

Contents

Memo:

To: **Town Department (e.g. Board of Health, Selectmen)**
From: **Concerned citizens/organizations of your town**
Date: **February 7, 2002**
Re: **Pesticide Use Reduction**

Goals:

Whereas pesticides, in addition to their intended effect on pests, can harm humans, pets, beneficial insects, plants, fish, birds, and other wildlife, we wish to reduce pesticide use in our town.

Today we are specifically asking the Board of Health to orchestrate an official alliance with the Selectmen, DPW, Park and Recreation to accomplish the following actions:

1. Alert the residents of our town that pesticides are dangerous and there are alternative actions and products available as substitutes. Send this message out with town bills at least once per year.

2. Alert the residents of our town that Diazinon and Dursban have been banned by the EPA, and they should be avoided.

3. Adopt a pesticide reduction policy on Town owned land and buildings in the form of an IPM [or organic] pest management policy which reduces [or eliminates] pesticides on town property.

We are certain that:

- **“Exposure to contemporary-use pesticides is greater than most people realize. Many populations of wildlife and humans are exposed.**
- **Exposure often occurs without the exposed individual's knowledge.**
- **A general lack of understanding by the public about pesticides and pesticide approval procedures has led to a false sense of security or to fear about the use of pesticides, both of which preclude rational analysis of the problem.**
- **Many contemporary-use pesticides adversely affect the reproductive, nervous, immune, endocrine, and metabolic systems.”**

Dr. Theo Colborn, Director, Wildlife and Contaminants Program, WWF US, coauthor "Our Stolen Future," from opening paragraph of a Consensus Statement released in 1999 by an expert group of scientists who met to discuss the health effects of contemporary-use pesticides at the Wingspread Conference, 1991.

Chapter 85 of the Acts of 2000

http://www.state.ma.us/legis/laws/seslaw00/sl000085.htm

AN ACT PROTECTING CHILDREN AND FAMILIES FROM HARMFUL PESTICIDES.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. (a) The general court finds that:

(1) the people of the commonwealth have a fundamental right to know about the use of pesticides;

(2) pesticides contain toxic substances, many of which may have a detrimental effect on human health and the environment and, in particular, have developmental effects on children;

(3) citizens of the commonwealth are being denied their right to know and their ability to make informed decisions about the level of pesticide exposure to them and their children; and

(4) information compiled regarding pesticide use in the commonwealth is not maintained in a manner which is useful to the public, thereby making it difficult to assess and address the potential health and environmental impact of pesticide use in the commonwealth;

(b) The policy goals of this act are to:

(1) prevent unnecessary exposure of children to chemical pesticides;

(2) promote safer alternatives to pesticides;

(3) ensure that clear and accurate notification concerning the use of pesticides in schools, day care centers and school age child care programs be made available so that measures may be taken to prevent and address pest problems effectively without endangering children or adults;

(4) promote the use of integrated pest management techniques to reduce the need for reliance on chemical pesticides; and

(5) develop a comprehensive, reliable and cost-effective system for collecting and organizing information on all categories of pesticide use in the commonwealth for review by government agencies, researchers, policy makers and the public to ensure the public health and safety and to protect the environment of the commonwealth.

League of Women Voters

Promoting Democracy in America

http://www.lwv.org/where/promoting/agricultural_read_pg4.html

Read About Agricultural Policy (cont.)

In fall 1989, the League opposed a bill in Congress that would have preempted stricter state laws on the regulation of pesticides. Following the 1990 League convention, as Congress was considering the periodic reauthorization of the major farm bill, **the League urged all members of the House to pass a bill that would protect land and water resources, reduce the use of toxic chemicals,** and target research and technical assistance to developing environmentally sound agriculture practices.

The League called for measures to strengthen conservation provisions, continue the conservation reserve, and permit retention of base payments and deficiency payments when farmers file and implement an approved plan for farming with environmentally beneficial practices. The League also called for national standards of organic production and against the export of pesticides that are illegal in the United States.

In 1988-1991, the League of Women Voters Education Fund (LWVEF), in cooperation with Public Voice for Food and Health Policy and state and local Leagues conducted a citizen education project on agricultural issues, including pesticide residues in food and water, sustainable agriculture, and research and technology.

American Public Health Association

FOR IMMEDIATE RELEASE
Contact: David Fouse, 202-777-2435
Carole Zimmerman, 202-777-2434

http://www.apha.org/news/press/1998/pesticid.htm

Seeks to Protect Children of Farm Workers from Pesticides

Washington, DC, October 22, 1998 - The American Public Health Association today joined in petitioning the U.S. Environmental Protection Agency to create stronger safeguards under the Food Quality Protection Act to protect the health of children of farm workers and of children who live on or near farms from pesticides.

"More than a million children of farm workers in the United States are exposed to agricultural pesticides from their parents and many more children are exposed from living on or near farms," said Mohammad N. Akhter, MD, MPH, executive director of the American Public Health Association. "Pesticides pose a much greater risk to children than adults, and farm children are exposed to much higher concentrations of these toxins from parents who bring pesticide residues home with them on their clothing and skin, from contaminated well water and even from breastmilk."

Infants and children, whose immune systems and organs are still developing, are much more vulnerable to pesticide toxicity than adults. Children frequently have higher exposure to pesticides as well. They breathe more air, eat more food and drink more water per body mass compared with adults; they play on the ground and often place their unwashed hands in their mouths.

"Several studies have suggested a link between pesticides and leukemia, sarcomas and brain tumors," said Akhter. "The public health community needs reliable data and proven research to protect the nation's health against pesticides and other harmful substances. We urge federal funding for studies to better measure the long-term impact of these pesticides on our environment and health, particularly for vulnerable populations such as children. **Just a small amount of toxin exposure during critical periods of development can have an irreversible effect lasting a lifetime.**"

The American Public Health Association, the oldest and largest organization of public health professionals, represents more than 50,000 members from over 50 public health occupations.

American Academy of Pediatrics

Hazards of Common Toxic Chemicals
http://www.medem.com/MedLB/article_detaillb.cfm?article_ID=ZZZSZ3ZVQ7C&sub_cat=29

Children are particularly susceptible to pesticides in their environment. They can be exposed to pesticides in the food they eat and the water they drink. Pesticides are used on farms as well as in home lawn and garden care. Although they are designed to kill insects, weeds and fungi, many pesticides are toxic to the environment and to people, especially children. Too much exposure to pesticides can cause a wide range of health problems. Washing all fruits and vegetables with water is one way to reduce pesticide exposure for your entire family. Also, using in-season produce can help as they are less likely to be heavily sprayed. Try buying foods that are grown without the use of chemical pesticides, too. In your own garden, use non-chemical pest control methods and if you must spray, keep children and pets away from the sprayed area until it has been watered several times. The most important thing you can do to protect your children is to keep all pesticides out of their reach, preferably in a locked cabinet.

National Parent Teacher Association

1998 Reducing Pesticide Use at Home

http://www.pta.org/programs/ourworld/9801/feature.htm

Most people feel that getting rid of household pests such as cockroaches, mice, or rats is as simple as buying pesticide and using it in the house. However, the improper use of pesticides can result in serious health problems, especially for the developing bodies of children. In 1995, the American Association of Poison Control Centers reported that approximately 79,000 children were involved in common household pesticide poisonings or exposures.

Pesticides are chemicals designed to control or eliminate "pests" and are sold as sprays, liquids, sticks, powders, crystals, balls, and foggers. These pesticides can end up where no one really wants or expects them—in indoor air, on carpets, desks, tables, and toys, and in areas where children play. **To prevent unnecessary exposure to pesticides, the National PTA encourages the use of integrated pest management (IPM) at homes and schools**.

The best way to reduce pesticide use is by preventing the pests from making your house their home. Here are a few "pest prevention" suggestions:

- **Eliminate Food Sources**. Store foods in tightly sealed containers. Keep your kitchen clean. Regularly vacuum places where food may have been dropped, including chairs and sofas. Empty your garbage can frequently.
- **Eliminate Shelter**. Block off or get rid of pest hiding places. Many pests live inside cardboard and paper bags and cockroaches may even eat the glue that binds them together. Do not store boxes, cardboard, paper, clothes, or containers on the floor. Eliminate clutter, especially on the floor or in cabinets under sinks.
- **Prevent Access**. Block passageways through the floor and caulk and seal openings in walls and cabinets. Install screens on windows and doors.
- **Reduce Moisture**. Fix leaky plumbing and make sure there is no standing water in trays under your house plants, under your refrigerator, or in buckets. Do not leave wet rags and other damp materials lying around your house.

If your home has been invaded by pests, try to use non-chemical methods such as mouse traps and sticky insect traps, or more controlled pesticides such as a bait trap before using pesticide sprays or foggers. If you must use chemical pesticides, make sure to read the label and follow the directions carefully. Be sure to store any pesticides out of reach of children and make sure children are not allowed in the rooms where pesticides were recently used. Also, increase ventilation in the rooms during and after use of pesticides. If you have unused or partially used pesticide containers you want to get rid of, dispose of them according to the directions on the label or on special household hazardous waste collection days.

United States General Accounting Office: Reduce Pesticide Use

http://www.gao.gov/docdblite/summary.php?recflag=&accno=A01403&rptno=GAO-01-815

Agricultural Pesticides: Management Improvements Needed to Further Promote Integrated Pest Management GAO-01-815 August 17, 2001

Chemical pesticides play an important role in providing Americans with an abundant and inexpensive food supply. **However, these chemicals can have adverse effects on human health and the environment, and pests continue to develop resistance to them**. Sustainable and effective agricultural pest management will require continued development and increased use of alternative pest management strategies, such as integrated pest management (IPM). Some IPM practices yield significant environmental and economic benefits in certain crops, and IPM can lead to better long-term pest management than chemical control alone. However, the federal commitment to IPM has waned over the years. The IPM initiative is missing several key management elements identified in the Government Performance and Results Act. Specifically, no one is effectively in charge of federal IPM efforts; coordination of IPM efforts is lacking among federal agencies and with the private sector; the intended results of these efforts have not been clearly articulated or prioritized; and methods for measuring IPM's environmental and economic results have not been developed. Until these shortcomings are addressed, the full range of potential benefits that IPM can yield for producers, the public, and the environment is unlikely to be realized.

Subject Terms
Pesticides
Interagency relations
Environmental monitoring
Agricultural pests
Agricultural chemicals
USDA Integrated Pest Management Program

United States General Accounting Office: Lawn Care Pesticides

See http://www.getipm.com/government/fifra-laws/gao-rpt.htm for full report.

Risks Remain Uncertain While Prohibited Safety Claims Continue

Report to the Chairman, Subcommittee on Toxic Substances, Environmental Oversight, Research and Development, Committee on Environment and Public Works, U.S. Senate GAO/RCED-90-134 **March 1990**

Executive Summary

Purpose:

The professional lawn care business has developed into a billion dollar industry over the last decade as more and more people have turned to such companies for lawn maintenance. To create beautiful lawns free of weeds and pests, professional lawn care companies rely on chemical pesticides. Many homeowners purchase this service, while others purchase and apply these pesticides themselves. As with most pesticides, these chemicals have the potential to create serious problems affecting human health and the environment. The range of concerns about the risks of pesticides has expanded to include potential chronic health effects, such as cancer and birth defects, and adverse ecological effects. **Currently these pesticides are being applied in large amounts without complete knowledge of their safety**.

Concerns have been raised about protecting the public from exposure to the risk of lawn care pesticides. As a result, the Chairman, Subcommittee on Toxic Substances, Environmental Oversight, Research and Development, Senate Committee on Environment and Public Works, requested that GAO review the information that the lawn care pesticides industry-manufacturers, distributors, and professional applicators-provides to the public about the safety of its products, federal enforcement actions taken against lawn care pesticide safety advertising claims, and the reregistration status of 34 lawn care pesticides.

Background: Under the Federal; Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Environmental Protection Agency (EPA) is required to evaluate the risks and benefits of a proposed pesticide before it is registered for use. More recently, the FIFRA Amendments of 1988 (known as FIFRA '88) imposed mandatory time frames and provided resources to help accelerate the reregistration of older pesticides, including those used in lawn care products. Reregistration is the process of bringing approximately 24,000 registered pesticide products into compliance with current data requirements and scientific standards and taking appropriate regulatory action on the basis of this new knowledge. Last May GAO testified before this Subcommittee on the status of EPA's reregistration program and concluded that EPA had not made substantial progress in reassessing the risks of these pesticides.

FIFRA also authorizes EPA to take enforcement action against advertising claims made by pesticide manufacturers and distributors. This authority, however, does not extend to claims made by professional applicators such as lawn care companies. The Federal Trade

Commission (FTC), under its own legislative authority to protect consumers against false and deceptive advertising, can, however, take enforcement action against professional pesticide applicators as well as manufacturers and distributors.

GAO reported in 1986 that the pesticides industry sometimes makes safety claims for its products that EPA considers to be false and misleading and that EPA had taken few formal enforcement actions against safety claim. GAO concluded that EPA had made limited use of its authority over unacceptable advertising safety claims and recommended that EPA take steps to strengthen and improve its program for regulating such claims.

Results in Brief: GAO found that the lawn pesticides industry continues to make prohibited claims that its products are safe or nontoxic. Such claims are prohibited by because they differ substantially from claims allowed to be made as part of the approved registration. EPA considers these claims to be false and misleading. GAO also found that EPA has yet to establish an effective program to determine whether pesticide manufacturers and distributors are, in fact, complying with requirements. In addition, EPA does not have authority over safety claims made by professional applicators.

The FTC can act against false and misleading pesticide safety advertising by manufacturers and distributors, but it has taken no enforcement action in this area since 1986. FTC officials told GAO that it prefers to defer to EPA in such matters because of EPA's expertise and legislative authority. Fm has not acted against professional applicator claims because it believes EPA has been handling such claims on an informal basis.

Finally, EPA is still at a preliminary stage in reassessing the risks of lawn care pesticides under its reregistration program, which '88 requires to be completed within 9 years. Of the 34 most widely used lawn care pesticides, 32 are older pesticides and subject to reregistration. Not one of these, however, has been completely reassessed.

Health Risks of Lawn Care Pesticides Have Not Been Fully Reassessed

GAO's review of the reregistration status of 34 major lawn care pesticides determined that EPA is still at a preliminary stage in reassessing the risks of lawn pesticides and has not completely reassessed the health risks of any of the major lawn care pesticides subject to reregistration. While EPA has made some progress in identifying the data needs and conditions of reregistration for many of these pesticides, uncertainties about their health risks still exist. For the two most frequently used lawn pesticides-diazinon and 2,4-D-EPA identified concerns about possible health effects associated with their use. No final determination has been made as to whether these concerns warrant any further regulatory action.

Until EPA completes its reassessments and takes appropriate regulatory action, the public's health may be at risk from exposure to these pesticides. GAO believes that while the 1988 Amendments can help accelerate the reregistration process, reregistering pesticide products and reassessing their risks remain formidable tasks.

STATEMENT OF SENATOR EDWARD M. KENNEDY
ON THE
SCHOOL ENVIRONMENT PROTECTION ACT AMENDMENT TO ESEA

November 27, 2001

http://www.senate.gov/~kennedy/statements/01/11/2001B28B46.html

For Immediate Release
Contact: Jim Manley
(202) 224-2633

It's an honor to be here today with my colleagues Senator Torricelli, Senator Harkin, Senator Reid, and Senator Boxer, and I commend them for their leadership in protecting students from pesticides at their schools. I also commend Congressman Rob Andrews for his leadership on the School Environment Protection Act.

In recent weeks, the nation has been gripped by the fear of biological and chemical attack. But every day in schools across the nation, children are exposed to dangerous pesticides that can make them sick.

We know that in too many school districts across the country, untrained people are making critical decisions day in and day out about the use of pesticides in school buildings and on school grounds.

We know that children may be especially sensitive to even low levels of dangerous substances. We need to take special precautions to protect the development of their immune systems and their nervous systems. EPA has evidence that a large number of pesticides are carcinogenic in animal studies. Federal law now permits protections for farmers from re-entering their fields too soon after pesticide use, but no such protections are available in the case of schools.

We know from sad and harsh experience the dangerous consequences for children from exposure to lead in paint. We shouldn't have to learn these lessons again for the exposure of children to dangerous pesticides.

We cannot allow schools to be chemical death traps for our children. If their schools make them sick, no measure of education reform will improve their learning.

Our proposal is a needed step to protect students from the harmful effects of pesticides in and around their school buildings. Children attend school at least 180 days a year. Effective precautions are essential in order to reduce their exposure to environmental chemicals and disease.

Dealing with the harmful impact of pesticides on students and schools should be part of overall education reform. This important measure will provide needed protection by limiting the use of toxic pesticides in and around schools.

Parents support the amendment because they want to know their children are safe. Teachers support it because they want to work under safe conditions, and they know that students learn more effectively when they are safe and healthy.

It is long past time for Congress to take this important step to protect schools and classrooms from the dangerous use of pesticides.

Statement from Senator Patrick Leahy of Vermont

GAO Finds That USDA and EPA Have Neglected Pledge to Cut Pesticide Use

http://leahy.senate.gov/press/200109/010927.html September 27, 2001
WASHINGTON (Sept. 27) – Federal agencies can and should be doing more to encourage farmers to reduce use of toxic pesticides on U.S. crops and farmland, according to the General Accounting Office (GAO), Congress's "watchdog" agency.

In a report requested and released by Sen. Patrick Leahy (D-Vt.), a senior member of the Senate Agriculture Committee, GAO concludes that the U.S. Department of Agriculture (USDA) and the Environmental Protection Agency (EPA) have done little to act on their 1993 pledge to reduce pesticide use through promotion of integrated pest management (IPM) programs. GAO found that the amount of pesticides used since then has actually increased and that while use of the riskiest pesticides has declined, they still account for more than 40 percent of all pesticides used today.

Leahy asked for the GAO study last year after learning that national pesticide use had risen by almost 40 million pounds since 1992, despite the IPM policy launched in 1993. Integrated pest management methods combine the use of chemical pesticides with nonchemical pest management practices such as planting pest-resistant crop varieties and protecting beneficial organisms. IPM has long been a high priority for farmers, communities, and environmental advocates interested in reducing chemical pesticide applications while producing high-quality crops. Pesticide producers are also interested in the technology because of the rising resistance of several species of pests to standard pesticide applications.

"Our food supply remains the safest and highest quality on earth, but we continue to overdose our farmland with powerful and toxic pesticides and to under use the safe and effective alternatives," said Leahy. "This report makes it clear that pesticide-reducing programs work, and that they need to be a higher priority to help farmers save money, protect the environment and continue producing the highest quality foods for our citizens and children."

USDA research scientists, grower associations and major food processors have shown that IPM practices can produce major environmental benefits in particular crops and locations without sacrificing yield quality or quantity or adding costs. For example, apple and pear growers in Washington, Oregon and California used IPM techniques to cut use of chemical pesticides by 80 percent. The IPM strategy reduced farmers' pest management costs and produced a higher-quality harvest. The National Academy of Sciences, the American Crop Protection Association and others have concluded that IPM leads to more effective long-term pest management than chemical controls alone.

A longtime advocate of reducing chemical pesticide use in the United States and abroad, Leahy welcomed Agriculture Secretary Anne Veneman's positive response to the GAO findings. USDA's comment letter published in the report notes that the agency will use GAO's recommendations to better implement and coordinate national IPM programs. Senator Leahy will work to include provisions from the reports' recommendations in upcoming farm policy legislation. The GAO report, "Management Improvements Needed to Further Promote Integrated Pest Management," is available online at GAO's website (and copies are available from Leahy's office by contacting Blythe McCormack, 202-224-2398.

Dursban

http://yosemite1.epa.gov/opa/admpress.nsf/016bcfb1deb9fecd85256aca005d74df/880b35adc877c301852568f8005399ed?OpenDocument
For Release: Thursday, June 8, 2000

Clinton-Gore Administration Acts To Eliminate Major Uses Of The Pesticide Dursban To Protect Children And Public Health

To protect the health and environment of all Americans, especially children, the Clinton-Gore Administration today announced that the U.S. Environmental Protection Agency and the manufacturer of Dursban have agreed to eliminate the widely used pesticide for nearly all household purposes. Dursban, also known as chlorpyrifos, is the most widely used household pesticide product in the United States. Today's action will also significantly reduce residues of chlorpyrifos on several foods regularly eaten by children.

"Today's action is a major step in the Clinton-Gore Administration's on-going efforts to better protect public health, especially the health of children," said EPA Administrator Carol M. Browner. "Chlorpyrifos is part of a class of older, riskier pesticides, some going back 50 years. Exposure to these kinds of pesticides can cause neurological effects. Now that we have completed the most extensive scientific evaluation ever conducted on the potential health hazards from a pesticide, it is clear the time has come to take action to protect our children from exposure to this chemical."

Chlorpyrifos is an ingredient used for a broad range of lawn and home insecticide products, for agricultural purposes and for termite treatment.

The agreement announced today will:

Stop production of and phase-out all home, lawn, and garden uses;

Stop production of and phase-out the vast majority of termite-control uses;

Significantly lower allowable pesticide residues on several foods regularly eaten by children.

EPA is taking this action under the Food Quality Protection Act (FQPA), which was passed unanimously by Congress under the leadership of the Clinton Administration and signed by the President in 1996. The FQPA requires a systematic review of all pesticides to ensure they meet the tough new safety standards that, for the first time, must be protective of children, who are among the most vulnerable to adverse health effects from pesticide residues.

Last August, the Clinton-Gore Administration announced action against methyl parathion and azinphos methyl to protect children from pesticide residues in food. Today's action is the next step in realizing the protections for families and communities under the Food Quality Protection Act.

Specifically, today's agreement will halt manufacture of chlorpyrifos by December 2000 for nearly all residential uses. It will require that virtually all of those residential uses be deleted from existing product labels prior to that time, including uses for home and garden sprays, uses to control termites in completed houses and uses on lawns.

This agreement also mandates that all uses will be phased out this year in areas where children could be exposed, including schools, daycare centers, parks, recreation areas, hospitals, nursing homes, stores and malls.

By the end of 2001, uses to control termites in buildings other than homes or areas where children could be exposed will be phased-out as well. By the end of 2004, the termiticide use on new construction will also be phased-out unless new information becomes available which show that this use could safely continue.

Today's action also calls for canceling or significantly lowering allowable residues for several foods regularly eaten by children, such as tomatoes, apples and grapes. These actions will be taken by the beginning of the next growing season.

Chlorpyrifos belongs to a family of pesticides called organophosphates which can affect the nervous system. The effects from chlorpyrifos exposure vary depending on the dose, but symptoms of over-exposure can include nausea, headaches, vomiting, diarrhea and general weakness. Because of their smaller body weights, children are more susceptible to these effects. Children can be exposed to chlorpyrifos through food residues, by playing in areas where chlorpyrifos has been used as a home-and-garden insecticide, or from inhalation of vapors when chlorpyrifos is used to control termites

Chlorpyrifos, also known as Dursban, Lorsban and other trade names, is one of the most widely used organophosphate insecticides in the United States, with more than 20 million pounds applied annually. Approximately 50 percent is used around homes, gardens, and lawns to control a variety of insects, including termites. The remaining 50 percent is used on 40 different agricultural crops. DowAgroSciences of Indianapolis is the primary registrant. There are approximately 825 registered products.

EPA advises consumers that short-term use of these products according to label instructions does not pose an imminent risk. If consumers choose to discontinue use immediately, they should contact their state or local hazardous material disposal program for information on proper disposal. Additional information about chlorpyrifos and today's action can be found on the EPA web site at: www.epa.gov/pesticides.

Diazinon

For Release: Tuesday, Dec. 5, 2000

EPA Announces Elimination Of All Indoor Uses Of Widely-Used pesticide Diazinon; Begins Phase-Out Of Lawn And Garden Uses

http://yosemite1.epa.gov/opa/admpress.nsf/016bcfb1deb9fecd85256aca005d74df/c8cdc9ea7d5ff585852569ac0077bd31?OpenDocument

Today, EPA announced an agreement to phase-out diazinon, one of the most widely used pesticides in the United States, for indoor uses, beginning in March 2001, and for all lawn, garden and turf uses by December 2003.

"The Clinton-Gore Administration continues to aggressively target for elimination those pesticides that pose the greatest risk to human health and the environment, and especially those posing the greatest risk to children," said Carol M. Browner, EPA Administrator. "The action we are taking today is another major step toward ensuring that all Americans can enjoy greater safety from exposure to harmful pesticides."

"Today's action will significantly eliminate the vast majority of organophosphate insecticide products in and around the home, and by implementing this phase-out, it will help encourage consumers to move to safer pest control practice," said Browner.

Diazinon is the most widely used pesticide by homeowners on lawns, and is one of the most widely used pesticide ingredients for application around the home and in gardens. It is used to control insects and grub worms. The agreement reached today with the manufacturers, Syngenta and Makhteshim Agan, will eliminate 75 percent of the use which amounts to more than 11 million pounds of the pesticide used annually.

EPA is taking this action under the Food Quality Protection Act, which President Clinton signed into law in 1996 after the Administration helped lead the way for the new, tougher national pesticide law. Since then, EPA has targeted a large group of older, riskier pesticides called organophosphates for review because they pose the greatest potential risk to children. In August of 1999, for example, EPA announced action against methyl parathion and azinphos methyl to protect children from pesticide residues in food. The Agency reached an agreement to halt by December 2000 the manufacture of chlorpyrifos, or Dursban, for nearly all residential uses. Diazinon – used in homes, and on lawns and gardens – is the latest organophosphate to be phased out. Specifically, the terms of the agreement implement the following phase-out schedules:

- For the indoor household use, the registration will be canceled on March 2001, and all retail sales will stop by December 2002.
- For all lawn, garden and turf uses, manufacturing stops in June 2003; all sales and distribution to retailers ends in August 2003. Further, the company will implement a product recovery program in 2004 to complete the phase out of the product.

- Additionally, as part of the phase out, for all lawn, garden, and turf uses, the agreement ratchets down the manufacturing amounts. Specifically, for 2002, there will be a 25 percent decrease in production; and for 2003, there will be a 50 percent decrease in production.
- Also, the agreement begins the process to cancel around 20 different uses on food crops.

Organophosphates can affect the nervous system. The effects from diazinon vary depending on the dose, but symptoms from over-exposure can include nausea, headaches, vomiting, diarrhea, and general weakness. Today's action also represents an important step for the environment. Diazinon's use on turf poses a risk to birds, and it is one of the most commonly found pesticides in air, rain, and drinking and surface water.

It is legal to purchase and use diazinon products according to label directions and precautions. Consumers should take special care to always read and follow the label directions and precautions. If consumers choose to discontinue use, they should contact their state or local hazardous waste disposal program or the local solid waste collection service for information on proper disposal.

Additional information can be found at: www.epa.gov/pesticides.

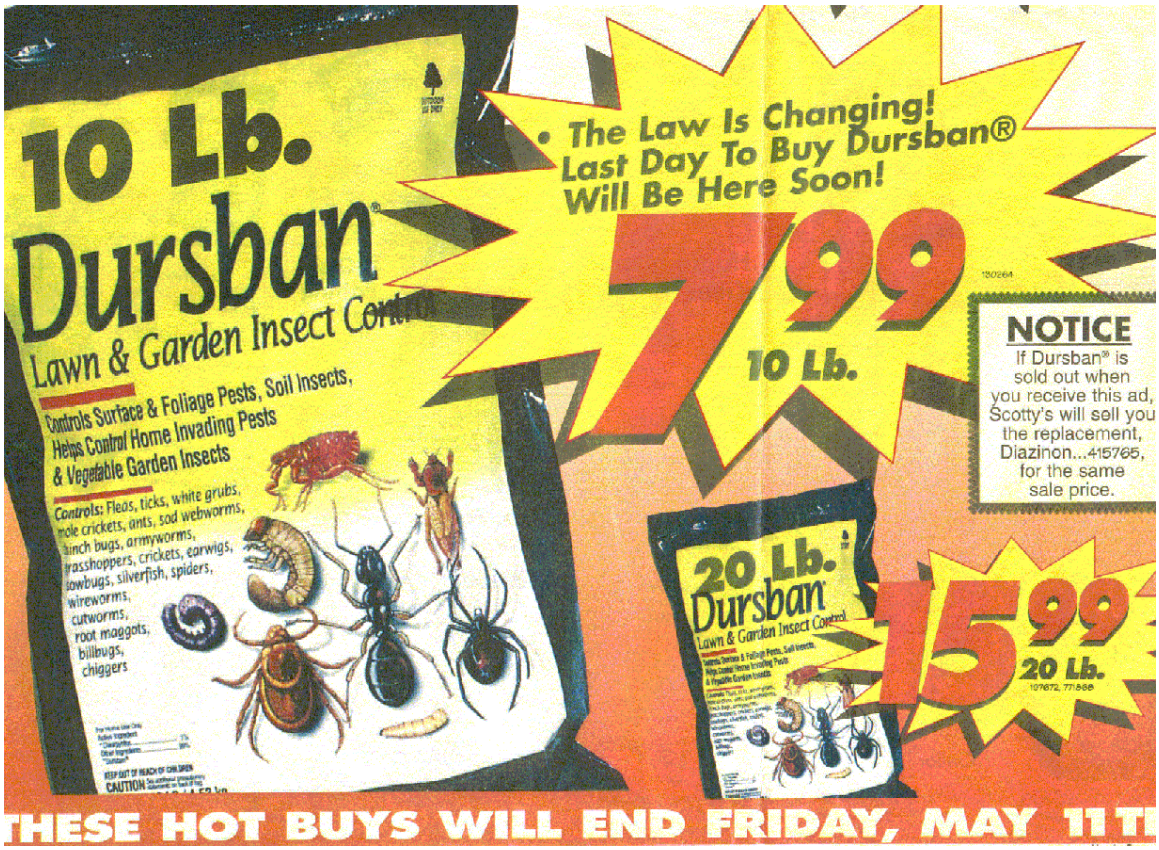
Sales Flyer Encourages use of Highly Toxic "Banned" Pesticides

http://www.beyondpesticides.org/Dursban_sales_flyer.htm

One of the inevitable results stemming from the Environmental Protection Agency (EPA) decision to allow the continued sale of existing stocks of Chlorpyrifos (Dursban™) and Diazinon is that retailers are scrambling to rid themselves of their current stocks. EPA entered into agreements with the manufacturers of both of these highly toxic chemicals in 2000. The agreements allow the continued sale of Chlorpyrifos through 2001 and the continued sale of Diazinon through 2002. Nothing short of a ban on products containing these pesticides can protect the public from the chemicals adverse health effects. Since less toxic and non-toxic alternatives are available for all Dursban uses, it is wrong and unnecessary to allow its use to continue during the phase out period. Click here for more information about alternatives to Dursban.

Is your local hardware store holding a sale on Dursban or Diazinon? We encourage you to join with the Attorneys General of Massachusetts, New York, Connecticut, Rhode Island, Maryland, Alaska, and Guam; contact the retailers in your area and ask them to voluntarily remove these toxic chemicals from their shelves. Click here to read a press release from the Office of Massachusetts Attorney General Tom Reilly.

This sales flyer is taken from a Scotty's Hardware Store in Florida.



Town of Marblehead Board of Health

May 14, 1998 7 Widger Road, Marblehead 01945 (781-631-0212)

CARL D. GOODMAN, Esq., Chairman
DAVID B. BECKER, D.M.D., M.P.H.
HELAINE R. HAZLETT
WAYNE O. ATTRIDGE, Director

The Board of Health of the Town of Marblehead
Statement on Pesticides

Whereas pesticides are by nature poisons and exposure, even at low levels, may cause serious adverse health effects; and

Whereas, due to a variety of physiologic and age-related factors, children are at increased risk of cancer, neuro-behavioral impairment and other health problems as a result of their exposure to pesticides; and

Whereas, many of the ingredients in pesticide products, alone and in combination, are not tested for their long-term toxic effects on the brain and nervous systems, the endocrine system, or the immune system; nor have they been tested with the unique vulnerability of children in mind; and

Whereas, pesticides and other toxins can cross the placenta and directly affect the developing child, even at low doses that might not harm adults; and

Whereas, in addition to their intended effects, pesticides can also harm non-target organisms (such as humans, pets, beneficial insects, aquatic and other wildlife) and the environment; and

Whereas according to the U.S. Environmental Protection Agency (EPA) all pesticides are toxic to some degree..., and the commonplace, widespread use of pesticides is both a major environmental problem and a public health issue; (1) and

Whereas, the U.S. Environmental Protection Agency (EPA) believes that most pesticides--despite having an EPA registration--have <u>not</u> been adequately tested to determine their effects on people or the environment; (2) and

Whereas, it is in the best interest of community health for all residents to learn about the hazards of pesticides, and to adopt organic gardening and landscaping techniques as well as an integrated pest management (IPM) approach to all pest-related problems:

NOW THEREFORE, The Board of Health of the Town of Marblehead hereby commits itself to the goal of reduction and eventual phase-out of pesticide use in the Town of Marblehead, both on public and private property.

Newton’s proclamation

Commonwealth of Massachusetts
City of Newton Proclamation 2002

Whereas, pesticides are toxic by design; and

Whereas, in addition to their intended effect on pests, pesticides also harm non-target organisms such as humans, pets, beneficial insects, plants, fish, birds and other wildlife; and

Whereas, the ingredients in pesticide products, alone and in combination, have long term toxic effects on the brain and nervous system, the endocrine system, and the immune system; and

Whereas, exposure to pesticides is particularly harmful to children and their development; and

Whereas, there are safer, more cost-effective, and ecologically-sound ways to control pests in our landscapes and buildings; and

Whereas, it is in the best interest of the City and its residents to protect the quality of our buildings and landscapes while reducing threats to our health and the contamination of the environment; and

Whereas, the City recognizes that public agencies should be a model of environmentally safe practices and that an Integrated Pest Management (IPM) policy for our public buildings and grounds enables the City to accrue the financial benefits of planning, prevention and responsible management; and

Now, therefore, be it resolved that His Honor the Mayor and Members of the Honorable Board of Aldermen of the City of Newton, do hereby endorse March 2002 as Alternative to Pesticides Month

And furthermore be it resolved that we renew our commitment to implementing Newton's Citywide Integrated Pest Management Policy and we urge citizens to follow the city's leadership, to learn about and adopt site management strategies designed to eliminate pests and pesticides in their homes, gardens, lawns, businesses, workplaces, places of worship and schools throughout our community.

Signed David B. Cohen, Mayor, Brooke K. Lipsitt, President

Pesticides used on Our Town land:

Their health effects and financial costs

Grub control (Merit™) 2xyear at $400each = $800
Imidacloprid: Data lacking. It is a systemic, chloro-nicotinyl insecticide. It causes a blockage in a type of neuronal pathway (nicotinergic). It is moderately toxic.

*Herbicide (*Quadmea "Trimex" Plus™) 3xyear at $500each = $1500
2,4-D Suspected carcinogen, blood toxicant, developmental toxicant, endocrine toxicant, gastrointestinal or liver toxicant, neurotoxicant, reproductive toxicant, respiratory toxicant, and skin or sense organ toxicant.
Mecoprop Data lacking. It is acutely toxic and a possible carcinogen.
Dicamba Data lacking. Suspected developmental toxicant. Possible carcinogen. Aquatic toxicant.
MSMA. Suspected gastrointestinal or liver toxicant; suspected kidney toxicant; carcinogen.
DMA: Suspected gastrointestinal or liver toxicant; suspected skin or sense organ toxicant; acutely toxic; possible carcinogen.

Herbicide (Manage™) 1xyear at $300 = $300
Halosulfuron-methyl: Data lacking.

Herbicide (Acclaim™) 1xyear at $400each = $ 400
Fenoxaprop-ethyl: Recognized developmental toxicant; suspected gastrointestinal or liver toxicant; suspected kidney toxicant.

Total cost to town per year: $3000

Alternatives to these pesticides:
Grubs
Diversify ground cover to include clover, fescues, and other hardy grasses. Top-dress with compost to increase soil microbial activity and reduce grub population. Water deeply and less often to increase root depth and resist grub damage. Use Milky spore and beneficial nematodes for spot treatment of grubs if necessary.

Weeds
Overseed bare spots in fall. Correct pH to between 6.5 and 6.8. Loosen compacted areas. Mow grass 3” long to outcompete weeds. Use corn gluten in spring as a pre-emergent if necessary.

Year 1 and 2 costs each: $4000

Subsequent years costs: $1000

Marblehead Living Lawn Demonstration Site, 2001

http://www.turi.org/community/Lawnsnaps.html

Web links for presentation packet:

http://www.state.ma.us/legis/laws/seslaw00/sl000085.htm

http://www.lwv.org/where/promoting/agricultural_read_pg3.html

http://www.lwv.org/where/promoting/agricultural_read_pg4.html

http://www.apha.org/news/press/1998/pesticid.htm

http://www.medem.com/MedLB/article_detaillb.cfm?article_ID=ZZZSZ3ZVQ7C&sub_cat=29

http://www.pta.org/programs/ourworld/9801/feature.htm

http://www.gao.gov/docdblite/summary.php?recflag=&accno=A01403&rptno=GAO-01-815

http://www.senate.gov/~kennedy/statements/01/11/2001B28B46.html

http://leahy.senate.gov/press/200109/010927.html

http://yosemite1.epa.gov/opa/admpress.nsf/016bcfb1deb9fecd85256aca005d74df/880b35adc877c301852568f8005399ed?OpenDocument [Dursban]

http://yosemite1.epa.gov/opa/admpress.nsf/016bcfb1deb9fecd85256aca005d74df/c8cdc9ea7d5ff585852569ac0077bd31?OpenDocument [Diazinon]

http://www.beyondpesticides.org/Dursban_sales_flyer.htm

http://www.turi.org/community/PDF/proclaim.pdf [Newton]

http://www.turi.org/community/PDF/town_pest.pdf [Marblehead]

http://www.turi.org/community/Lawnsnaps.html [Marblehead]

Sample Flyers and Design

Contents

Web resources:

Wellesley Pesticide Awareness Campaign
www.ci.wellesley.ma.us/nrc/pesticide

Marblehead BOH flyer to schools
http://www.turi.org/community/PDF/spr_alert.pdf

Natick BOH flyer
http://natickma.virtualtownhall.net/Public_Documents/NatickMA_HealthDept/%23363294.0/Lawns%20w/out%20Pesticides.pdf

Newton Green Decade advocacy literature.
www.greendecade.org

Articles:

"Read about WPAC in the news"
www.ci.wellesley.ma.us/nrc/pesticide

Statements:

Newton Mayer proclamation.
http://www.turi.org/community/PDF/proclaim.pdf

Marblehead BOH statement on pesticides.
http://www.turi.org/community/PDF/town_pest.pdf

Brochures:

Marblehead Pesticides and Your Health.
http://www.turi.org/community/PDF/PESTS.pdf

Marblehead Simple Steps Towards a Healthy Lawn.
http://www.turi.org/community/PDF/Lawn.pdf

Needham Health Department

1471 Highland Avenue, Needham, MA 02492 781-455-7523 (tel) 781-455-0892 (fax)
e-mail: BOH@town.needham.ma.us
web: www.town.needham.ma.us/BOH

SPRING ALERT

A Public Health Message From The Needham Board Of Health

The Needham Health Department recommends that homeowners learn the facts about pesticides and seek to reduce or eliminate pesticide use in their yards and homes.

According to the U.S. Environmental Protection Agency (EPA), all pesticides are harmful to some degree. The commonplace, widespread use of pesticides is both a major environmental problem and a public health issue. And most pesticides - despite having an EPA registration - have not been adequately tested to determine all their effects on people or the environment.

Overall, children may be the most vulnerable to the harmful effects of pesticides due to a variety of physiologic and age-related factors. The American Public Health Association warns that even a single exposure during a critical period of development could cause acute or long-term health problems. In the last few years, the EPA has phased out the registration of certain pesticides because of their potential impact on childrens' health and on the environment. Herbicides, insecticides, fungicides, and "Weed and Feed"-type products are all examples of pesticides. Scientific studies potentially link exposure to common lawn care pesticides with an increased risk of several types of cancer, neurological and respiratory diseases, endocrine disruption and birth defects.

As of December 31, 2001 the EPA cancelled the sale of chlopyrifos (Lorsban, Dursban) for home lawn, indoor crack and crevice treatments and some termiticide uses. Other uses of this pesticide will be phased out over the next few years. Diazinon will no longer be sold for indoor use as of December 31, 2002. Its use for residential lawn and turf applications will be phased out by December 31, 2004. In addition to reducing unnecessary exposures to children, these efforts should improve urban river and stream quality and reduce the risk to birds and aquatic life.

The Town of Needham has developed an integrated pest management (IPM) policy to assure that all town departments, boards and commissions with oversight of buildings, parks and fields adhere to IPM principals and use, only if necessary, the smallest amount of the least toxic chemical to control pests and weeds.

Still, the greatest environmental source of pesticides contamination and exposure to children in Needham may be from residents' own yards and lawns and the runoff from excessive or inappropriate use. When purchasing pesticides for use around your home ask about alternative safer products. This year, ask your lawn specialist about the products they are currently using and whether safer alternatives are available.

To learn more about how you can reduce your reliance on pesticides and introduce organic turf control policies into your home, contact the Needham Health Department or check out the following web sites:

MA Dept of Food and Agriculture Pesticide Bureau- http://www.state.ma.us/dfa/
The US Environmental Protection Agency- http://www.epa.gov/pesticides/
The IPM Institute of North America- http://www.ipminstitute.org/

Lexington Board of Health

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To All Homeowners: Lawn Maintenance, Health, and the Environment

Many homeowners and businesses treat their lawns with pesticides and herbicides to reduce weeds, grubs and other pests. Before you or your lawn service work on the grass around your home this year, the Lexington Board of Health asks you to consider the following issues about pesticide and herbicide usage:

Lawn Pesticides and Herbicides Affect Water Supplies. Since Lexington lies upstream of other communities, the chemicals we use here can enter the water supplies of other towns nearby.

Lawn Pesticides May Affect Human Health. Many pesticides or their breakdown products often persist in the environment. Chemicals on your lawns may cause negative health effects through low level, frequent exposures.

Pesticides Affect Children More Than Adults. Children tend to have higher exposures to pesticides when they play on lawns, on carpets onto which pesticides are tracked, and through normal hand-to-mouth behaviors. Children are also more sensitive to the effects of pesticides than adults.

No Pesticide Is Completely Safe. Pesticides and herbicides are toxic to insects, animals or plants. Just last year, the EPA took two commonly used household pesticides, chlorpyrifos (Dursban^{TM} or Lorsban$^{TM)}$, and diazinon, off the market.

If you use a lawn service, ask your contractor about safer alternatives to pesticides. Learn about conditions and methods that minimize weed growth and create a better environment for your lawn. Pesticides are not necessary for the health of your lawn. In fact, long-term use of pesticides may actually destroy the natural environment in which healthy grass grows best.

The Lexington Board of Health asks you to investigate and support efforts that reduce toxics in your environment. For more information, call (781) 862-0500, Ext. 237.

SPRING ALERT

A PUBLIC HEALTH MESSAGE FROM THE WELLESLEY BOARD OF HEALTH

Do you know what this sign *really* means?

The Wellesley Board of Health recommends that homeowners reduce or eliminate pesticide use in their yards and homes.

If you would like additional information about organic lawn care classes or ecological landscape services, **contact the NRC at 781-431-1019 x294 or visit www.ci.wellesley.ma.us/nrc/pesticide.** Other resources for more information are: www.pesticide.org; www.massorganic.org; and **Greater Boston Physicans for Social Responsibility** at www.igc.org/psr. For information on pesticides and schools and the *Children and Families Protection Act*, contact the **Pesticide Bureau** www.state.ma.us/dfa/cpa/ipmplan.htm or the **Toxics Use Reduction Institute** www.turi.org.

Many people do not know the meaning of these pesticide warning flags. They indicate that poisonous chemicals have been applied to the turf and that everyone, especially children, should STAY OFF THE GRASS. Be aware that a 24-hour waiting period will not prevent exposure, as many pesticides can persist on turf and in the soil for months, not days, after an application.

Know the facts about pesticides. According to the U.S. Environmental Protection Agency, all pesticides are toxic to some degree. The commonplace, widespread use of pesticides is both a major environmental problem and a public health issue. And most pesticides – despite having an EPA registration – have not been adequately tested to determine their effects on people or the environment.

Overall, children are the most vulnerable to the harmful effects of pesticides due to a variety of physiologic and age-related factors. The American Public Health Association states that *even a single exposure during a critical period of development can cause acute or long-term health problems.*

Herbicides, insecticides, fungicides, and "Weed and Feed" type products are all examples of pesticides. Scientific studies link exposure to common lawn care pesticides with an increased risk of several types of cancer, neurological and respiratory diseases, endocrine disruption and birth defects.

The preceding facts about pesticides are cited references from the U.S. Environmental Protection Agency Office of Prevention, Pesticides and Toxic Substances; Journal of the National Cancer Institute; National Academy of Science; American Journal of Public Health; U.S. General Accounting Office; U.S. Federal Code; and others.

A public service message sponsored by the Wellesley Board of Health and the Wellesley Pesticide Awareness Campaign, funded in part by a grant from the Toxics Use Reduction Institute of the University of Massachusetts, Lowell.
Spring, 2002

Marblehead Board of Health

1/28/02

Spring Alert A public health message from The Marblehead Board of Health [Yellow flyer with pesticide flag on left]

(On top left over yellow sign:) Do you know what this sign *really* means?

Many people do not know the meaning of these pesticide warning flags. They indicate that poisonous chemicals have been applied to the turf and that everyone, especially children, should STAY OFF THE GRASS. A 24-hour waiting period has been shown to be *inadequate*, as many pesticides can persist on turf and in the soil for months, not days, after an application.

Be aware of the facts about pesticides. According to the U.S. Environmental Protection Agency, "All pesticides are toxic to some degree. The commonplace, widespread use of pesticides is both a major environmental problem and a public health issue. And most pesticides – despite having an EPA registration – have not been adequately tested to determine their effects on people or the environment."

Overall, children are the most vulnerable to the harmful effects of pesticides due to a variety of physiologic and age-related factors. *Even a single exposure during a critical period of development can cause acute or long-term health problems.*

Herbicides, insecticides, fungicides, and "Weed and Feed"-type products are all examples of pesticides. Scientific studies link exposure to common lawn care pesticides with an increased risk of several types of cancer, neurological and respiratory diseases, endocrine disruption and birth defects.

(IN BLACK BOX) -

A PUBLIC SERVICE MESSAGE SPONSORED BY THE MARBLEHEAD BOARD OF HEALTH AND THE MARBLEHEAD PESTICIDE AWARENESS COMMITTEE (MPAC)

The preceding facts about pesticides are cited references from the U.S. Environmental Protection Agency Office of Prevention, Pesticides and Toxic Substances; Journal of the National Cancer Institute; National Academy of Science,; American Journal of Public Health; U.S. General Accounting Office; U.S. Federal Code; and others.

Printed on recycled paper.

(ON LEFT HAND SIDE UNDERNEATH SIGN) –

The Marblehead Board of Health recommends that homeowners adopt organic lawn and landscape techniques and an integrated pest management (IPM) approach to all pest-related problems. As of May 2001, the Board of Health adopted an Organic Pest Management Policy (OPM) for the maintenance of all town-owned land**.**

If you would like additional information about organic lawn and garden care classes, contact MPAC at 631-7214. **For information on the OPM policy, contact the** Board of Health at 631-0212**. Other resources for more information are: www.beyondpesticides.org; www.massorganic.org; and** Greater Boston Physicans for Social Responsibility **at www.igc.org/psr. For information on pesticides and schools and the *Children and Families Protection Act,* contact** the Pesticide Bureau **www.massdfa.org/pestreg.htm. or** Toxic Use Reduction Institute **www.turi.org**

Made possible by a grand from the Toxics Use Reduction Institute (TURI) at U Mass Lowell.

GreenCAP Green Decade Coalition/Newton

474 Centre Street Newton, MA 02458 617-965-1995 www.greendecade.org

WHAT IS IN A PESTICIDE PRODUCT?

ACTIVE INGREDIENTS are biologically and chemically chosen to kill the target pest - the unwanted insect, weed or fungus. Active ingredients typically make up 1 - 3 % of the product.

INERT INGREDIENTS. So-called "inerts" are NOT biologically inactive. These secret ingredients are the dust, the solution, or the granule that "carries" the active ingredient. These solvents, propellants, preservatives, emulsifiers and surfactants are typically 97% or more of the product. They are used to make the active ingredient more toxic or more long-acting. Some are more toxic than the active ingredient. They may be petrochemicals such as benzene, toluene, or xylene. Manufacturers argue that these ingredients are protected by trade secret laws. Therefore they hide the identity of these ingredients from the public and, in many cases, from the EPA.

CONTAMINANTS AND IMPURITIES such as dioxin and DDT are not purposefully added but are a result of the chemical production process.

METABOLITES are chemical breakdown products which form when the pesticide mixes with air, water, soil or living organisms. The break down products can be more hazardous than the parent pesticide.

WHAT'S THE DIFFERENCE BETWEEN CHEMICAL PEST CONTROL AND INTELLIGENT PEST CONTROL?

CHEMICAL PEST CONTROL

1. Relies on Products (Poisons)
2. Is a Quick Fix
3. Ignores the source of the pest problem
4. Kills off beneficial weeds and insects and endangers people, pets and wildlife
5. Contaminates drinking, water, food, soil and air.
6. Wastes $
7. Avoids communication among site users, managers and maintenance personnel.

INTELLIGENT PEST MANAGEMENT

1. Relies on Process (Planning, Documentation, Problem Solving)
2. Focuses on Long Term Solutions
3. Prevents or corrects source of pest problems
4. Enhances sustainability of ecosystem and protects bio-diversity
5. Protects drinking water, food, soil and air.
6. Saves $
7. Promotes good communication among site users, managers and maintenance personnel.

Scientific References

Contents

Compiled by Toxics Use Reduction Institute

Compiled by Wayne Sinclair, M.D. (Board Certified Immunology) Allergy, Asthma, Immunology, Vero Beach, Florida, and Richard Pressinger, M.Ed. Tampa, Florida

Compiled by Beyond Pesticides http://www.beyondpesticides.org/

1. Biological Monitoring Survey of Organophosphorus Pesticide Exposure among Pre-school Children in the Seattle Metropolitan Area

SOURCE: Chensheng Lu, Dianne E. Knutson, Jennifer Fisker-Andersen, and Richard A. Fenske Department of Environmental Health, University of Washington, Seattle, Washington, USA, Environ Health Perspect 109:299-303 (2001).

In this study we assessed organophosphorus (OP) pesticide exposure among children living in two Seattle metropolitan area communities by measuring urinary metabolites, and identified possible exposure risk factors through a parental interview. We recruited children in clinic and outpatient waiting rooms. We obtained spot urine samples in the spring and fall of 1998 from 110 children ages 2-5 years, from 96 households. We analyzed urine samples for six dialkylphosphate (DAP) compounds, the common metabolites of the OP pesticides. Through parental interviews we gathered demographic and residential pesticide use data. At least one of the DAP metabolites was measured in 99% of the children, and the two predominant metabolites (DMTP and DETP) were measured in 70-75% of the children. We found no significant differences in DAP concentrations related to season, community, sex, age, family income, or housing type. Median concentrations of dimethyl and diethyl DAPs were 0.11 and 0.04 µmol/L, respectively (all children). Concentrations were significantly higher in children whose parents reported pesticide use in the garden (0.19 vs. 0.09 µmol/L for dimethyl metabolites, $p = 0.05$; 0.04 vs. 0.03 µmol/L for diethyl metabolites, $p = 0.02$), but were not different based on reported pet treatment or indoor residential use. Nearly all children in this study had measurable levels of OP pesticide metabolites. Some of this exposure was likely due to diet. Garden pesticide use was associated with elevated metabolite levels. It is unlikely that these exposure levels would cause acute intoxication, but the long-term health effects of such exposures are unknown. We recommend that OP pesticide use be avoided in areas where children are likely to play. pesticides, urine.

2. A New Crop of Concerns: Congress Investigates Pesticide Safety

SOURCE: David A. Taylor, Environmental Health Perspectives Volume 108, Number 9 September 2000

A March 2000 report by the General Accounting Office, Pesticides: Improvements Needed to Ensure the Safety of Farmworkers and Their Children, states that much remains unknown about the risks faced by children in agriculture, and that enforcement of pesticide protection standards for farmworkers is patchy and unsystematic. Many cases of farmworkers' pesticide-related illnesses go unreported, leaving health workers with an inadequate basis for tracking patterns and fine-tuning pesticide standards, says the report. In addition, children are known to be more vulnerable to the effects of pesticides, but there is a lack of data regarding children's exposures and the precise effects of pesticides on children's health.

3. Exposures of Children to Organophosphate Pesticides and Their Potential Adverse Health Effects

SOURCE: Brenda Eskenazi, Asa Bradman, and Rosemary Castorina, Center for Children's Environmental Health Research, School of Public Health, University of California, Berkeley, California USA, Environ Health Perspect 107(suppl 3):409-419 (1999).

Abstract

Recent studies show that young children can be exposed to pesticides during normal oral exploration of their environment and their level of dermal contact with floors and other surfaces. Children living in agricultural areas may be exposed to higher pesticide levels than other children because of pesticides tracked into their homes by household members, by pesticide drift, by breast milk from their farmworker mother, or by playing in nearby fields. Nevertheless, few studies have assessed the extent of children's pesticide exposure, and no studies have examined whether there are adverse health effects of chronic exposure. There is substantial toxicologic evidence that repeated low-level exposure to organophosphate (OP) pesticides may affect neurodevelopment and growth in developing animals. For example, animal studies have reported neurobehavorial effects such as impairment on maze performance, locomotion, and balance in neonates exposed in utero and during early postnatal life. Possible mechanisms for these effects include inhibition of brain acetylcholinesterase, downregulation of muscarinic receptors, decreased brain DNA synthesis, and reduced brain weight in offspring. Research findings also suggest that it is biologically plausible that OP exposure may be related to respiratory disease in children through dysregulation of the autonomic nervous system. The University of California Berkeley Center for Children's Environmental Health Research is working to build a community-university partnership to study the environmental health of rural children. This Center for the Health Assessment of Mothers and Children of Salinas, or CHAMACOS in Monterey County, California, will assess in utero and postnatal OP pesticide exposure and the relationship of exposure to neurodevelopment, growth, and symptoms of respiratory illness in children. The ultimate goal of the center is to translate research findings into a reduction of children's exposure to pesticides and other environmental agents, and thereby reduce the incidence of environmentally related disease.

4. Pesticides and Inner-City Children: Exposures, Risks, and Prevention

SOURCE: Philip J. Landrigan,1,2 Luz Claudio,1,2; Steven B. Markowitz,7; Gertrud S. Berkowitz,1,2; Barbara L. Brenner,1; Harry Romero,5; James G. Wetmur,3; Thomas D. Matte,6; Andrea C. Gore,4; James H. Godbold,1; and Mary S. Wolff 1,2. Environ Health Perspect 107(suppl 3):431-437 (1999).

[1Department of Community and Preventive Medicine, 2Center for Children's Health and the Environment, 5Department of Microbiology, 7Fishberg Center for Neurobiology, Mount Sinai School of Medicine, New York, New York USA; 4Borikuen Neighborhood Health Center, New York, New York USA; 6Center for Urban Epidemiologic Studies of the New York Academy of Medicine, New York, New York USA; 3Center for Biology of Natural Systems, Queens College, City University of New York, New York, New York USA].

Six million children live in poverty in America's inner cities. These children are at high risk of exposure to pesticides that are used extensively in urban schools, homes, and day-care centers for control of roaches, rats, and other vermin. The organophosphate insecticide chlorpyrifos and certain pyrethroids are the registered pesticides most heavily applied in cities. Illegal street pesticides are also in use, including tres pasitos (a carbamate), tiza china, and methyl parathion. In New York State in 1997, the heaviest use of pesticides in all counties statewide was in the urban boroughs of Manhattan and Brooklyn. Children are highly vulnerable to pesticides. Because of their play close to the ground, their hand-to-mouth behavior, and their unique dietary patterns, children absorb more pesticides from their environment than adults. The long persistence of semivolatile pesticides such as chlorpyrifos on rugs, furniture, stuffed toys, and other absorbent surfaces within closed apartments further

enhances urban children's exposures. Compounding these risks of heavy exposures are children's decreased ability to detoxify and excrete pesticides and the rapid growth, development, and differentiation of their vital organ systems. These developmental immaturities create early windows of great vulnerability.
Recent experimental data suggest, for example, that chlorpyrifos may be a developmental neurotoxicant and that exposure in utero may cause biochemical and functional aberrations in fetal neurons as well as deficits in the number of neurons. Certain pyrethroids exert hormonal activity that may alter early neurologic and reproductive development. Assays currently used for assessment of the toxicity of pesticides are insensitive and cannot accurately predict effects to children exposed in utero or in early postnatal life. Protection of American children, and particularly of inner-city children, against the developmental hazards of pesticides requires a comprehensive strategy that monitors patterns of pesticide use on a continuing basis, assesses children's actual exposures to pesticides, uses state-of-the-art developmental toxicity testing, and establishes societal targets for reduction of pesticide use.

5. Pesticides and Childhood Cancer

SOURCE: Shelia Hoar Zahm and Mary H. Ward, Occupational Epidemiology Branch, Division of Cancer Etiology, National Cancer Institute, Rockville, Maryland, Environ Health Perspect 106(Suppl 3):893-908 (1998).
Children are exposed to potentially carcinogenic pesticides from use in homes, schools, other buildings, lawns and gardens, through food and contaminated drinking water, from agricultural application drift, overspray, or off-gassing, and from carry-home exposures of parents occupationally exposed to pesticides. Parental exposure during the child's gestation or even preconception may also be important. Malignancies linked to pesticides in case reports or case-control studies include leukemia, neuroblastoma, Wilms' tumor, soft-tissue sarcoma, Ewing's sarcoma, non-Hodgkin's lymphoma, and cancers of the brain, colorectum, and testes. Although these studies have been limited by nonspecific pesticide exposure information, small numbers of exposed subjects, and the potential for case-response bias, it is noteworthy that many of the reported increased risks are of greater magnitude than those observed in studies of pesticide-exposed adults, suggesting that children may be particularly sensitive to the carcinogenic effects of pesticides. Future research should include improved exposure assessment, evaluation of risk by age at exposure, and investigation of possible genetic-environment interactions. There is potential to prevent at least some childhood cancer by reducing or eliminating pesticide exposure.

The summaries below are provided by Ellie Goldberg, GreenDecade Coalition, Newton (compiled by Wayne Sinclair, M.D. (Board Certified Immunology) Allergy, Asthma, Immunology, Vero Beach, Florida, and Richard Pressinger, M.Ed. Tampa, Florida).

6. Living Near Agriculture Increases Risk of Brain Cancer

SOURCE: Drs. A. Aschengrau, D. Ozonoff, P.Coogan, R. Vezina, T. Heeren, Department of Epidemiology and Biostatistics, Boston University School of Public Health, American Journal of Public Health, 86(9): 1289-96, 1996
Living closer than 2600 feet to an agriculture area has been found to increase the risk for developing brain cancer. This 1996 research project studied cancer rates among over 600 people. Brain cancer overall showed a twofold increase risk for people living within the 2600 foot distance. An astounding 6.7 fold increased risk was found for the brain cancer

type known as astrocytoma for people living within 2600 feet from an agriculture area. For more information on brain cancer and neuroblastoma see: www.chem-tox.com/cancerchildren.- brain cancer research summaries and www.chem-tox.com/neuroblastoma - neuroblastoma research summaries

7. Golf Course Superintendents Face Higher Cancer Rates

SOURCE: Drs. Kross, B.C., Burneister, L.F., Ogilvie, L.K., Fuortes, L.J., Department of Preventive Medicine Health, University of Iowa, American Journal of Industrial Medicine, 29(5):501-506, 1996

Working as a Golf Course Superintendent has been found to significantly increase the risk of dying of four cancer types including - brain cancer, lymphoma (non-Hodgkin's lymphoma, NHL), prostate and large intestine cancer. A study was conducted of 686 deceased members of the Golf Course Superintendents Association of America from all U.S. states who died between 1970 and 1992. Brain cancer rates for the Superintendents was found to occur at over twice the national average, while non-Hodgkin's lymphoma also occurred at over twice the national average. Prostate cancer occurred at nearly 3 times the national average and large intestinal cancer occurred at 1.75 times the national average. The researchers stated that a similar pattern of elevated NHL, brain and prostate cancer mortality along with excess deaths from diseases of the nervous system has been noted previously among other occupational groups exposed to pesticides.

8. Common Birth Defects Increase After Pesticide Exposure - Hydrocephaly & Cleft Palete

SOURCE: Dr. K. Machera, Laboratory of Pesticide Toxicology, Benaki Phytopathological Institute, Athens, Greece, Bulletin of Environmental Contamination Toxicology, 54:363-369, 1995

Of the many different types of pesticides (which include insecticides, herbicides and fungicides), it was found that the common fungicide "cyproconazole" caused serious defects when administered to test animals. This chemical is reported to be widely used in agriculture and is a member of the family of fungicides known as triazole fungicides. It's closely related family members include the fungicides triadimefon, triadimenol, bitertanol, flusilazole, 1,2,4-triazole, and propiconazole. Each of these pesticides were reported in this article as being capable of causing birth defects in test animals when administered at doses as low as 30 mg/kg. These chemicals are far more toxic than even standard insecticides. The "No Observable Effect Level" (which means the maximum amount of the chemical that test animals can be exposed to without seeing any adverse effects) is reported to be only 2 mg/kg for flusilazole.

The study on the effects of cyproconazole (lets call it CPZ for simplicity) was headed by Dr. K. Machera, at the Laboratory of Pesticide Toxicology in Athens, Greece. Dr. Machera exposed 10 pregnant animals to different levels of CPZ ranging from 20-75 mg/kg from the 6th to the 16th day of pregnancy. On the 21st day of pregnancy the animals were sacrificed and the number of implantations, resorption sites and live and dead fetuses were recorded. The fetuses were weighed and examined for abnormalities.

Results showed the number of resorptions (similar to an early miscarriage) was over 8 times greater for the animals exposed to the 50 and 75 mg/kg doses. The fetal length was significantly smaller in doses from 50 mg/kg up. The fetal body weight was significantly less even at the lowest dose of 20 mg/kg.

Cleft Palate did not occur in any of the 100 offspring not exposed to CPZ. However, cleft palate did occur in 2% of animals exposed to 20 mg/kg of CPZ, 20% of animals exposed to 50 mg/kg of CPZ and 91% of animals exposed to the highest 100 mg/kg dose. The same trend was also seen with hydrocephalus - 0% for the animals not exposed to CPZ, 6% for animals exposed to 20 mg/kg, 19% for animals exposed to 50 mg/kg, 32% for animals exposed to 75 mg/kg and 100% for the 12 animals exposed to the 100 mg/kg level.
These studies demonstrate the definite potential for pesticides in the triazole family to increase the risk of lower birthweight, lower body length, as well as strongly increasing the risk of cleft palate and hydrocephalus. With results such as this in test animals, it would certainly be worthwhile to investigate the incidence of these conditions among people living in close proximity to agricultural areas. Dr. Machera did not state if these chemicals were used on residential lawns as an anti-fungal agent. Keep in mind that these studies were looking for physical defects and were not looking for neurological defects in offspring (which typically occur at much lower dosages).

9. Chlordane Causes Neurological Disorders and A.D.D. Symptoms

SOURCE: Dr. Kaye H. Kilburn and John C. Thornton, Environmental Sciences Laboratory, University of Southern California School of Medicine, Los Angeles Environmental Health Perspectives, 103:690-694, 1995
In 1987, over 250 adults and children were exposed to the pesticide chlordane when the wooden building surfaces and soil around their apartment complex was sprayed. Their exposure came from the vapors that entered into their home for the years after the chemical's application. Levels inside the homes were reported above 0.5 mg/m3.
In June-September 1994, 216 adult occupants or former residents of the apartment complex were examined by researchers at the University of Southern California School of Medicine in Los Angeles. The 109 women and 97 men were given a battery of neurological tests to determine if the low levels of chlordane in their apartments was causing any harmful effects. The tests given are considered sensitive indicators of neurotoxicity. To determine if chlordane was in fact causing neurological problems, the test scores of the chlordane exposed adults were compared to the test scores of 94 women and 68 men from Houston, known not to have been exposed to chlordane.
Results of the testing showed many negative effects upon mental function from the low levels of air chlordane. Not only were test scores lower for reaction time, balance, and memory, but also worse scores were observed in the test checking for attention deficits (digit symbol) and all tests of mood scores including tension, depression, anger, vigor and fatigue. Going beyond the neurological testing, both groups were also investigated for many common symptoms and illnesses. Those which were significantly more common in the chlordane exposed group included asthma, allergies, production of phlegm, chronic bronchitis by Medical Research Council criteria, and wheezing with and without shortness of breath. Headaches and indigestion were also more common among the chlordane exposed individuals.
In summary Dr. Kilburn and Thornton summarized their findings by stating, "The exposure of our study group appears to be from indoor air, due to the outgassing of chlordane from the wooden surfaces of the apartment complex. Examination of subjects exposed in their homes to chlordane as compared to referent subjects showed significant, and we suggest important, impairment of both the neurophysiological and psychological functions including mood states. Accompanying these changes were significant differences in symptom frequency and

in respiratory rheumatic and cardiovascular disease symptoms. The most notable changes were slowing of reaction time, balance dysfunction as revealed by increased sway speed, reduction in cognitive function, perceptual motor speed, and immediate and delayed verbal recall. The neurobehavioral impairments measured in this environmental epidemiological study were similar to those noted in patients exposed to chlordane at home. These impairments include probably irreversible dysfunction of the brain. Possible effects on trigeminal nerve-pons-facial nerve function were suggested for the first time. Confirmatory studies, including follow-up after removal from exposure, are urgently needed. Meanwhile, chlordane use should be prohibited worldwide." This study should generate heightened concern because of the large number of neurological and health effects seen at chlordane air levels of above 0.5m g/m3 (typical levels for most U.S. homes) and statements by researchers that developing children are harmed more by chemicals than adults.

10. Immune System Problems Appear After Indoor Dursban Exposure

SOURCE: Jack D. Thrasher Ph.D., Roberta Madison, Alan Broughton, Department of Health Science, California State University, Archives of Environmental Health, 48(2):89-93, March/April 1993

The pesticide Dursban (also called chlorpyrifos), commonly used in indoor and lawn pest control, is now showing evidence of causing immune system disorders in people. In a study by the Department of Health Science at California State University, 12 individuals, which included a teacher, six housewives, a retail owner, a musician and an engineer, were studied for 1 to 4.5 years after they became ill when their home or place of employment was treated with the pesticide. The researchers were investigating for any abnormalities in immune system function. Immediately following each patient's exposure to the pesticide, common complaints included an initial flu-like illness followed by chronic complaints of fatigue, headaches, dizziness, loss of memory, upper and lower respiratory symptoms, joint and muscle pain and gastrointestinal disturbances. The subjects were found to have an elevated number of CD26 cells and a higher rate of autoimmune problems, compared with two other control groups. (Autoimmune disorders occur when the person's own immune system mistakenly makes antibodies which attack their own body.) Autoantibodies were found toward smooth muscle, parietal cell, brush border, thyroid gland, myelin, and ANA. 83% of the pesticide exposed people were found to have autoantibodies in their blood, in comparison to only 15% for non-exposed control group. 50% of the pesticide exposed people were also found to have two or more autoantibodies in comparison to only 4% for the non-exposed group.

In conclusion the researchers stated, "the presence of several different types of autoantibodies, e.g., antimyelin, antismooth muscle, anti brush boarder, and antimicrosomal, indicates that generalized tissue injury has occurred. Moreover, these identical observations have been made in additional chlorpyrifos patients (research in progress). Thus, chlorpyrifos (Dursban), as used in pesticide spray, should be examined more closely as a probable immunotoxin."

11. Flea Home Treatments Cause High Air Pesticide Levels

SOURCE: Richard A. Fenske, Ph.D., MPH, Kathleen G. Black, MPH, Ken P. Elkner, MS Department of Environmental Sciences and Graduate Program in Public Health, Rutgers University, American Journal of Public Health, 80(6):689-693, 1990

Applying common flea pesticide treatments to carpets results in illegally high air pesticide levels in homes which lasts for over 24 hours after application. This was the conclusion of research conducted by Dr. Richard A. Fenske, Assistant Professor at Rutgers University. Tests were conducted by applying the common pesticide Chlorpyrifos (Dursban) for flea treatment by a licensed Pest Control Applicator to three rooms of an unoccupied apartment in New Jersey in June, 1987. Air sampling equipment was installed above the floor at the levels expected for an adult sitting in a chair and that of an infant. After application, samples were taken at 30 minutes, 1 hour, 1.5 hours, 3 hours, 5 hours, 7 hours and 24 hours. Results showed that at 5 hours post application, indoor air levels of the pesticide was nearly twice above the legal limit in homes with ventilation (an open window) and over 6 times above the legal limit at 7 hours where windows were closed. Levels at the infant breathing zone were nearly 10 times above the legal limit at 7 hours and over 3 times the legal limit even after 24 hours. These results show it is incorrect when Pesticide Applicators state it is safe to return home several hours after application. In fact, levels at 7 hours were 3-5 times higher than the 1.5 hour level. In conclusion the researchers stated, "Despite uncertainties in exposure/absorption estimates and toxicological interpretation, the dose values derived in this study raise a public health concern. Broadcast applications and possibly total release aerosol/fogging applications of acutely toxic insecticides may result in dermal and respiratory exposures sufficient to cause measurable toxicological responses in infants.

12. Common Pesticides Cause Hyperactivity in Test Animals After Single Dose

SOURCE: Dr. J. A. Mitchell, S. F. Long, Dept. of Pharmacology, University of Mississippi, The Behavioral Effects of Pesticides in Male Mice, Neurotoxicology and Teratology, Vol. 11:45-50, 1989

Groups of test animals exposed to different pesticides used in agriculture and lawn care showed over 50% more activity following a single exposure to the chemical. One of the main goals of this experiment, conducted by Dr. J. A. Mitchell and colleagues at the University of Michigan, was to investigate activity behavioral changes in test animals (male Swiss mice) following a single exposure to one of 4 different dosages of weed killers and fungicides. The chemicals used included Lasso (containing alachlor), Basalin (containing fluchloralin), Premiere (containing dinoseb) and the fungicide Maneb-80 (80% Maneb).. Test dosages ranged from a very low .4 mg/kg to 4 mg/kg to 40 mg/kg. Even the largest dose was still below the LD-50 for the animals (the amount needed to kill 50% of the test animals). According to the researchers, the herbicides and fungicides have received few reports investigating their toxicity while their yearly growth and production have grown far more than the insecticides.

The detection of hyperactivity was measured by placing the test animals in steel cages that were equipped with electronic motion detectors which used infrared beams to count specific movements by the animals. After the single chemical exposure, activity was measured for a 4 hour period. Results showed the weed killer "Lasso" did not show any effects at the very low .4 mg/kg level but did show over a 65% increase in activity at the low 4 mg/kg and a 75% increase at the higher 40 mg/kg level. The weed killer Dinoseb also showed no activity increases at the lowest .4 mg/kg dose but did show a 15% increase at the 4 mg/kg level and a 54% increase at the larger 40 mg/kg level. Other researchers have reported that activity provides a sensitive measure for evaluating the behavioral effects of the pyrethroid pesticide, deltamethrin, at doses that did not cause the characteristic neurotoxicological syndrome (6).

In conclusion the researchers stated, "The results of this study suggest that at least some herbicides, in addition to pyrethrins, organophosphate, and carbamate pesticides, can produce behavioral manifestations following accidental exposure...The effects of the pesticides on activity also support the hypothesis that these agents may affect the central nervous system."

13. Common Lawn Pesticide Linked to Cancer

SOURCE: Newsweek, May 16, pg.77, 1988; Science News, September 13, 1986

The lawn pesticides, mancozeb and chlorothalonil (used by commercial lawn spray companies as fungicides), have been classified by EPA as "probable" cancer causing chemicals in humans as they have been found to cause cancer in animals (1). Mancozeb has also been found to react with sunlight to form a new compound EPA categorizes as a "known"human carcinogen (1). The common lawn pesticide 2,4-D has been shown to increase the risk of lymphatic cancer in farmers six times the normal rate according to a National Cancer Institute report (2).

14. Male Infertility After Pesticide Chlordane Exposure

SOURCE: Dr. K. J. Balash, M. A. Al-Omar, et al., Biological Research Center, Scientific Research Council, Baghdad, Iraq., Bulletin of Environmental Contamination Toxicology, 39:434-442, 1987

In the following study, researchers divided mice into three groups of ten mice each. Two groups were subjected to either a low or higher level of chlordane and the third group was used as a control group not exposed to any chlordane. After 30 days of daily exposure, the animals were sacrificed and the testicles were examined. The researchers stated that the chlordane exposed groups showed obvious changes to the part of the testicles where sperm development occurs (called the seminiferous tubules). Damaged tubules were present in 19% of the lower chlordane exposed animals - 31% of the higher chlordane exposed animals and only 3% in the animals not exposed to chlordane. There was also a reduction in the seminiferous tubule diameter in the higher chlordane exposed group. More details of this research can be seen at the infertility web site

15. Pesticide Vapors Present - Weeks - Months & Years after Application

SOURCE: Pest Control Technology Magazine, pg. 44, August 1987

In research to determine the amount of indoor air contamination following routine indoor application of pesticides, it was found the levels of the pesticide Dursban drop to only one-sixth of its original 1 hour level four days after application. The research was conducted by Dow Chemical (1). The no-odor pesticide Ficam was reported to have an air half-life of approximately 10 days (2). Of significant concern is the discovery that the pesticide soil drench procedure (a procedure in which approximately 200 gallons of pesticides are saturated into the soil just prior to the pouring of the concrete foundation in new home construction) is finding its way into the indoor air for literally years and years after application. It was originally thought that the concrete foundation provided a solid barrier to the poison. However, air testing technology has shown this is not the case (3). Just as radon finds its way into a home, entering from the soil, the pesticide vapors do also moving from the high pressure underneath the home and into the lower pressure inside the home. It enters through cracks in foundation, around plumbing fixtures, etc. This provides strong evidence that this procedure should be eliminated immediately and alternative methods be used. Alternative methods include using only concrete and metal framing - using non-volatile Sodium Borate treatment on the wood framing before installing drywall - using pesticide spikes embedded in

the soil around the perimeter of the home (this is still a chemical pesticide and therefore is not a first option but may satisfy the Lenders). Other research at University of Florida has shown that larger "sand" granules do not allow termites to build their nests. Unfortunately, the pesticide industry has worked its way solidly into new home construction practices and therefore takes a little effort on the homeowner's part to stop the pesticide soil drench procedure - (It can be done however, as it is not a law, but rather a recommended procedure in the Southern Building Code and one the lenders like to see done. Go talk to your lender personally and tell them about the alternatives and threaten to take your business somewhere else.). The bottom line is these chemicals do enter the home and they do accelerate the onset of health problems (as seen in the research on this page) including aging of the immune and nervous system and therefore should not be applied underneath the home.

16. The Pesticide Chlordane Contaminates Most U.S. Homes

SOURCE: Samuel S. Epstein and David Ozonoff, Chief Environmental Health Section Boston University School of Public Health, Boston Massachusetts, Teratogenesis, Carcinogenesis, and Mutagenesis 7:527-540, 1987

There is approximately a 75% chance you are breathing the pesticide chlordane every minute you are inside your home if your home was built before March of 1988. Other studies have shown there is a 6-7% chance you are breathing dangerously high levels of the pesticide which are above the guidelines set by the National Academy of Sciences. This problem is occurring because over 30 million homes were treated with the chemical prior to its being banned by the EPA in March of 1988. The air chlordane studies were conducted by the U.S. Air Force and the New Jersey Department of Environmental Regulation. Over 1000 homes and apartments were tested in different parts of the nation. The researchers stated they expect the figures to remain the same throughout the country because of standardized application practices by the pest control companies. If you would like more detailed information on the chlordane problem and the health effects suspected for the millions of Americans living in chlordane treated homes - visit the chlordane web site by clicking on this link.

17. Home Pesticides Increase Risk of Leukemia in Children

SOURCE: Dr. John Peters, University of Southern California, Journal of the National Cancer Institute, July 1987

Children who live in homes where indoor or outdoor pesticides are used face a far greater chance of developing leukemia (leukemia is a cancer of the blood). The study, published in July's 1987 issue of the Journal of the National Cancer Institute, studied 123 Los Angeles children with leukemia and 123 children without the malignancy. The results showed the children living in the pesticide treated homes had nearly a 4 times greater risk of developing the disease. If the children lived in homes where pesticides were used in the garden as well, the risk of developing leukemia was 6.5 times greater. All of the children in the study were 10 years of age or younger.

18. Brain Damage Linked to Lawn Pesticides

SOURCE: 1. Toxicology and Applied Pharmacology, 65:23, 1982; 2. British Journal of Psychiatry, 141:273, 1982: 3. Annual Reviews in Public Health, 7:461, 1986

The pesticide MCPA, used as an ingredient is some lawn pesticides, has been found to damage a part of the brain known as the blood brain barrier (1). The blood brain barrier is the brain's primary defense system which works to keep toxic substances out of the brain cells and is literally protecting all of us from developing immediate neurological illness. The blood

brain barrier has been found to be defective more often in patients with Alzheimers and some psychiatric disorders (2). In fact, the lack of functioning of the blood brain barrier in the human infant has been reported on many occasions as being the reason why an infant is being found to develop brain damage after exposure to common chemicals while an adult with a mature blood brain barrier does not. Unfortunately, EPA neurotoxicologist Dr. Bill Sette stated EPA does not yet require chemical companies to test any of their pesticides for causing blood brain barrier damage. Another study of 56 men exposed to organophosphate pesticides detected memory problems and difficulty in maintaining alertness and focusing attention (3). Each of these studies will be listed here in greater detail shortly as our web site completes development. As the understanding of blood brain barrier function is of critical importance to understanding why one individual can receive more damage to his/her nervous system than someone else, we will also include a blood brain barrier site with the address www.chem-tox.com/bbb.

19. Pesticide Inhalation Associated with Brain and Lung Cancer

SOURCE: Journal of the National Cancer Institute, 71(1), July 1983
A study of 3,827 Florida pesticide applicators employed for 20 or more years found they had nearly 3 times the risk for developing lung cancer. The same study also showed the pesticide applicators had twice the risk for brain cancer. There was not any increased cancer risk when applicators were studied for only 5 years implying it takes over 5 years to accumulate enough damage to the genetic structure to develop the cancers.

Compiled by Beyond Pesticides
http://www.beyondpesticides.org/

Children are Especially Vulnerable to Toxics

The National Academy of Sciences finds that children are more susceptible to chemicals.
National Research Council, National Academy of Sciences, Pesticides in the Diets of Infants and Children, National Academy Press, Washington, DC, 1993: 184-185.

Children take in more pesticides relative to body weight than adults and have developing organ systems that are more vulnerable and less able to detoxify toxic chemicals.
US EPA, Office of the Administrator, Environmental Health Threats to Children, EPA 175-F-96-001, September 1996

Pesticides can increase susceptibility to certain cancers by breaking down the immune system's surveillance against cancer cells. Infants and children, the aged and the chronically ill are at greatest risk from chemically induced immune-suppression.
Repetto, R., et al., Pesticides and Immune System: The Public Health Risk, World Resources Institute, Washington, DC, March 1996.

Children and Cancer

The probability of an effect such as cancer, which requires a period of time to develop after exposure, is enhanced if exposure occurs early in life.

Vasselinovitch, S., et al., "Neoplastic Response of Mouse Tissues During Perinatal Age Periods and Its Significance in Chemical Carcinogensis," Perinatal Carcinogenesis, National Cancer Institute Monograph 51, 1979.

The rate of childhood cancer is increasing approximately 1% on average per year, and cancer is the leading cause of death by disease among non-infant children under the age of 15.
Cushman, J., "U.S. Reshaping Cancer Strategy as Incidence in Children Rises," New York Times, September 29, 1997. American Cancer Society, Cancer Facts and Figures, Oakland, CA, 1996.

Between 1973 and 1991, the overall incidence of childhood cancer increased 10%. Soft tissue sarcoma and brain cancer incidence increased more than 25%.
Ries, L., edited by Harras, A., Cancer Rates and Risks, National Institutes of Heath Publication No.96-691, May 1996.

Children with brain cancer are more likely than normal controls to have been exposed to insecticides in the home.
Gold, E. et al., "Risk Factors for Brain Tumors in Children," American Journal of Epidemiology 109(3): 309-319, 1979.

A study sponsored by the National Cancer Institute indicates that household and garden pesticide use can increase the risk of childhood leukemia as much as seven-fold.
Lowengart, R. et al., "Childhood Leukemia and Parent's Occupational and Home Exposures, " Journal of the National Cancer Institute 79:39, 1987.

Studies show that children living in households where pesticides are used suffer elevated rates of leukemia, brain cancer and soft tissue sarcoma.
Gold, E. et al., "Risk Factors for Brain Tumors in Children," American Journal of Epidemiology 109(3): 309-319, 1979;
Lowengart, P., et al., "Childhood Leukemia and Parents' Occupational and Home Exposures," Journal of the National Cancer Institute, Vol. 79, No. 1, pp.39-45, 1995;
Reeves, J., "Household Insecticide-Associated Blood Dyscrasias in Children,"(letter) American Journal of Pediatric Hematology/Oncology 4:438-439, 1982;
Davis, J., et al., "Family Pesticide Use and Childhood Brain Cancer," Archives of Environmental Contamination and Toxicology 24:87-92, 1993;
Leiss, J., et al., "Home Pesticide Use and Childhood Cancer: A Case-Control Study," American Journal of Public Health 85:249-252, 1995;
Buckley, J., et al., "Epidemiological characteristics of Childhood Acute Lymphocytic Leukemia," Leukemia 8(5):856-864, 1994.
Whitmore, R., et al., "National Home and Garden Pesticide Use Survey Final Report," Research Triangle Park, NC: Research Triangle Institute, March 1992.

The most commonly used non-agriculture herbicide, 2,4-D,11 has been linked to non-Hodgkin's lymphoma in scientific studies.

Hoar, S., et al., "Agricultural Herbicide Use and a Risk of Lymphoma and Soft-Tissue Sarcoma, "Journal of the American Medical Association, 259(9): 1141-1147, 1986;
Wigle, D., et al., "Mortality Study of Canadian Farm Operators: Non-Hodgkin's Lymphoma Mortality and Agricultural Practices in Saskatchewan," Journal of the National Cancer Institute 82(7):575-582, 1990;
Woods, J., "Non-Hodgkin's Lymphoma Among Phenoxy Herbicide-Exposed Farm Workers in Western Washington State," Chemosphere 18(1-6):401-406, 1989;
Zahm, S., et al., "A Case Control Study of Non-Hodkin's Lymphoma on the Herbicide 2,4-dichlorophenoxyacetic acid (2,4-D) in Eastern Nebraska" Epidemiology 1(5):349-356, 1990.

Other Health Hazards Associated with Pesticides

Health effects of 48 commonly used pesticides in schools: 22 are probable or possible carcinogens, 26 have been shown to cause reproductive effects, 31 damage the nervous system, 31 injure the liver or kidney, 41 are sensitizers or irritants, and 16 can cause birth defects.
See Health Effects of 48 Commonly Used Pesticides in Schools, Beyond Pesticides/NCAMP Factsheet, August 2000.

Symptoms of exposure to commonly used pesticides: nausea, dizziness, headaches, aching joints, disorientation, inability to concentrate, vomiting, convulsions, skin irritations, flu-like symptoms and asthma-like problems.
Bushnell, P., et al., "Behavioral and Neurochemical Effects of Acute Chlorpyrifos in Rats: Tolerance to Prolonged Inhibition of Chloinesterase, "Journal of Pharmacology Exper. Thera.. 266(2): 1007-1017, 1993;
Volberg, D. et al., Pesticides in Schools: Reducing the Risks, Robert Abrams, Attorney General of the New York State Department of Law, Environmental Protection Bureau, New York, March 1993.

In a comparative study in Mexico, children exposed to pesticides demonstrated decreases in stamina, coordination, memory, and the ability to draw familiar subjects.
Guillette, E., et al., "An Anthropological Approach to the Evaluation of Preschool Children Exposed to Pesticides in Mexico," Environmental Health Perspectives, 106(6):347-353, 1998.

Animal studies link pesticides in the organochlorine, organophosphate (OP), and pyrethroid families to hyperactivity. OPs are also linked to developmental delays, behavioral disorders and motor dysfunction in animal studies.
Shettler, T., et al., "Known and suspected developmental neurotoxicants," In Harms Way: Toxic Threats to Child Development, Greater Boston Physicians for Social Responsibility: Cambridge, MA, 2000.

An internal Office of Pesticide Program, US EPA, memo states that further studies need be conducted, because of "evidence that odor and petroleum-related carriers" in OP pesticide products may be contributing to neurobehavioral effects in people exposed to OPs.

Darcy, S., "Chlorpyrifos, Diazinon Rank High in Residential Child Poisoning Incidents, EPA Internal Memo Says," Pesticide Report, vol. 3, no. 3, July 9, 1999, citing an Blondell, J., "Review of Poison Control Center Data for Residential Exposures to Organophosphate Pesticides, 1993-1996," U.S EPA Memorandum, February 11, 1999.

US EPA and Dow AgroSciences recently agreed to phase-out chlorpyrifos (DursbanTM), one of the most commonly used insecticides in schools, because of its high risks to children, after allowing it to be used in schools and homes for the past 30 years. Although it can be purchased until 12/31/01, chlorpyrifos products can continue to be used in schools until existing stocks are used.
U.S. EPA, Chlorpyrifos Revised Risk Assessment and Agreement with Registrants, Washington, DC June 2000. Accumulation of Residues after Pesticide Applications

A 1998 study found that chlorpyrifos accumulated on furniture, toys and other sorbant surfaces up to two weeks after application.
Gurunathan, S., et al., "Accumulation of Chlorypyrifos on Residential Surfaces and Toys Accessible to Children," Environmental Health Perspectives, Vol. 106, No. 1, January 1998.

A separate study involving chlorpyrifos found substantially higher chlorpyrifos concentrations in the infant breathing zone.
Fenske, R. et al., "Potential Exposure and Health Risks of Infants following Indoor Residential Pesticide Applications," American Journal of Public Health 80(6): 689-693, 1990.

Airborne concentrations of 7 insecticides were tested 3 days following their application in separate rooms. Six of the seven pesticides left residues behind through the third day.
Wright, C., et al., "Insecticides in the Ambient Air of Rooms Following Their Application for Control of Pests," Bulletin of Environmental Contamination & Toxicology, 26, 548-553, 1981.

A 1996 study found that 2,4-D can be tracked from lawns into homes, leaving residues of the herbicide in carpets.
Nishioka, M., et al., "Measuring Transport of Lawn-Applied Herbicide Acids from Turf to Home:Correlation of Dislodgeable 2,4-D Turf Residues with Carpet Dust and Carpet Surface Residues, "Environmental Science Technology, 30:3313-3320, 1996.

EPA's Non-Occupational Pesticide Exposure Study (NOPES) found that tested households had at least 5 pesticides in indoor air, at levels often 10X greater than levels measured in outdoor air.
U.S. EPA, "Nonoccupational Pesticide Exposure Study" (NOPES), Atmospheric Research and Exposure Assessment Laboratory, Research Triangle Park, North Carolina, EPA/600/3-90/003, January 1990.

Another EPA study found 23 pesticides in indoor household dust and air that was recently applied or used in the home. The study also found residues of pesticides in and around the home even when there had been no known use of them on the premises.

Lewis, R., et al., "Determination of Routes of Exposure of Infants and Toddlers to Household Pesticides: A Pilot Study," Methods of Research Branch, U.S. EPA, Research Triangle Park, NC, 1991.

Integrated Pest Management (IPM)

The National PTA issued a position statement in 1992 stating that "The National PTA is particularly concerned about the use of pesticides in and around schools and child care centers because children are there for much of their young lives. The National PTA ... supports efforts at the federal, state, and local levels, to eliminate the environmental health hazards caused by pesticide use in and around schools and childcare centers [and] encourage the integrated pest management approach to managing pests and the environment in schools and child care centers.
"National PTA, The Use of Pesticides in Schools and Child Care Centers, Position Statement adopted by the Board of Directors, 1992.

The American Medical Association's Council on Scientific Affairs states that "Particular uncertainty exists regarding the long-term health effects of low-dose pesticide exposure. … Considering these data gaps, it is prudent … to limit pesticides exposures … and to use the least toxic chemical pesticide or non chemical alternative."
Cox, C., "Jimmy and Jane's Day: A Precautionary Tale," J. of Pesticide Reform (18)2, 1998, citing American Medical Association, Council of Scientific Affairs, "Education and informational strategies to reduce pesticide risk," Prevention Medicine 26:191-200, 1997.

Maryland schools reported 100% of 17 school districts surveyed had adopted integrated pest management (IPM) policies that discourage the routine use of pesticides.
Albert Greene, National IPM Coordinator for the U.S. General Services Administration (GSA), has implemented IPM in 30 million square feet, approximately 7,000 federal buildings, in the capital area without spraying toxic insecticides. Greene has stated, "that it can be pragmatic, economical, and effective on a massive scale.
"Greene, A., "Integrated Pest Management for Buildings," Pesticides and You, 1993, article adapted from transcript of an address to Canada's Department of National Defense Pest Management Advisory Committee, Montreal, Quebec, November 19, 1992.

According to the US EPA, "preliminary indications from IPM programs in school systems suggest that long term costs of IPM may be less than a conventional pest control program."
U.S. EPA, Pest Control in the School Environment: Adopting Integrated pest Management, 735-F-93-012, +….August 1993.

Policies

Contents

Web resources:

Marblehead Organic Pest Management Policy
http://www.turi.org/community/PDF/Organic.pdf

Newton Integrated Pest Management Policy
http://www.turi.org/community/PDF/IPMPOL.pdf

TOWN OF MARBLEHEAD
Board of Health

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ORGANIC

PEST MANAGEMENT POLICY

for

Turf and Landscape

May 3, 2001

Town of Marblehead
Board of Health

Marblehead Organic Pest Management Policy

Phase 1 – Turf & Landscape

Prepared in accordance with the
Town of Marblehead, Board of Health
"Statement on Pesticides" of June 1998

SECTION 1: STATEMENT OF INTENT

The Town of Marblehead agrees with the U.S. Environmental Protection Agency (EPA) that "all pesticides are toxic to some degree…, and the commonplace, widespread use of pesticides is both a major environmental problem and a public health issue."

The Town of Marblehead Board of Health recognizes that all citizens, (particularly children), as well as other inhabitants of our natural environment, have a right to protection from exposure to hazardous chemicals and pesticides in particular.

The Town of Marblehead Board of Health recognizes that a balanced and healthy ecosystem is vital to the health of the town and its citizens; and as such is also in need of protection from exposure to hazardous chemicals and pesticides, in particular.

Furthermore, the Town of Marblehead Board of Health recognizes that it is in the best interest of public health to eliminate the use of toxic pesticides on Town-owned land;
to encourage the reduction and elimination of the use of toxic pesticides on private property; and to introduce and promote natural, organic cultural and management practices to prevent and, when necessary, control pest problems on Town-owned land.

SECTION 2: PHILOSOPHY/PRINCIPLES

The Town of Marblehead Board of Health hereby adopts the *Precautionary Principle (as defined by the Wingspread Statement)* as the basis for its Organic Pest Management Policy. The Precautionary Principle states *"When an activity raises threats of harm to the environment or human health, precautionary measures should be taken, even if some cause and effect relationships are not yet fully established."*

SECTION 3: STATEMENT OF ACTION

Be it known that the Town of Marblehead Board of Health hereby adopts an Organic Pest Management (OPM) Policy which mandates the following:

- That the use and application of toxic chemical pesticides, either by Town of Marblehead employees or by private contractors, is prohibited on all Town-owned lands;
- That natural, organic turf and landscape cultural practices and maintenance shall be the method of choice to understand, prevent, and control potential pest problems;
- That all control products used under the terms of this policy shall be in keeping with, but not limited to, those products on the approved list of NOFA/Mass. (Northeast Organic Farmers' Association/Mass.) and/or the Organic Materials Review Institute of Eugene, OR;
- That an OPM Advisory Committee shall be formed;
- That Town of Marblehead employees who work with turf grass and the landscape receive education and training in natural, organic turf and landscape management;
- That a listing of all Town-owned lands affected by this policy be made available to the public;
- That a registry of all pesticides currently stored on Town-owned premises be compiled, with a goal of proper disposal through a Hazardous Wastes Collection program.
- That Town compost shall be tested on a yearly basis for contaminants, including, but not limited to, heavy metals and pesticides, as decided by the Public Health Director.

SECTION 4: PESTS AND PESTICIDES DEFINED

For the purpose of this policy, pests and pesticides are defined as follows. Pests are and may be known as *undesirable* plants, insects, fungi, bacteria, and rodents, birds and other animals. Common examples in turf grass and the landscape can be, but are not limited to, crabgrass, knotweed, poison ivy, chinch bugs, grubs, and a variety of plant pathogens.

Pesticides are defined by the Massachusetts Department of Food and Agriculture Pesticide Bureau as "substances or mixtures of substances that prevent, destroy, repel, or mitigate pests, or defoliate, desiccate, or regulate plants. Pesticides are poisonous substances that can have an adverse effect on the environment or impair human health…" Herbicides, fungicides, insecticides, miticides, avicides and rodenticides are all considered pesticides.

Under this policy, pesticides classified as known, likely, or probable human carcinogens or probable endocrine disruptors, or those pesticides that meet the criteria for Toxicity Category I or Toxicity Category II, as defined by the United States Environmental Protection Act (EPA) in section 156.10 of Part 156 of Title 40 of the Code of Federal Regulations can no longer be applied to any Town of Marblehead-owned lands. A list of the pesticides in the EPA's Toxicity Categories I and II will be periodically updated and maintained at the offices of the Town of Marblehead Board of Health.

SECTION 5: ORGANIC PEST MANAGEMENT (OPM) DEFINED

Organic Pest Management is a problem-solving strategy that prioritizes a natural, organic approach to turf grass and landscape management without the use of toxic pesticides. It mandates the use of natural, organic cultural practices that promote healthy soil and plant life as a preventative measure against the onset of turf and landscape pest problems.

Essential OPM practices include, but are not limited to:

- regular soil testing;
- addition of approved soil amendments as necessitated by soil test results, following, but not limited to, the recommendations of NOFA/Mass (Northeast Organic Farmers' Association/Mass) and/or the Organic Material Review Institute of Eugene, OR;
- selection of plantings using criteria of hardiness; suitability to native conditions; drought, disease and pest-resistance; and ease of maintenance;
- modification of outdoor management practices to comply with organic horticultural science, including scouting, monitoring, watering, mowing, pruning, proper spacing, and mulching;
- the use of physical controls, including hand-weeding and over-seeding;
- the use of biological controls, including the introduction of natural predators, and enhancement of the environment of a pest's natural enemies;
- through observation, determining the most effective treatment time, based on pest biology and other variables, such as weather and local conditions; and
- eliminating pest habitats and conditions supportive of pest population increases.

OPM dictates the use of chemical controls, in consult with the OPM Advisory Board (See Section 9), only in the event of a public emergency as determined by the Board of Health.

SECTION 6: EXEMPTIONS

All outdoor pest management activities taking place on Town of Marblehead-owned land shall be subject to this OPM policy, except as follows:

- Pesticides otherwise lawfully used for the purpose of maintaining a safe drinking water supply at drinking water treatment plants and at wastewater treatment plants and related collection, distribution, and treatment facilities.
- Pesticides in contained baits or traps for the purpose of rodent control.
- Pesticides classified by the United States Environmental Protection Agency as exempt materials under 40CRF 152.25, or those pesticides of a character not requiring FIFRA regulation.

SECTION 7: OPM ADVISORY COMMITTEE

In accordance with Section 4 of this policy, an OPM Advisory Committee shall act as a "Pest Management Board" to oversee and assist in the implementation of the OPM policy, to develop an OPM program consistent with Section 5 of this policy, and to advise the Town of Marblehead Board of Health of any problems encountered or amendments required to achieve the full and successful implementation of this policy. The Advisory Committee shall meet four times per year, unless otherwise called to meeting by the Board of Health.

The Advisory Committee will seek the participation, advice, and counsel of experts in the fields of organic turf and landscape management and IPM protocol. Broad community participation, including parents, schools, advocates, and local landscaping businesses will be encouraged on a non-voting basis. Voting membership on the OPM Advisory Committee shall be comprised of:

- Town of Marblehead, Board of Health (1 Representative)
- Recreation Parks and Forestry Department Board (1 Representative)
- Town of Marblehead, Cemetery Commission (1 Representative)
- Town of Marblehead, School Committee (1 Representative)
- Town of Marblehead Conservation Commission (1 Representative)
- 3 Citizen Representatives, knowledgeable about organic approaches to pest problems and organic horticulture, as appointed by the Board of Health.

SECTION 8: TRAINING AND EDUCATION

All Town of Marblehead personnel involved in the evaluation, approval, or implementation of organic turf and landscape maintenance and/or outdoor pest control, should receive hands-on training and education in natural, organic cultural and technical methods.

SECTION 9: EMERGENCY WAIVERS

If an emergency situation warrants the use of pesticides which would otherwise not be permitted under this policy, the Town of Marblehead Director of Public Health and/or the Board of Health shall have the authority to grant a temporary waiver for a period of thirty days. Notice of the waiver request shall be given to the OPM Advisory Committee for advice on resolving the problem without the use of pesticides. The waiver may be extended for an additional period not to exceed six months. Nothing in this waiver provision prohibits the Town of Marblehead from adopting additional waiver resolutions for as long as the condition exists, again not to exceed six months for any individual resolution.

Any waiver granting the use of pesticides on Town land shall require the use of Integrated Pest Management protocol as it pertains to the least toxic material chosen for any given application (see Addendum 1 for IPM definition).

The Board of Health shall determine if such a waiver is warranted based on the following criteria:

1. the pest situation poses a threat to human health and/or environmental quality;
2. viable alternatives consistent with this OPM policy do not exist.

Any Town department using a pesticide under such a waiver must comply with the laws of the Commonwealth of Massachusetts regarding notification to site users and abutters.

ADDENDUM 1:

INTEGRATED PEST MANAGEMENT (DEFINED)

Organic Pest Management strives first and foremost to prevent pest problems through the application of natural, organic horticultural and maintenance practices. OPM can incorporate some of the principles of Integrated Pest Management (IPM**) in its program as is deemed suitable and necessary by the OPM Advisory Committee.**

> IPM is an ecologically-sound approach to suppressing and eliminating pest populations to keep them from causing health, economic, or aesthetic injury. IPM utilizes site-specific information about pest biology and behavior, environmental conditions, and the dynamics of human characteristics and activities in dealing with the prevention and control of pests that interfere with the purpose and use of a particular site.

The following steps outline the basic approach used in an IPM program.

- Monitoring and scouting the turf or landscape in question;
- Accurate record-keeping documenting any potential pest problems;
- Evaluation of the site with regard to any injury caused by a pest in question and a determination made on which course of treatment to follow;
- Chosen treatment to be the least damaging to the general environment and one that best preserves the natural ecosystem;
- Chosen treatment to be the most likely to produce long-term reductions in pest control requirements. The effective implementation must be operationally feasible, and must be cost effective in the short and long term.
- Chosen treatment must minimize negative impact to non-target organisms;
- Chosen treatment must be the least disruptive of natural controls available.
- Chosen treatment must be the least hazardous to human health.

U. S. Environmental Protection Agency Office of Prevention, Pesticides and Toxic Substances, “Healthy Lawn, Healthy Environment, June 1992.

Wingspread Conference, S. Johnson Foundation, Racine, WI, February 1998

Massachusetts Department of Food and Agriculture, Pesticide Bureau Regulations, 333CMR:203, Sec. 4, 1996

Massachusetts Department of Food and Agriculture, Pesticide Bureau, Regulation Home Page, www.massdfa.org/pestreg.htm, March 2000

City of Newton Integrated Pest Management Policy

(September 1997)

Preface

The city of Newton recognizes that citizens, particularly children, deserve to be protected from exposure to hazardous chemicals and pesticides. The City also recognizes that public agencies should be a model of environmentally responsible practices. Employing an Integrated Pest Management (IPM) policy allows the City to accrue the financial benefits of planning, prevention and responsible management, while reducing the use of pesticides that pose a health risk to people directly through breathing, drinking, ingesting or skin absorption of toxic products or via delayed exposures from contaminated soil, food, air, water, utensils, and toys.

Newton IPM Policy

The City of Newton will commit to Integrated Pest Management (IPM) principles and practices and incorporate them into all landscape maintenance and building maintenance and construction work. This policy will apply to work by contractors hired by the City as well as to work done by city employees.

IPM Defined

Integrated Pest Management (IPM) is a problem-solving approach to landscape and building management designed to prevent and control undesirable weeds, insects, fungi, and rodents. IPM relies on the use of site-specific information about environmental conditions and the dynamics of human characteristics and activities, and pest biology and behavior to prevent, resist and control pests that interfere with the purpose and use of a particular site. When a pest has exceeded a predetermined threshold at a particular site, all appropriate pest control strategies are employed including modifying the habitat, modifying maintenance practices, modifying user behavior, and, if all else fails, using pesticides as a last resort, and only within specific guidelines for least-toxic selection and use.

Pests Defined

Pests are undesirable plants, insects, fungi and rodents. Common examples in the landscape are grubs, chinch bug, crabgrass, knotwood, and a variety of plant diseases. Insects, weeds, and fungi are a significant problem on our athletic fields and other public grounds. They can

destroy or overtake large areas of turf resulting in lack of playability, large renovation costs, and poor conditions for players. Common pests in buildings are ants, lice, cockroaches, termites, mice and other rodents that thrive when food and other conditions are available. They can create hygiene and safety problems, cause damage to building structures and, if nothing else, cause a nuisance.

IPM Goals

The goal of Newton's Integrated Pest Management Policy is to promote the health, safety, quality and sustainability of public buildings and landscapes and maximize the enjoyment and use of public buildings and grounds for functional, recreational (both active and passive) and ornamental purposes. This policy will

1. Reduce use of pesticides through common sense principles of IPM to the point of no pesticide use, whenever possible and practical.

2. Provide healthy, high-quality and sustainable buildings, parks and public open spaces.

3. Prevent the contamination of buildings, soil, air, and water and protect people (especially children and other vulnerable populations), animals and beneficial plants and insects from toxic exposures.

4. Provide a model of responsible stewardship of environmental and community resources.

IPM Practices

Planning: The City of Newton will develop site-specific building and landscape maintenance plans for all sites, which will incorporate pest prevention and control measures. These plans will specify site-assessment, testing and the timing and/or type of maintenance practices; monitor conditions and pest populations; establish pest thresholds; recommend educating users or modifying user behavior (including modifying public access, traffic or use patterns), define record keeping requirements and evaluation criteria, solve problems using expert assistance and resources; and, if determined to be necessary, identify the conditions for use of pesticides. Plans will be reviewed and approved by the IPM Advisory Committee.

IPM Guidelines:

The IPM Advisory Committee will develop guidelines for considering all appropriate intervention options, including changes in cultural, mechanical, physical, biological and chemical measures, or no action. Criteria for selecting pest control interventions within these guidelines shall be:

a. Least hazardous to people, beneficial insects and plants, and the environment
b. Most species-specific
c. Lowest cost
d. Highest level of anticipated effectiveness
e. Greatest need for ongoing use and maintenance of field or facility

Record Keeping:

The landscape and building maintenance contractors and City workers will maintain a record of site characteristics and conditions, interventions, practices, pest populations, and other pertinent IPM data and make periodic reports as determined by the IPM Advisory Committee.

Notification:

All site users and abutters will be notified regarding any use of pesticides according to state law and any additional requirements established by the IPM Advisory Committee.

IPM Advisory Committee

The City of Newton will establish an IPM Advisory Committee advisory to the Commissioners of Health, Public Buildings, Parks and Recreation, and Support Services of the Newton Public Schools and the Mayor.

The Advisory Committee will recommend action in the following areas, or will assume authority to act in these areas to the extent that power to so is delegated by those indicated above.

· Develop IPM guidelines and oversee their implementation.

· Develop IPM specifications for RFPs and contracts.

· Provide necessary community education about IPM.

· Ensure that all staff have appropriate training and experience in IPM practices and access to expert assistance and resources.

· Ensure that best practices and all non-toxic pest control methods are fully exploited.

· Ensure that any pesticide considered for use is fully evaluated (active and inert ingredients) for the least-adverse impact on people and the environment.

· Determine policy for notification of pesticide use to all site users and abutters and enforce the full extent of that policy and applicable state law.

· Specify collection of IPM data and evaluate pesticide use records and reports for all city departments and make regular reports to the Landscape Maintenance Task Force, the Mayor and the community.

· Membership on the IPM Advisory Committee shall be:

· Newton Health Department

· Green Decade Coalition/Newton/GreenCAP

· Newton Parks and Recreation Department

· Representative of Newton sports leagues

· Newton Public Buildings Department

- Health and Safety Committee, Newton Change Management Group
- Newton School Department, Support Services
- Health and Safety Committee, Newton PTO Council
- Neutral chair, to be selected by other members.

The committee will seek the participation of technical experts to provide advice and counsel. Broad community participation, including parents, schools, advocates, and other landscape users and managers, (including the Newton Commonwealth Golf Course) will be encouraged on a non-voting basis.