

How Integrated Pest Management Will Reduce the Need for Pesticides in Schools



LOCALMOTION

*Respectfully submitted by
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Introduction

This report is offered as an introduction to basic integrated pest management (IPM) principals. It describes how to implement an IPM program into a Michigan school district, and discusses program costs and benefits. This report is intended to be used as a resource guide for schools and individuals who want to reduce pesticide use and find a more effective way to handle pest problems.

Numerous school districts in the state have reduced their use of pesticides by implementing successful IPM programs. Many of these schools have employed professional IPM companies.

Southern Michigan, in particular, benefits from the availability of multiple pest control companies that have long term and successful experience in implementing safe, non-toxic IPM programs into schools. IPM companies in Michigan are well known and some have expanded their programs into other states as well.

Michigan is also known for its state regulations regarding IPM, which are some of the most comprehensive in the country.

Many pesticides have been found to be detrimental to developing children. These findings have thus caused serious health concerns. IPM is a cost-effective way for schools to reduce the risk of any health hazards that are associated with pesticides and create a healthy, pest-free learning environment.

Integrated Pest Management

According to the Michigan Department of Agriculture (MDA), Integrated Pest Management (IPM) is defined as “...a pest management system that uses all suitable techniques in a total management system to prevent pests from reaching unacceptable levels or to reduce existing pest populations to acceptable levels.”¹

Different sources, however, define Integrated Pest Management differently. This is due to the flexible nature of this approach to pest control. IPM does not come in a one-size fits all package. The variety of techniques that IPM employs are categorized as:

- **Physical or Habitat Modification**
- **Mechanical**
- **Biological**
- **Educational or Behavior Modification**
- **Chemical**

Buildings or sites may have different combinations of pest problems with varying degrees of severity and different structural and environmental factors to consider. The IPM methods utilized, therefore, must be tailored specifically to each site. IPM methods have been successfully modified for use in agriculture, in gardens and lawns, on playing fields, and in buildings.

Integrated Pest Management is the most commonly chosen approach when the goal is to control a pest population with the least amount of risk to people and the environment. Taking this into consideration, some practitioners of IPM choose to use chemical control techniques, such as pesticides, in their program and others do not. If chemical pesticides are used, the least-toxic measures are always the preferred choice.

Physical Controls

Physical Controls Inside	Physical Controls Outside
<ul style="list-style-type: none"> • inspect • monitor • encourage good sanitation <ul style="list-style-type: none"> -cover and clean trash cans • eliminate conducive conditions <ul style="list-style-type: none"> -dripping water -crumbs, food sources -dark, protected possible shelters • practice exclusionary measures <ul style="list-style-type: none"> -plug cracks/holes -repair screens -employ door sweeps 	<ul style="list-style-type: none"> • inspect • monitor • encourage good sanitation <ul style="list-style-type: none"> -cover and clean garbage/dumpsters • eliminate conducive conditions <ul style="list-style-type: none"> -maintain soil and grass -water regularly -aerate soil -use native grasses -mow at proper height for use -over-seed grass

IPM is a proactive approach to pest control. Practitioners aggressively work to prevent pest populations from entering a site or from becoming established if they do get inside. An IPM program first considers the physical aspects of a site to address the question as to how and why pests are present.

Regularly monitoring the site for signs of pest activity, as well as structural problems, is a continual process when using IPM. Through an initial inspection, and follow up monitoring, IPM practitioners can identify possible entryways for pests and conditions that are conducive to the survival of the pests.

Conducive conditions may include standing or dripping water, crumbs or other food sources, and dark, protected places used by pests as shelter. Closing entryways such as

holes in window screens, cracks and holes in the building, and using door sweeps exclude pests from a building and are therefore known as exclusionary techniques. Exclusionary techniques will also improve the indoor air quality of a building and decrease costs associated with loss of climate-controlled air. These are simple common sense measures that save money in more ways than one.

The physical techniques of sanitation, exclusion, and elimination of conducive conditions may also be referred to as habitat modification. Habitat modification plays a pertinent role when using IPM to control pests inside a building. The question as to why pests are present, however, must always be addressed no matter where the problem persists--inside or outside.

Outside a building there are no entryways to eliminate. Conducive conditions, however, may exist that make it easy for a pest, whether it is plant or animal, to survive. Weeds and grubs can overtake a lawn or playing field if the soil and grass is not properly maintained. Regular watering, aeration of the soil, using types of grass that are well-suited for this climate, mowing at the proper height, and over-seeding the grass can prevent weeds and grubs from becoming a serious problem. Some school districts have even chosen to use artificial turf to alleviate any potential problems on playing fields.

Conditions that are conducive to the survival of pests outside also include uncovered garbage. Unsealed garbage bags and open dumpsters attract rodents, flies, and stinging insects. Keeping trash sealed and covered, emptying the dumpsters daily, and regularly cleaning the bins can prevent such pests from becoming a problem.

Careful monitoring in the spring will also reveal the nests of stinging insects as they are being built. Early detection allows any nests that are close to human activity to be destroyed before they are a problem.

After conducive conditions and entryways have been eliminated, mechanical, biological, and educational control methods are used to keep a pest population below unacceptable levels. Chemical controls may be used as a last resort.

Mechanical Controls

Tools	Devices	Machines
<ul style="list-style-type: none"> • hand garden tools • hair comb 	<ul style="list-style-type: none"> • glue trap • snap trap • light trap 	<ul style="list-style-type: none"> • lawn mower • other maintenance machinery • vacuum cleaner

Mechanical control techniques are non-toxic and include the use of any tool, device, or machine. Outside mechanical control techniques include the use of mowers and other maintenance machinery and the manual removal of weeds. Vacuums and various types of traps are common mechanical controls that can be used outside or inside. A vacuum can be a very useful tool not only for sanitation, but also for sucking up pests, such as ants and stinging insects. Two of the most commonly used traps are snap traps and glue traps.

Glue traps are useful mechanical controls for monitoring pest activity in an area. A glue trap consists of a flat board covered with a sticky substance. When an insect or rodent gets stuck on the glue trap, it is worthy to note from which direction the pest was coming. By going backwards from that point, entryways can be identified more easily.

Glue traps can also be used in conjunction with other equipment. For example, a device known as a light trap has been proven effective against fleas. A light attracts the fleas to a glue trap where they get stuck. Lights can be used to lure insects into other types of traps as well.

Mechanical techniques are highly recommended over chemicals for control of head lice. The recommended techniques include using a comb to remove lice; washing clothes and bedding in hot water; machine drying; exposing clothes and bedding to freezing temperatures; and sealing clothes and bedding in plastic for 7-10 days.²

Biological Controls

Biological Controls Inside	Biological Controls Outside
<ul style="list-style-type: none"> • organisms <ul style="list-style-type: none"> -nematodes -parasitic wasps -others • substances <ul style="list-style-type: none"> -pheromones 	<ul style="list-style-type: none"> • organisms <ul style="list-style-type: none"> -green lacewings -praying mantises -ladybugs and other beetles -others • substances <ul style="list-style-type: none"> -pheromones

Biological controls are non-toxic and rely on the use of biological organisms or substances to control a pest. Most commonly a predator is introduced and allowed to do what comes naturally, find its prey and eat it. Predators are often specialized and are of no consequence to humans. Two examples of possible predators are microscopic nematodes (a type of worm) and tiny parasitic wasps that prey on cockroaches.

Ladybugs and other predatory insects will feast on outdoor plant pests, such as aphids. If the invasive weed, purple loosestrife, has become a nuisance, specialized beetles can be used to decimate the population. Other examples of predatory insects that can be used outside are praying mantises, green lacewings, and beetles such as the soldier beetle.

The urge to reproduce can also be used against an animal or insect. Sexually reproducing animals often emit pheromones that attract the opposite sex. Strips of paper coated with synthesized pheromones can lure moths, cockroaches, yellow jackets, and other insects into their respective traps.

Educational Controls

Educate	Involve	Train
<ul style="list-style-type: none"> • keep screen-less doors/ windows shut • throw away soda cans/ candy wrappers 	<ul style="list-style-type: none"> • art projects • videos • theatre performances • science projects • group activities • discussions 	<ul style="list-style-type: none"> • hold workshops for school officials

Education, or behavior modification, is non-toxic and is one of the most important tools available for combating pest infestations. Education focuses on the actions of people instead of on the pests. The goal of education is to inform the human inhabitants of a building about what they can do to prevent pest problems. Leaving screen-less doors and windows open; dropping crumbs, candy wrappers and empty soda cans; even storing corrugated cardboard in a closet will attract and shelter pests.

Posters or other art projects, videos, theatrical performances, science projects, group activities or discussions, and simple announcements all serve as educational techniques. Educational techniques are only limited by the imagination.

More technical educational training will be needed for the building manager, custodians, and others if they will be implementing any IPM techniques. The Michigan Department of Agriculture, in cooperation with Michigan Pest Control Association, provides training programs and certification throughout the year for potential IPM practitioners. Currently the training programs are free of charge.

Chemical Controls

Non-toxic	Low Toxicity
<ul style="list-style-type: none">• soap• hydrogen peroxide	<ul style="list-style-type: none">• isopropyl alcohol• boric acid• silica gels• diatomaceous earth• non-volatile baits• plant-based essential oils

Chemical controls include registered pesticides and some safer alternatives such as soap, isopropyl rubbing alcohol, and hydrogen peroxide.

Registered pesticides are divided into three categories according to their toxicity. The following signal words can be found on the labels of all registered pesticides³:

- Caution (slightly toxic)
- Warning (moderately toxic)
- Danger (highly toxic)

Of the estimated 100,000 chemicals commonly used today, only 2,000 (2%) have been tested for their ability to cause cancer in humans.⁴ Fewer still have been tested for their effects on the reproductive system, brain function, and immune system. Furthermore, the Environmental Protection Agency (EPA) does not promote the use of any registered pesticide and states that no pesticide can be considered safe.⁵ Since 1996, the EPA has cancelled the registration permits of more than 200 pesticides and 20,000 pesticide

products as a part of its reregistration process of older pesticides. The agency still has approximately 250 pesticides to review that are currently on the market.⁶

IPM can be effective without the use of toxic chemicals. Most people who use IPM agree that pesticides should only be used as a last resort or not at all. If they do use pesticides, advocates of IPM use the least toxic pesticides available.

Some of the least toxic chemical controls include boric acid, silica gels, and diatomaceous earth. The manner in which these substances are used can determine how dangerous they are to humans. Non-volatile baits do not vaporize readily into the air and are considered less toxic because they are enclosed in a trap or applied directly into cracks and crevices in granular form. If the same substance is used as a liquid spray in an open area it is considerably more dangerous to humans.

Botanical insecticides can be made from essential plant-based oils. Most are considered to be among the least toxic of chemical controls. This classification, botanical insecticides, does not include synthetic pyrethroids, which are neurotoxins and can cause liver and kidney damage.⁷

Isopropyl or rubbing alcohol is a common household product and is one of the least toxic substances available for pest control. Five tablespoons of rubbing alcohol in water will kill poison ivy when sprayed on it.⁸

Non-toxic chemical controls include soapy water and hydrogen peroxide. A solution made from soap and water will kill many insects when sprayed directly on the insect or nest. Hydrogen peroxide can be used as a safe alternative to chlorine bleach for sanitation. There are many other simple and safe solutions.

Companies in Southern Michigan Offering IPM Services to Schools

Below is a list, not necessarily completely inclusive, of pest control companies who offer highly recommended integrated pest management services to schools in southern Michigan:

- EnviroSafe, Inc.
- Get Set, Inc.
- Insectech
- Praxis

Below is a chart that lists each company, contact information, and some of the services they offer. Products and services offered will vary between companies, as will their level of on-site involvement. A company may provide on-site services, remote services, consultation, staff training, and/or safe pest control products. Services such as products, information, or advice are considered remote when they are provided from a distance and company visits to school structures are rare.

EnviroSafe, Get Set, and Praxis have each developed innovative, exclusive, non-toxic products. One company, Praxis, doesn't use any pesticides at all. Others use chemicals that are considered to be the least toxic chemical controls available. All of the companies listed have proven, successful, and reputable IPM programs.

Please be aware of pest control companies that claim to use IPM, but still spray monthly without monitoring for pest problems, structural deficiencies, or conducive conditions. Pest control companies that service schools also need to inform the district of the details of any and all use of pesticides.

This brief summary is not meant to be an all-inclusive description of each company and their offered services. For more information, please refer to the supplemental information provided or contact the company directly.

Company/ Web site	Contact Person	Address, Phone, Fax	Services offered
EnviroSafe, Inc. www.envirosafe.cjb.net http://envirosafeipm.com	Mr. Bob Stoddard EnvyroSafe@aol.com	P.O. Box 151011 Grand Rapids, MI 49515-1011 Phone: 800-226-0418 Fax: 616-364-1891	On-site services, Remote services, Consultation, Staff training, Safe pest control products
Get Set, Inc. www.thebestcontrol.com www.getipm.com	Mr. Steve Tvedten steve@getipm.com	2530 Hayes Street Marne, MI 49435-9751 Phone: 800-221-6188	On-site services, Remote services, Consultation, Staff training, Safe pest control products
Insectech	Mr. Bill Beck	3011 East Michigan Avenue Ypsilanti Township, MI 48198 Phone: 734-487-7024	On-site services, Consultation
Praxis www.praxis-ibc.com	Mr. Samuel DeFazio, Mr. Patrick McKown, or Ms. Jean McKown praxis@allegan.net	2723 116 th Avenue Allegan, MI 49010-9023 Phone: 616-673-2793 Fax: 616-673-2793	Remote services, Consultation, Staff training, Safe pest-control products

EnviroSafe, Inc.

EnviroSafe, Inc. provides services for the buildings and outdoor areas of schools, daycare facilities, restaurants, and other businesses. The company serves numerous school districts in Michigan, including Birmingham Public Schools.

EnviroSafe's philosophy is to only use pesticides as a last resort and to only use those that are of the least toxic. No volatile synthetic pesticides are used inside or outside.

A representative from EnviroSafe will make monthly visits to the school district and will also be available for other on-site services if necessary. The company will train staff and also provides an IPM manual filled with simple pest management solutions for each school building. EnviroSafe will be responsible for notifying parents if any pesticide will be used.

Enzymatic cleaners, non-toxic lice shampoo, organic fertilizers, and other products are provided as part of their service. On-site visits, training, products, and all other services are included in the overall cost of EnviroSafe's IPM program.

Get Set, Inc.

Get Set, Inc. serves schools, businesses, their structures and landscaped areas. Get Set provides services for 23 school districts in Michigan and Ohio. Get Set's founder, Steve Tvedten has over 30 years of experience in traditional and alternative pest control.

The company controls insects inside and outside school buildings without the use of any volatile, synthetic pesticides. Borates, one of the least toxic forms of chemical pest control, are only used as a last resort.

Get Set will train staff on pest control techniques and cleaning tips. The company also provides a thorough 800-page IPM manual titled "The Best Control" on CD-ROM and in book format for each building in the district. This manual serves as a resource of non-toxic solutions for any pest problems or IPM questions that may arise. A non-toxic treatment for head-lice is one of the various products that Get Set provides as a part of its service to a school district. The costs of all their on-site visits and other services are included in the overall service package.

Insectech

Insectech provides IPM services for the structures and the surrounding outdoor areas of schools, restaurants, nursing homes, residential areas, and businesses. The company has been in business since September of 1993.

After sanitation, exclusion, and other preventative techniques, Insectech relies on mechanical controls. Least toxic chemical controls will be used in emergency instances such as when stinging insects pose hazards to small children.

The Ann Arbor Public School District is the only district with which they have a contract. Insectech does, however, provide consultation services to individual schools such as Summer's Knoll Elementary, a private school in Ann Arbor.

Praxis

Praxis serves schools, low and high-income housing, day care facilities, hospitals, restaurants, and prisons. The company has projects in 28 states and serves clients remotely. Praxis also operates a pesticide-free commercial nursery.

Praxis prides itself on providing a service that is completely pesticide-free. The company has found biological controls to be the most effective means of pest control.

Through blueprints of the site, soil quality tests, and other information from engineers and architects Praxis gains understanding of the site. After the initial site characterization, Praxis develops an all-inclusive program designed to fulfill the specific needs of the organization. For schools, Praxis designs and creates an "Academy Biotoool Kit". The Academy Biotoool Kit is not a kit per se, but a program that includes everything a school district should need to control pests. Costs include training, products, teaching materials, advice and telephone consultation whenever necessary.

Cost of Switching to IPM

Practicing IPM should not cost a school district more money than using conventional chemical controls. If a district has an excellent cleaning program and has stayed on top of structural repairs, the transition to IPM will be smooth. If preventative measures are not already in place, the implementation of sanitation and exclusionary techniques may take more time at first. A clean and structurally sound building, however, will benefit all occupants and save the district money in the long run.

Once cleanliness is routine and structural repairs have been made, fewer pests will enter the building. Proper maintenance of school grounds and playing fields should also lead to fewer pest problems and lower pest control costs in the future.

After the IPM program is in place, the dedication of staff to handle pest problems is an option. A staff person acting as building manager is needed to oversee the IPM program and be responsible for record-keeping and parent notification. Additional staff members can also be designated to execute IPM control measures.

Utilizing on-site staff members to implement minor pest control procedures can cut IPM program costs. A professional company, therefore, can take on the role of a consultant who visits the site only to handle major problems and is available anytime for advice. Hiring a professional pest control company as a consultant costs significantly less than hiring a pest control company to be on-site for every step of the IPM process.

For example, Get Set can be hired as an on-site pest control company or as a trouble-shooting consultant. The West Ottawa School District has been working with Get Set for approximately five years. Initially Steve Tvedten, Get Set's founder, treated West Ottawa's 13 buildings himself. At that time the cost to West Ottawa was about \$1,200 per building per year for a total of \$15,600 per year. All of the services that Get Set offers were included. Now West Ottawa's Director of Building Services, Mr. Gary Brezinski, and his staff are familiar with IPM and they implement the non-toxic pest control themselves. With Get Set acting as consultants, Mr. Brezinski estimates that the district is now paying about \$1,500 per year plus the cost of on-site visits (if necessary) and products.

Hiring Get Set acting as a consultant versus a full-time pest control operator, saves the West Ottawa School District an estimated \$10,000 per year.⁹

Most companies cannot give an estimate of what their services will cost before evaluating the potential site. Some, like Insectech and Praxis, charge a consultation fee for the initial evaluation. Insectech will provide a complimentary consultation that includes an overview of their services, style, and strategies. A thorough inspection, however, will cost a fee, which depends on the size of the building or district. Praxis charges \$500 for the initial characterization of the site.

Praxis has provided services for the IPM program that is in place at Cass Technical High School in Detroit. Mr. Sam DeFazio of Praxis estimates that the cost to Cass Tech is \$14.79 per day.¹⁰ In 1999 and 2000, Cass Tech's student enrollment was approximately 2,400.¹¹ This comes out to a cost of less than a penny per student per day for non-toxic pest control.

Schools in Michigan Using IPM

Many schools in Michigan are using IPM for their pest management needs. Below is a list (not necessarily completely inclusive) of school districts that practice IPM. The role of the hired professional company varies between specific sites, depending on the individual school district's needs, wants, and level of participation.

Three selected school districts: Ann Arbor Public Schools, Birmingham Public Schools, and West Ottawa Public Schools have been found to have exemplary IPM programs. Each school's building manager reports that the bulk of their pest problems can be prevented or resolved without the use of pesticides. Ingenuity, careful monitoring, record keeping, and a willingness to try seemingly unusual methods have enabled these three districts to create safe learning environments for children, teachers, maintenance, cafeteria personnel, and administrators alike.

The building managers of these three districts contend that it is not necessary to rely upon the routine use of pesticides to eliminate pests. A variety of non-toxic techniques can be more effective in most, if not all, situations. Even in the case of stinging insects, a spray made of dish soap and water has been found to kill bees just as effectively as a toxic chemical.¹² Dish soap and water, however, can be applied without the need to clear the premises or inform parents. Soapy water is just one of the many non-toxic pest control strategies that has been proven effective. Non-toxic means of pest control can eliminate pest concerns as well as concerns regarding pest control and any potential liability as well.

School / District	Address and Phone	Contact Person	Company Used
Allendale Public Schools	6561 Lake Michigan Dr. Allendale, MI 49401 616-895-6155	Mr. Gary Torno, Facilities Manager	EnviroSafe
Ann Arbor Public Schools	2555 S. State Street Ann Arbor, MI 48104 734-994-2226	Mr. Tim Gruszczynski, Projects Crew Chief	Insectech
Bangor Public Schools	801 W. Arlington Bangor, MI 49103 616-427-8274	Mr. Rich Corwin, Maintenance & Custodian Supervisor	Get Set
Birmingham Public Schools	2305 Cole Street Birmingham, MI 48009 248-203-3977	Mr. Bernard Smith, Assistant Manager- Custodial Services	EnviroSafe
Cass Technical High School, Detroit Public Schools	2421 Second Detroit, Michigan 48201 313-596-3900	Ms. Lenora Ashford, Science Dept. Head Mr. Michael Jones, Science Teacher	Praxis
Coopersville Area Public Schools	198 East Street Coopersville, MI 49404 616-997-3250	Mr. Paul Cooper, Building and Grounds Director	Get Set
East Jordan Public Schools	304 4 th Street East Jordan, MI 49727 231-536-3131	Mr. Chris Hansen	Get Set
Emerson Elementary School, Saginaw Public Schools	1422 Merrill Street Saginaw, MI 48601 517-759-3413	Dr. Larry Wells, Principal	Praxis
Fremont Public Schools	220 W. Pine Street Fremont, MI 49412 231-924-5264	Mr. Rod Burkle, Maintenance	Get Set
Fruitport Community Schools	3113 Pontaluna Road Fruitport, MI 49415 231-865-4019	Mr. Ted Tyers, Maintenance	Get Set

Godwin Heights Public Schools	3529 Division Avenue S. Wyoming, MI 49548 616-245-1413	Mr. Brian Sartin, Facilities Engineer	Get Set
Grand Haven Area Public Schools	1415 Beech Tree Street Grand Haven, MI 49417 616-850-5127	Mr. Ted Rescorla, Maintenance Supervisor	Get Set
Grand Rapids Public Schools	1331 Franklin SE Grand Rapids, MI 49501 616-771-3010	Mr. Mike Hathaway	EnviroSafe
Greenville Public Schools	516 W. Cass Street Greenville, MI 48838 616-754-2370	Mr. Bruce Athey, Director of Buildings and Grounds	Get Set
Harbor Springs Public Schools	174 E. Lake Street Harbor Springs, MI 29740 231-526-4544	Mr. David Larson, Superintendent	Get Set
Kalamazoo Public Schools	1220 Howard Street Kalamazoo, MI 49008 616-337-0497	Mr. Bill Alexander, Custodial Supervisor	N/A
Muskegon Area Intermediate School District	630 Harvey Street Muskegon, MI 49442 231-773-4398	Mr. Pete DeGraff	Get Set
Paw Paw Public Schools	119 Johnson Street Paw Paw, MI 49079 616-657-7292	Mr. Don Dean, Maintenance Director	Get Set
Reeths- Puffer Schools	991 W. Giles Road Muskegon, MI 49445 231-744-9497	Lynn G. Stel, Director of Maintenance and Grounds	Get Set
Rockford Public Schools	616-866-4205	Mr. Gene Van Putten	EnviroSafe
Saginaw High School, Saginaw Public Schools	3100 Webber Street Saginaw, MI 48601 517-759-3577	Dr. Wilson Smith, Principal	Praxis

Saranac Community Schools	150 South Pleasant Street Saranac, MI 48881 616-642-6140	Mr. Gary Golombisky, Supervisor of Maintenance and Plant Operations	N/A
Shelby Public Schools	525 North State Street Shelby, MI 49455 231-861-5416	Mr. Gary Stark, Maintenance	Get Set
Southfield Public Schools	24661 Lahser Rd Southfield, MI 48034 248-746-8533	Mr, Bill Whalen, Manager of Buildings and Grounds Services	N/A
Sturgis Public Schools	216 Vinewood Sturgis, MI 49091 616-659-1500	N/A	N/A
Sylvan Christian School	1630 Griggs, S. E. Grand Rapids, MI 49506 616-245-5244	Mr. Martin Rustenburg, Facilities Service and Maintenance	Get Set
Walter French Academy	1900 South Cedar Street, Lansing, MI 48910 517-487-8983	Mr. Todd Lovas jtkirk@cmsinter.net	N/A
Washtenaw Intermediate School District campus	1819 S. Wagner Rd. Ann Arbor MI 48106 734-994-8100 ext. 1401	Mr. Frank Hughes	N/A
Waverly Community Schools	515 Snow Road Lansing, MI 48917 517-482-9561	Terry Hamrick, Facilities Manager	Get Set
West Ottawa Public Schools	3623 Butternut Holland, MI 49424 616-738-6970	Mr. Gary Brezinski, Director of Building Services	Get Set

Summary of Michigan's Regulation 637: Pesticide Use ¹³

Since 1992, Michigan State law has required an IPM policy to be in place in schools if pesticides are used on-site. Regulation 285.637, Pesticide Use, was revised on August 13, 1995, as an amendment to Act No. 451 of the Public Acts of 1994.

Regulation 637 has set very clear standards for pesticide use in the State of Michigan. Rules 14 and 15 within the regulation address “integrated pest management” and “pesticide use in and around the schools,” respectively. Within the regulation, the term “building manager” is used to refer to the person who has been designated by the district to be responsible for oversight of the IPM program. A copy of the regulation is included with this report.

Rule 14: Integrated Pest Management

Rule 14 of Regulation 637 states, in section (a), that anyone who applies pesticides in schools must have “participated in a verifiable training program.” The director of the department of agriculture must approve the training program and it must include specific integrated pest management elements as outlined in section (a). Examples of the specified IPM elements to be included in a training program are site evaluation, habitat modification, record keeping, and the use of a building manager to implement the IPM program.

Section (b) of Rule 14 states that “ a verifiable integrated pest management program shall be in place for the building.” A detailed list is then given that explains what should be included in each school’s IPM program. Worthy of notation are: “site evaluation, ...consideration of... pest biology, ... consideration of all available pest management methods, ...consideration of the impact on human health and the environment...”

Record keeping is also required in this section of Rule 14. If a contracted pest control operator applies pesticides s/he must provide the building manager with certain information, including a description of the IPM program, an initial service inspection record, and records from each service call.

Rule 15: Pesticide Use in and around Schools

Rule 15 of Regulation 637 states that aerosol or liquid spray insecticides must not be used in or around occupied areas of the school. Pesticides should not be sprayed for 100 feet outside of an occupied building as well. If any insecticides are sprayed within a school, that area must remain unoccupied for four hours or longer depending on the label requirements. Rule 15 also describes in depth how and when the building manager and parents should be notified of pesticide applications. Parents must be notified within 30 days of the beginning of the school year of their right to know about pesticide applications in the schools.

Health Hazards Associated with Pesticides

Pesticide use in schools is of great concern for two reasons: first, children spend a large portion of their lives in schools; second--and more importantly--developing children are more sensitive than adults to the effects that pesticides have on the human body. In other words, the same chemical at the same dose will have a stronger effect on a child than on an adult because of the child's smaller size and rapidly developing nature.

In 1998, Wisconsin's Department of Agriculture, Trade, and Consumer Protection (DATCP) performed a survey of public and private schools in Wisconsin. Findings revealed the top ten chemicals used as pesticides in and outside school buildings. The list contained chemicals such as 2,4-D, chlorpyrifos, dicamba, glyphosate, malathion, and other hazardous chemicals commonly used in Michigan as well.¹⁴

Studies have shown that exposure to chemicals during certain crucial developmental windows can be more detrimental than at others. From pre-natal to infancy and adolescence are two such critical periods of development. Many of the chemicals in pesticides have been shown to cause reproductive problems, brain dysfunction, nerve damage, organ damage, endocrine disruption, and/or immune system deficiencies. These effects create adverse learning environments for children and may cause serious long-term effects.

In 1998 a study that showed the effects of pesticide exposure in four and five year old children was published. The scientists who performed the study compared two populations that were alike in every way except for their use of pesticides. The children from the pesticide-exposed group "demonstrated decreases in stamina, gross and fine eye-hand coordination, 30-minute memory, and the ability to draw a person."¹⁵ A copy of the published research results is included in this report.

It is also important to remember that children are more heavily exposed to pesticides than the average adult. Children are closer to the floor where chemicals can get trapped in carpeting; they often times put their hands or other objects in their mouths; and

pound for pound they eat more food, drink more water, and breathe more air, and thus bring a greater volume and number of chemicals into their bodies. Any and all reductions to a child's exposure to toxins are of benefit.

Recommendations

Seven Steps to Implement IPM

In the EPA booklet, Pest Control in the School Environment: Adopting Integrated Pest Management, the authors outline seven steps to establish an IPM program in a school.¹⁶ Other proponents of IPM, including the University of Tennessee Agricultural Extension Service, also recommend these seven steps suggested by the EPA.¹⁷ MDA's Regulation 637, Pesticide Use, also requires most of these steps.

- **Step 1: Develop an official IPM policy statement.** A policy statement serves to state the intentions and expectations of a school district and the guidelines and procedures to be adhered to by its pest control operators. A sample policy statement from the Grand Rapids Public Schools is included in this report.
- **Step 2: Designate pest management roles.** Designate a staff person to act as building manager to oversee the IPM program. Decision makers and those who implement any pest management techniques should also be identified and educated or trained accordingly. Good communication between all stakeholders is important.
- **Step 3: Set pest management objectives for sites.** Identify the type of pest management control that will be used if the acceptable level of pests is surpassed. Always consider the resulting impact on human health and the environment.
- **Step 4: Inspect, identify, and monitor pest populations.** Check the buildings and outside areas for potential and existing pest problems and conducive conditions.
- **Step 5: Set action thresholds.** Once a pest population has surpassed the acceptable level, action needs to be taken. Decide the unacceptable level (action threshold) of each pest population and the types of environmental conditions that would require action.

- **Step 6: Apply IPM strategies to control pest populations.** Employ physical, mechanical, biological, educational, and chemical control techniques if necessary.
- **Step 7: Evaluate results and keep records.** Determine if the objectives outlined in step 1 were met. Continue to keep written records of every aspect of the IPM program.

Hiring a Professional Pest Control Company

Careful consideration should be given when deciding which pest control company to hire. There are certain qualities to look for when making this decision. Most importantly make sure that the company is licensed and all of its pest control operators are trained and certified in IPM, as outlined in Rule 14 of Regulation 637. All of the companies previously listed in this report are licensed and certified.

Many of the seven steps described in the previous section can be done by or in conjunction with a qualified pest control company. The University of Wisconsin, along with their extension service and DATCP, has put together a school IPM manual, within which they give a description of things to consider when hiring an IPM company.¹⁸

After the company's credentials have been verified:

- Provide the company with a copy of the district's IPM policy, (step 1);
- Discuss the school district's history of pest problems;
- Discuss the role the company is expected to fulfill. If some school staff will participate in pest management, ask if the company has a training program, (step 2);
- Request that the company develop pest management objectives for the district, (step 3);
- The company should do an initial inspection and identify potential problems, (step 4);

- Discuss the goals of the district’s IPM program and set pest tolerance and action thresholds, (step 5);
- Discuss the strategies the company will use to control pests and the timing of any potential pesticide applications, (step 6);
- The pest control operator (PCO) should provide data necessary for the building manager to keep accurate and up-to-date records, (step 7).

Organizations in Support of IPM

Many organizations support and promote the use of IPM in schools, including:

- Michigan State Board of Education
- National Parent Teacher Association
- National Education Association
- Michigan Department of Agriculture
- United States Environmental Protection Agency

In 1992, the Michigan State Board of Education produced an environmental management guide titled Pollution Prevention in Schools. In Chapter 5, *Pesticide Management*, the Board of Education suggests that schools “encourage employees or contractors to use integrated pest management (IPM).” Possible health hazards, individual sensitivities, and costs for pesticides are among the reasons cited for concern about the use of pesticides in schools.¹⁹ A copy of Ann Arbor’s 1988 IPM policy is given as an example within the Michigan publication.

“To prevent unnecessary exposure to pesticides...” the National Parent Teacher Association (National PTA) “encourages the use of integrated pest management (IPM) at homes and schools” in the January, 1998, edition of *Our World*. Within the article, Reducing Pesticide Use at Home, the National PTA states that, “...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.”²⁰

The National PTA also released a statement on October 13, 1999, in support of the School Environment Protection Act of 1999. Within the statement, Vickie Rafel, a National PTA vice president asserts that, “Pesticides are poisons, and exposure—even at low levels—can cause serious adverse health effects.” The National PTA recognizes that, “Children...are at increased risk of cancer, neuro-behavioral impairment, and other health problems as a result of their exposure to pesticides.”²¹ The national legislation would require IPM in schools and for parents to be informed of any pesticide use, as does Michigan’s Regulation 637.

On July 18, 2001, the National Education Association (NEA) submitted an official statement to the U.S. House of Representative’s Committee on Agriculture, in support of SEPA as a part of the Elementary and Secondary Education Act. The NEA states that, “...exposure to pesticides in school can adversely affect children’s health and ability to learn.” In their statement the NEA notes that, “...scientists increasingly associate learning disabilities or attention deficit disorders with low level toxic exposure and its effect on the central nervous system.”²²

The Michigan Department of Agriculture amended the Public Acts of 1994 to include the requirement of the implementation of IPM into schools that use pesticides. A thorough description of the regulation is provided earlier in this text.

The EPA, often times thought of as the regulatory agency that “approves” pesticides, does not promote the use of any pesticide. Pesticides must be registered with the EPA because they are dangerous and need to be handled according to specific guidelines and require certain precautionary statements on labels. The EPA, in fact, promotes the use of IPM throughout various publications.

Pest Control in the School Environment: Adopting Integrated Pest Management, which was published in August 1993, is an EPA booklet that introduces readers to IPM and is meant to “assist school officials in examining and improving their pest management practices.”²³

Conclusion

Many people who have switched from strictly chemical control methods to IPM argue that IPM is more effective. Pesticide applications only address a pest population after it is well established. Spraying pesticides may kill one wave of insects, rodents, or weeds. Pesticides, however, do not stop more pests from becoming a problem. Without simple, precautionary measures such as those used in IPM, pest infestations will be an ongoing problem.

In fact, scientists have found that insects have the ability to detoxify their bodies. Those individual pests that can rid a specific chemical from their bodies will survive a pesticide spray and go on to reproduce. Thus, entire populations of insects can display resistance to certain chemicals. The German cockroach, for example, has displayed resistance to 39 different chemicals.²⁴ The more chemicals that are sprayed, the more ineffective they will become.

The benefits of IPM will continue to be appreciated as more pests develop resistance to high-use pesticides and as commonly used chemicals are found to be too dangerous to human health. Chlorpyrifos (sold under the trade name of Dursban) was recently reevaluated and subsequently banned by the EPA for use in parks, gardens, lawns, residential buildings, and most commercial buildings.²⁵ As the EPA continues the reevaluation process of many registered pesticides, more chemicals may be discovered to be too hazardous to humans as well.

Society at large is also becoming more aware of the dangers that chemical pesticides can pose to humans and especially to children. Organizations that serve to educate and safeguard children, such as the Michigan State Board of Education and the National Parent Teacher Association, support and encourage the use of IPM as an alternative to relying on chemicals for pest control. With society's ever-increasing realization that many pesticides can cause negative health effects, using IPM displays a positive and conscientious image to a community.

Using IPM reduces costs to human health and can cut financial costs as well. Once preventative measures such as sanitation and exclusion are in place and conducive conditions have been eliminated, an IPM program will reduce the need for pest control actions because fewer pests will be present. IPM differs from conventional chemical pest control in that actions to combat pests are only taken if the population exceeds the tolerance threshold. Conventional chemical pest control methods, however, disregard prevention and require routine spraying of pesticides regardless of whether or not pests are present.

Here in Michigan, schools interested in reducing their use of pesticides can take advantage of the experienced and innovative companies that offer a complete IPM package. Due to the many years that IPM has been in practice, techniques have been honed and tested and IPM programs can be successful and easy to implement. All in all, IPM can be a cost effective and simple way to prevent and control pest problems without using dangerous chemicals.

A 1999 report written by the United States Governmental Accounting Office (GAO) cited an analysis done by the EPA on information provided by the American Association of Poison Control Centers. According to the report, an estimated 2,300 incidents occurred in which individuals were exposed to pesticides in schools from 1993 through 1996. Of these, 329 people were referred to health care facilities. Outcomes of almost half of the cases, however, are not known. According to the GAO the number of documented pesticide exposures is probably lower than the actual amount because many pesticide-caused illnesses are not reported or the cause may be misidentified.²⁶

IPM presents an opportunity for schools to reduce children's risk of pesticide exposure and exposures to pests as well. In society today, children face numerous challenges as they grow and develop into young adults. Schools are often concerned with ways to provide children with the latest technological advances that will give them advantages in life. Schools have also eliminated children's exposures to toxins such as lead and asbestos after the discovery that these substances are dangerous.

Scientists, governmental agencies, and educational organizations are now realizing the health hazards of pesticides and their impacts on children, in particular. IPM, therefore, is a way for schools to provide additional important advantages to children. Reducing the use of pesticides will create a more healthy and conducive environment for all people who spend their days teaching, learning, and working in schools.

NOTES

¹ Michigan Department of Agriculture Pesticide and Plant Pest Management Division, "Pesticide Use (Regulation No. 637)," August 1995.

² Michigan Department of Agriculture Pesticide and Plant Pest Management Division, "Questions & Answers about Head Lice," February 1998.

³ United States Environmental Protection Agency, "Read the Fine Print," 6 Aug. 2001 <<http://www.epa.gov/seahome/housewaste/src/bfrbuy.htm>>.

⁴ National Toxicology Program, "Chemical Health & Safety Data," 22 Aug. 2001 <http://ntp-server.niehs.nih.gov/Main_Pages/Chem-HS.html>.

⁵ United States General Accounting Office, "Nonagricultural Pesticide Risks and Regulations," GAO/RCED-86-97, April 1986.

⁶ United States Environmental Protection Agency, "About the Office of Pesticide Programs (OPP)," 22 Aug. 2001 <<http://www.epa.gov/pesticides/about.htm>>.

⁷ The Extension Toxicology Network, "Pesticide Information Profiles," 24 Aug. 2001 <<http://ace.orst.edu/cgi-bin/mfs/01/pips/bifenthr.htm?65#mfs>>.

⁸ Gary Brezinski, Director of Building Services, West Ottawa Public Schools, Personal conversation, 28 June 2001.

⁹ Brezinski 28 June 2001.

¹⁰ Samuel DeFazio, President, Praxis, Personal conversation, 7 September 2001.

¹¹ Board of Education of the City of Detroit, "Lewis Cass Technical High School," 8 Aug. 2001 <<http://www.detroit.k12.mi.us/schools/Cass/website/index.htm>>.

¹² Bernard Smith, Assistant Manager-Custodial Services, Birmingham Public Schools, Personal conversation, 26 July 2001.

¹³ Michigan Department of Agriculture Pesticide and Plant Pest Management Division August 1995.

¹⁴ Wisconsin Department of Agriculture, Trade, and Consumer Protection, "Final Report on Pesticide Use in Wisconsin Schools," August 1998.

¹⁵ Elizabeth A. Guillette et al., "An Anthropological Approach to the Evaluation of Preschool Children Exposed to Pesticides in Mexico," *Environmental Health Perspectives* V.106, N.6, June 1998.

¹⁶ United States Environmental Protection Agency, “Pest Control in the School Environment: Adopting Integrated Pest Management,” August 1993.

¹⁷ The University of Tennessee Agricultural Extension Service, “Suggested Guidelines for Managing Pests in Tennessee’s Schools: Adopting Integrated Pest Management,” July 1997.

¹⁸ University of Wisconsin, “Wisconsin’s Integrated Pest Management Manual,” August, 2000.

¹⁹ Michigan State Board of Education, “Pollution Prevention in Schools,” September 1992.

²⁰ National Parent Teacher Association, “Reducing Pesticide Use at Home,” Our World, January 1998.

²¹ National Parent Teacher Association, “National PTA Supports Legislation to Reduce Health Hazards in Schools,” October 1999.

²² National Education Association, “Statement of the National Education Association, Submitted to the Committee on Agriculture, U.S. House of Representatives, on the School Environment Protection Act of 2001,” July 2001.

²³ United States Environmental Protection Agency August 1993.

²⁴ Michigan State University-Center for Integrated Plant Systems, “The Database of Arthropods Resistant to Pesticides,” 1 Aug. 2001
<<http://www.cips.msu.edu/resistance/rmdb/>>.

²⁵ United States Environmental Protection Agency, “Chlorpyrifos Revised Risk Assessment And Risk Mitigation Measures,” 27 June 2001
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²⁶ United States General Accounting Office, “Pesticides: Use, Effects, and Alternatives to Pesticides in Schools,” GAO/RCED-00-17, November 1999.