

CHAPTER 5

INTELLIGENT PEST

MANAGEMENT®



**“G-d gave us a land flowing with milk and honey -
we have given our children a land flowing with
pollution and contamination”
SLT in a speech given 4/22/97
Earthday and Passover**

How to get rid of teacher's pest without getting rid of teacher!

**The first step in controlling unwanted pests is to prevent them from entering in the first place. The second step is not to feed and water your pests or you will make them your “pets.”
The three “R’s” in school should not be Reading, ‘Riting, and Roach Poison.**

A is for Apple, B is for Ball, C is for Cancer . . . Cancer? There are more than 100,000 K-12 schools in the United States. In the 1990s we knew that each year, more than 6,000 children personally learn about cancer and other catastrophic illnesses when they are stricken with deadly diseases. In 1985, a 6.5 times higher than “normal” rate of testicular cancer was found in teen-aged boys in a Tucson, Arizona school. There was 3.5 times more leukemia than “normal” among 5 - 9 year olds. In 1996, The State Health Department documented a cluster of 230 cases of childhood brain, bone and central nervous system cancers since 1979 in Toms River, New Jersey! Childhood cancer has increased 28% nationally from 1950 to 1987! Clusters of cancers, miscarriages, birth defects and diseases often are the first warning signals of toxic exposure. An EPA memorandum from William Burnham, Health Effects Division, 2/19/97 noted that the U. S. EPA had identified at least 96 different *registered* pesticide (poison) active ingredients that are potential human carcinogens. The number 1 killer disease of children is cancer - help us stop this killer of innocents by removing volatile poisons from their environment and always practice **safe** pest control! Sadly, cancer is not a rare disease; the incidence of childhood cancer has been steadily rising for many years. This frightening, ominous trend has been strikingly evident for acute lymphocytic leukemia and brain cancer, the most common forms of childhood cancers. Philip J. Landrigan, M. D., Professor of Pediatrics and Community Medicine, Mount Sinai School of Medicine, co-author of Raising Children Toxic Free noted: Research scientists believe most cancer (80% - 90%) is due to environmental causes (toxins in our air, water and food); only 10% - 20% of cancers is attributed to genetic inheritance. **Do you really want your children to learn about cancer - by being personally stricken?** Learn to practice self defense pest control!

We have been told repeatedly by government and industry officials that when it comes to the 4.6 billion pounds of pesticide poisons used every year - we have nothing to worry about - that the “registered” pesticide *residues* in our food present “practically no risk,” DDT and PCB’s are not related to breast cancer, and EPA’s risk assessments are *protective* of public and worker health. However, scientific researchers tell us if you ask the wrong question, you get the wrong answer. In fact, the chemical cause of a disease like cancer may not be found in our bodies at the time the disease presents itself. The illness may be related to an exposure that occurred years prior, perhaps during fetal development.

Government regulators continue to “register” or extend volatile, synthetic pesticide poisons and allowable contamination residues with virtually no ability to answer key questions about the total health impact of these pesticide poisons on children, and the synergistic effect of all the chemical mixtures. Government safety reviews still focus on individual pesticide poisons rather than the total toxic load on people and the ecosystem. And while there is a push for “safer” pesticide poisons, these, too, have unanswered safety questions and continue the reliance on toxic controls rather than Pestisafes®, preventative pest management and/or true IPM.

Integrated Pest Management (IPM) was first adopted as federal policy for urban and agricultural pest management by the Carter Administration during the 1970’s. President Clinton strengthened the mandate with his 1993 IPM initiative and Congress gave IPM a further boost with the Food Quality Protection Act of 1996 which directs all Federal Agencies “to use IPM techniques in carrying out pest management activities and to promote IPM through procurement and regulatory policies and other activities.” These words amend the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Acts that govern pesticide regulatory activities. Sadly some “regulator’s and/or the poison “industry” has been determining and defining what is IPM. At the same time FIFRA suggests using alternatives some “regulators” insist that anything that controls or even mitigates pests in any way is automatically a pesticide. If everything is automatically a pesticide and must be “registered”, then there are no allowable alternatives. **Even so, we only recommend you use Pestisafes®.**



True IPM or Intelligent Pest Management® (IPM) or Ecologically Based Pest Management (EBPM) or Situational Pest Management (SPM) or Get Set Pest Management (GSPM) is an environmentally sane, innovative approach to managing weeds, insects, vertebrates, and other pest organisms in order to provide economical, long-term protection from pest damage. Simply stated, it means fighting or controlling infestations in ways that are least toxic to people, pets and the environment. The safety and control benefits of true **IPM** are finally becoming the control of choice in the management of urban pest problems. True **IPM** when **properly practiced** removes the cause rather than *treating* the symptom with poison! Knowledge of the species, local breeding areas, feeding and territorial habits of the pest is essential to controlling pest populations. Often the pests are not even killed.



Intelligent pest management® (IPM) involves safely controlling, preventing, reducing, or eliminating unwanted pests using common sense, enzymes, and science and Pestisafes® rather than synthetic pesticide poisons. This is done by limiting their access to food, water and shelter, by changing the conditions conducive to their growth and entry, by encouraging their natural enemies, creating structural modifications, habitat reductions and by reducing the carrying capacity of the site. To properly do this, you must know the structure, the habits and life cycles of the many pests and beneficials and understand the natural processes and conditions that are conducive to each pest population. Then you must regularly inspect/monitor your building/pest to determine if and when control(s) are needed. Managing pests through *prevention* is usually less expensive, more effective and safer than trying to control a pest population with volatile poisons that has already become established. Pest prevention also reduces the chance for substantial economic loss or damage. Prevention avoids disruption of people and the many dangers associated with synthetic pesticide poison control efforts that may be used after pests become established. But, even if pest exclusion and prevention are routinely practiced; even if all wastes and debris are stored out of reach of pests and cleanliness is routinely practiced, there still may be some situations where additional modifications of the habitat, as well as temperature, physical or even some **small** chemical controls may be needed. **So, seek, strike and destroy (SSD).**

Once a pest becomes established, your goal must be to completely eliminate it. Elimination can only be successful if all of the conditions conducive, or those which favor the pest's growth or the pest's entry into the area, can be corrected/eliminated. In order to do so we will employ physical, mechanical, cultural, biological, chemical, storage, temperature and humidity changes and education tactics to accomplish our goals. Spot application of least-toxic pesticidal controls should be used only as a last resort. **Never** use volatile and/or restricted-use pesticides, e.g., the toxic chemicals described in the section "Pesticides are not Pestisafes®".

Intelligent Pest Management® is what we will now study. Using true IPM means selecting the method or technique or product or combination that is least disruptive to the environment. It includes prevention, inspection, selection, modification, exclusion, equipment, discussion, tolerance, invention, study, imagination, mechanical controls, monitoring, trapping, education, changing conditions conducive to infestation, biological controls, natural processes, Pestisafes®, negative ion plates, caulking, vacuums, cultivation, enzymes, patience, temperature and humidity controls, habitat reduction, sanitation, rotation, identification, evaluation, cultural controls, predators, intelligence and then **maybe** the use of non-volatile pesticides usually baits. **You will find it is less expensive and gives better results than traditional pesticide control. There is far less liability and parents will be pleased you are not poisoning their children.**

Harborage is any area that can provide shelter for pests. Most pests are rather secretive in their behavior and prefer dark, quiet areas where there is little traffic or activity. In infrequently disturbed storage areas, a large insect population may develop before anything is noticed. A good rule to follow is to stack items neatly with air space on all sides and dispose of trash and other unwanted materials as soon as possible. Loosely piled materials with no air circulation are havens for any type of pest. **No animal, plant or insect is automatically or naturally a pest...**only the way we feel about it in a particular location determines whether we welcome or are repelled by its life and consider it to be a *pest*, so the terminology *pest* is really only an issue if you consider its damage or annoyance *intolerable*. The economic injury level is the level of pests at which the cost to manage the pest is equal to the losses that pest causes. The action threshold is the pest density at which action must be taken to prevent the pest from reaching the economic injury level and/or your tolerance level for the pest density in any specific area. **Habitat is the entire native environment of an animal or plant.**

Pests must be first correctly identified so their habitats, entry points, food sources and developmental stages can be understood and monitored. Conditions that promote or support the pest must also be properly identified so they can be either eliminated or corrected. Your first step in creating a barrier against these pest invaders, is to perform a thorough cleaning and check of potential hiding places. Favorite pest entry points are through clothes dryer exhaust ducts, weep holes at the base of masonry walls, and plumbing fixtures. Check under your washing machine, dishwasher, and garbage disposer for any leaks. And pay particular attention to points where water lines, windows, doors, etc. penetrate the wall.



Those of you who have branches overhanging your roof or touching your building should pay particular attention to pest entry areas around eaves, vents and chimneys. Look for breaks in shingles and sheathing. And those with brick homes, watch for tiny openings where the brick and decorative trim meet. Plant roots are termite highways directly through poison barriers and into your house.

All of these potential pest entry points must be trimmed back away from the house, then cleaned and plugged with a suitable caulking. Water leaks need to be repaired. And where openings are necessary (like attic vents, chimneys and clothes dryer vents), ensure the openings are properly screened and maintained.



Not only must the pests be carefully identified and their weaknesses and vulnerable points understood, one must also remove the cause of infestation and the pest's optimum growth requirements, so that you can truly control them. Look closely at the habitats both in total and in part, the temperature and humidity ranges and the availability of food, moisture, and shelter. The sewer system is located below the frost line and is filled with garbage, feces and other pest "necessities" and kept warm and moist year round by waste water. A perfect harborage for roaches, rats and drain flies. **Clean them routinely with Kleen 'Em Away Naturally® or Safe Solutions, Inc. enzyme cleaners.** Remember the plumbing and electrical lines connect areas within the structure, look closely in and behind suspended or drop ceilings, plumbing access areas, lockers, and false walls. Furniture, motor housings, and appliances also provide ideal pest harborages as do areas

where the vapor barrier is on the wrong side of the insulation creating perfect breeding area for fungi, rot, and pests. Hollow concrete blocks, envelope construction and other hollow walls permit pests to freely move about within your structure, mulch, leaf litter and debris the longer they remain in these areas the larger the arthropod population. Improper lighting attracts nocturnal insects - the closer to the structure - the greater the chance of invasion. Standing water anywhere in ditches, tires, cans, etc. are ideal insect breeding sites. The color of the structure can actually attract insects or absorb heat and attract insects to your building. Trees and shrubs create moisture, shade, mold, fruit, pollen, and haborage for many pest infestations.

Building surfaces and shapes can create ideal nesting sites. Improper grading can favor invasion of moisture, insects and termites. RR ties attract carpenter ants and termites, as do firewood stacks - both can also attract rodent populations. Improper mulching can create ideal fire ant, earwig, centipedes, sow bugs, etc. habitat. Barbecues attract flies, spiders and wasps. Garbage, droppings and animal waste attract many pests. Bird feeders attract mice, squirrels and create weed problems in the Spring. Look closely for large cracks and crevices, heating and air conditioning ducts, steam tunnels, telephone and cable lines, gas lines, etc., for pest movement potential. Remove the cause of your pest problem and you totally eradicate the pest rather than constantly killing a few of their number. **Volatile, synthetic pesticide poisons have never, and will never, even solve your pest problems and they are dangerous to all of the occupants — so why continue to poison yourself with volatile pesticide poison "treatments?"**

First of all, properly inspect and then install negative ion plates in all buildings to freshen the air and set up an “ionizing light frequency” outside the visible light spectrum using only the earth’s own energy to create a low level polarized energy field to help repel (exclude) ants, scorpions, fleas, flies, most roaches, some spiders, termites and several other pests including molds. Negative ion plates, when properly installed, can create a protective barrier of natural energy. If they leave any pockets of resistance - use the **IPM** techniques we describe to finish up the control. Properly practice exclusion, sanitation, habitat reduction and install dehumidifiers and vents and fans.



Second of all, you should routinely clean with Safe Solutions, Inc. enzyme cleaners and spray all drains with enzyme cleaner with peppermint. Enzymes are used by spiders and insectivore plants to digest insects. All molting insects use enzymes to split open their exoskeleton so they can pass through each instar. Therefore, Safe Solutions diluted enzyme cleaners quickly destroy all stages of insects, while they also improve sanitation and also reduce conditions conducive to infestation.

In true IPM programs, treatments (other than your routine sanitation and habitat reduction) **are not made according to any predetermined schedule**...they are made **only** when, if and where your inspections and monitoring have indicated that the pest(s) will cause immediate and unacceptable economic, medical or aesthetic damage(s). Least-toxic treatments are then carefully chosen and properly timed to be most effective and least disruptive to natural pest controls.

Some of the control methods that might be used in a true **IPM** program include vacuums, exclusion, caulking, repellents, disinfectants, Safe Solutions, Inc. enzyme cleaners and/or food-grade DE, peppermint soap, pest proofing, dusts, negative ion plates, proper plant selection, noise, lighting changes, isolation techniques, natural or biological controls, mechanical alteration, traps, nets, inspection protocols, sanitation, screening, temperature changes, habitat reduction, modifying or eliminating conditions conducive, biological control and, **only** if absolutely



necessary, a spot application of the least-toxic (non-volatile) pesticide possible. Note: Pesticide applicators, pest control people, even those with degrees in entomology and biology are ill equipped to handle or even understand how and why a true **IPM** program works. They may understand everything about synthetic pesticide poisons and know the Latin or Greek name of all insect and rodent pest(s), but they may be totally unaware of proper clean-up procedures, correct building maintenance and construction, proper trash collection and storage, exclusion and habitat reduction techniques, etc. Nor do they usually want to learn how to put themselves out of the business of spraying/using synthetic poisons. This is, hopefully, what you the reader will now learn and will implement.

Remember, even a small spot application of any least-toxic (volatile) pesticide POISON must be selected very carefully and only used according to the label and combined with other alternative control methods.

The timing of the least-toxic pesticide spot application is especially important. Pesticide POISONS selected must be the least disruptive to the environment, the natural predators and the people and pets occupying the same area. Environmental concerns and human and animal **safety must be your utmost and first priority**, not the cheapest way or even the destruction of a pest, insect or rodent. **Remember to notify all occupants before spot applying any poison.** No notification is usually necessary with Intelligent Pest Management® or true IPM and/or Pestisafes® or safe and far more effective alternatives to dangerous “registered” poisons.

Notification - In the 1990s the Grand Rapids School System had about 24,000 students; about 17,000 parents wanted to be notified any time a *registered* pesticide poison is applied in the schools per Mark Green.

Chemical Alert

Over 70,000 chemicals are in current commercial use worldwide and another 1,000 are being synthesized and added to the toxic brew we have to live in each year - but only a small fraction of these products are ever tested for potential harm to human health. Even if they are “tested” - the “tests” do not take into consideration the exponential increase in danger to us, our pets and our planet that the combined impact to us - of the many doses of a great number of different chemicals and poisons that we are continually being exposed to over a lifetime! Nearly all “safety standards” have been set for exposure to a single chemical - allowing a minimum “safe” dose

for only one chemical exposure to a 160 pound, healthy adult male. Exposure to one chemical compound may decrease the body's ability to detoxify another compound; still others intensify the toxic effects of another or create a third unknown compound - yet no one even looks at these facts. Even a product with a LD₅₀ value of 2,000 or greater is still considered to be "non-toxic" and all *inerts* are simply ignored. In the 1990s the U.S.D.A. noted that "pest control" now represents about 34% of a farmer's variable crop production costs and pests continue to cause losses of at least 10 - 30% with current pest control "strategies". U.S. children are continually being exposed to dangerous, volatile, synthetic pesticide poisons virtually everywhere they go because we are scattering 4.5 billion pounds all over America each year! Asthma is now the number one cause of absenteeism for American school children. The majority of asthma sufferers in the U. S. live in places where the ambient air does not meet federal standards.

Irene Wilkenfeld noted in Our Toxic Times, December, 1996:

- ⇒ 12% of our nation's school children are now considered to be "medically fragile"; 10-20% of all children now suffer with a chronic health condition: asthma, rhinitis, sinusitis, skin rashes, arthritis, seizure disorders, etc.
- ⇒ Of the 38 kinds of birth defects for which the Centers for Disease Control maintains records, 29 have increased during the past 20 years.
- ⇒ In the last 45 years there has been 500% increase in the number of ADHD children.
- ⇒ About 13.7 million Americans now have asthma more than double the 1980 figure. Asthma deaths in children have increased 118% between 1980 - 1993 according to the Centers for Disease Control and Prevention.

In 1995, there were 67,159 calls to poison control centers regarding exposures to pesticides and 9,341 cases of herbicide exposure. Laura Dye of EPA's Office of Prevention, Pesticides and Toxic Substances has noted that five different surveys in the past 15 years have all found that most pesticide users never read the label directions! Obviously, widespread exposure to widespread chemical contamination is in reality an ongoing human experiment, but one that is being run without the benefit of controls or scientific design or study.

"In the absence of other data, it would be advisable to avoid excessive and prolonged exposure to such agents."

In 1997, 11.4 million Americans - mostly children - used Ritalin® to help improve their concentration per the Federal Drug Enforcement Administration figures.

Please make sure your children are not needlessly exposed to any more dangerous, volatile, synthetic pesticide poisons, and their concentration and health will dramatically increase!

WARNING: NEVER USE ANY VOLATILE, SYNTHETIC PESTICIDE POISON, ESPECIALLY IF ANY OF THE OCCUPANTS ARE OVER 60, UNDER 1, PREGNANT, HAVE ALLERGIES OR BREATHING PROBLEMS, AND/OR ARE CHEMICALLY SENSITIVE!

Any good, true **IPM** program or Intelligent Pest Management® involves frequent monitoring, inspection and review of any/all control strategies in order to make any corrections necessary to keep pace with changes or anticipated changes in the pest's activities. **Remember, 90% of all pest infestations will be found in 10% of the area.**

EQUIPMENT OVERVIEW — The most needed and reliable tool of all pest management is the brain and ability of a technician to use it and his knowledge of true IPM pest management and common sense along with well-cared-for equipment, Pestisafes® and good supplies. Second is the use of this handbook or master **IPM** Planning Manual, **The Best Control®**. All components of a true IPM program should act in concert with minimal antagonistic interaction between natural enemy parasites, predators or biological control agents, e.g., entomopathogens and all other interventions.

The more commonly used equipment includes:

- Vacuums
- Hand held compressed air sprayers or 2½ gallon rechargeable fire extinguishers
- Behavioral methods
- Biological controls

- Canned insecticides
- Caulking
- Cultural controls
- Changing the conditions conducive to infestation
- Dusters
- Exclusion
- Habitat reduction
- Inspection
- Mechanical controls
- Non-toxic controls or Pestisafes®
- Power dusters
- Pheromone traps
- Sanitation
- Traps and bait stations
- Ventilation

VACUUMS

The best way to remove insects, debris and food is to vacuum all cracks and crevices (then caulk) and floors at least bi-weekly and/or whenever you see the pests, debris, spider webs, droppings, etc. Poisons not only are toxic to people and pets, they leave the dead insects. As dead insects decompose they contaminate the ambient air (the air we breathe) and cause many kinds of breathing problems. In addition, dead insects can be a source of food to other insects, creating an ongoing infestation problem. You can use a rinse-and-vac, steam cleaner, regular vacuum (canister or upright with a disposable bag) a dust buster or an especially designed back pack unit with which to vacuum, but if it is not too inconvenient, use a water vacuum. Water vacuums are superior pest control tools because they trap dirt, dust and drown insects in a swirling water and soap bath. Because they have no bag to hinder air flow, they are more powerful than ordinary vacuums and can suck up greater numbers of pests and debris and the various foods pests eat. But water soluble allergy-producing materials may pass back into the ambient air. Usually dry vacuums have enough dust to smother the insect pests you vacuum up, but if your disposable bag is *clean* and you are facing wasps (or similar stinging or biting insects) you can initially add corn starch or talcum powder to help destroy/smother the pests inside the bag as you vacuum. After vacuuming once, wait a few minutes and then vacuum slowly again. Cockroaches, house dust mites and other arthropods produce allergens - which in turn create allergic reactions like stuffy noses, hay-fever-like symptoms, runny noses, itchy dermatitis and asthma attacks - so if you do not use a water vacuum or rinse-and-vac - please be sure your dry vacuum is equipped with a high-efficiency particulate (or HEPA) air filter, so that microscopic allergens do not become airborne.



Austin M. Frishman, Ph.D., President of AMF Pest Management Services, Inc., has stated the following with regard to the Company's Li'l Hummer vacuum: The Li'l Hummer has landed a place in the arsenal of the pest control industry by virtue of the times and some of its unique properties. It is at the right place and the right time.

- Its vacuum ability allows it to pull cockroaches sitting in open areas as well as resting in visible cracks and voids. Vacuum every 20 days.
- The special filter bag prevents cockroach fragments and house ites from blowing back into the environment where sensitized people could suffer from inhaling such particles.
- The long light extension cord allows great mobility to cover a large area without having to have an electric source in the immediate area.
- The long extension tubes access hard-to-reach locations such as under long tables and high ceilings.



- The weight is light enough for a smaller-than-average person to carry it for long periods without tiring.
- The tips can be interchanged for different types of voids, cracks and even treating carpeting.
- It can be used for:
 - Reducing large cockroach populations in low-income housing projects.
 - Removing cast skins, fecal matter and dead as well as live cockroaches in commercial food establishments or in the initial cleanout.
 - Reaching cockroaches above suspended ceilings.
 - Pulling cockroaches out of ovens where pesticide applications are not desirable and/or permissible. Cockroaches may rebound within 20 - 25 days.
 - Removing immature fleas from carpets.
 - Reducing adult flea populations of furniture and carpeting.
 - Collection of dust samples for possible insect phobia cases.



The Li'l Hummer is presently called the Sierra Model manufactured by: ProTeam, 800-541-1456, web site: <http://www.proteamvacs.com>

HAND-HELD COMPRESSED AIR SPRAYERS

The small (one or two gallon) stainless steel spray tank used to be the workhorse of pest control. It can still be used in many different ways (and by many different industries). In **IPM** pest management, the *spray tank* is used to apply only least toxic materials, e.g., Safe Solutions, Inc. enzyme cleaners, peppermint soap, cedar oils, soapy water, garlic oils, citrus oils and/or insecticidal soaps. Depending on the nozzle selection, it applies different spray patterns; and depending on the amount of pumping, it delivers the material under high or low pressure.

Spray Patterns - The most common nozzle for the hand-held compressed air sprayer is made of brass and usually can be set in one of four spray patterns. More than four patterns are available, however. The most common patterns include two pin streams, flat fans, and cones. Pin streams can be coarse or fine. The coarse or fine pin streams do not produce the best crack and crevice application. Even when set for fine spray, a spray is produced that splashes back from all but the widest crack, so many nozzles have a connection for a narrow-diameter plastic extension tube. Remember to use equipment as directed, e.g., injection tool for crack and crevice application. The end of the extension tube is inserted into or at the edge of a crack and delivers an accurate pin stream.

Coarse and fine flat fan streams are used to apply general or spot applications, as are hollow or solid cone sprays. Cone sprays deliver a circle of spray and are often used outside on uneven surfaces and plants.

Pressure - Spray tank air pressure varies according to the amount of air you, the technician, pump into the tank. Pressure gauges can be attached to spray tanks. Low pressure is usually recommended for spray application inside structures. Constant use of high pressure with compressed air sprayers sets up the possibility of overuse and misapplication. It causes part of the sprayed liquid to break into droplets as soon as it exits the nozzle; this wastes material that can drift onto non-target surfaces. High pressure also causes splash back on surfaces or quickly traps air in crevices and keeps the material from entering small spaces. As well as being uneconomical and wasteful, the practice encourages rapid application of material whether they are needed or not, from distances that affect accuracy. This style of application will seldom result in effective pest control.

Technicians who use hand-held compressed air sprayers should periodically attend training for cleaning and sprayer maintenance. It is recommended that they familiarize themselves with their own equipment and be prepared to repair it and maintain it.

- Rinse the sprayer after each use, especially the hose. (Always empty liquid from the hose; hold the nozzle high and squeeze the trigger to drain the hose into the tank. If this is not done, liquid from the last use remains; it will be applied first at the next use, regardless of any new spray mix in the tank.)
- Clean the sprayer on a regular schedule.
- Never use warm water to mix volatile, synthetic pesticide poison sprays.
- For a great deal of pressure, use a 2½-gallon stainless steel, rechargeable fire extinguisher.
- Always use gloves when spraying. Always use safety glasses or goggles when treating areas above the head or close to the face.

TRUE IPM USES A WIDE VARIETY OF TOOLS.

BEHAVIORAL METHODS

Pheromone lures and traps, mating disruption, repellents and/or attractants, e.g., kairomones secretions.

BIOLOGICAL CONTROLS

Get some “good” bugs to fight the “bad” bugs - these include predators, parasites and microorganisms, e.g., the fungal entomopathogen, *Zoophthora phytonomi* (Arthur), is a valuable, natural control agent of the alfalfa weevil, *Hypera postica* (Gyllenhal); it can often cause >90% mortality of the alfalfa weevil larvae (Harcourt, et al. 1974).

CANNED INSECTICIDES

Pressurized cans of insecticides became common in the late 1940's and were first used as aerosol foggers or *insect bombs*. Canned insecticides in urban pest management include canned aerosol foggers (volumetric sprays, total release fogs), pressurized dusts, silica gel and/or boric acid powder, and pressurized liquid sprays. We suggest these “registered” poison sprays not be used at all by you but only applied as a last resort by certified applicators/technicians. Canned air works just as well to flush roaches, and is a lot safer.

CANNED AEROSOL PESTICIDES

Canned aerosol pesticide poisons consist of a pressurized fluid that produce an aerosol or fog droplet that floats in the air for a period of time, then settles to the ground. The droplet size is governed by the nozzle and valve at the top of the can. After use, a more or less uniform coverage will be attained on exposed horizontal surfaces. Very little pesticide poison lands on vertical surfaces, penetrates opened cabinets, or clings to under-surfaces. Droplets contact pests that have left hiding places and other insects that may fly into the insecticide poison are killed. Be careful when using aerosols - you can quickly create an explosive atmosphere using these products. You should avoid using aerosol products - aerosols disperse the toxin and the propellant and the “inerts” as tiny droplets that can be inhaled or absorbed through the skin - they also cover all surfaces including your eyes. Aerosol cans can also explode like grenades when heated above 120° F.

CANNED PRESSURIZED LIQUID SPRAYS

Canned pressurized liquid sprays are not aerosols. Because the coarse, wet spray is not made up of aerosol droplets, little becomes airborne. Compressed gas mixes with the pesticidal liquid in a pressurized spray. The gas forces the pesticide through the exit port, quickly vaporizes, and leaves pesticide poison on surfaces. When canned pressurized liquids are part of a system that includes crack and crevice nozzles, the insecticide poison can be placed more precisely on the target area. In a closed crevice, the expanding gas propels the insecticide poison in all directions forcing it on all surfaces in the crevice, rather than shooting it across in a straight line like a compressed air sprayer. Using canned pressurized liquid sprays requires a firm understanding of the target pests' habits so that pest harborage can be treated, or better yet eliminated.



CAULKING

Controls pests by removing or eliminating harborages and access - If you can insert your business card in a crack or crevice - it must be caulked or sealed.

CLUTTER

Remove clutter; clutter provides homes for pests.

CONDITIONS CONDUCTIVE

Remove, eliminate and/or correct any and all conditions that help your pest survive and/or thrive.

CULTURAL CONTROLS

Involve habitat reduction, removal of food and water, changing the conditions conducive to infestation, pruning, crop rotation, early harvest, proper storage of food and water, cultivation, cover crops, sanitation, proper plant selection, caulking, removal of breeding sites, screening, hand or vacuum removal of pests or diseased plants, pick up of animal waste and fallen fruit, crop rotation, etc. Proper plowing and/or mowing techniques will safely control cutworms, weeds, fungus problems and many other pest problems.

DUSTERS (Other than Canned Aerosol Dusts)

Dusters apply a fine, dry layer of a powdery mixture containing a small amount of pesticide or baking soda or talcum powder or medicated body powder. Dust applied on porous surfaces is not absorbed like liquids; it rests on them like a layer of insecticidal powder. This dust accumulates on body parts (insect hairs, legs and mouthparts) of insects who touch it. Pesticide poisons in dusts are absorbed by the insect in the same way as liquid sprays. Additionally, if the pest ingests particles (when grooming or cleaning itself), the dust can also cause stomach poisoning. Any dust will control insect pests by suffocating them.

Three types of hand dusters are commonly used by pest management technicians: bulb, bellows, and plunger dusters. Dusts are also driven by gas in some formulations of canned insecticides, but with this method, dusts are applied like canned liquid pesticides. Bellows dusters consist of a closed rubber cylinder made rigid by an internal spring, a spout at one end, and a stopped refill hole at the other. These dusters, originally called Getz dusters, are held with the spout at the top. A slight pressure from top and bottom pushes air and dust from the spout. The more pressure applied, the more dust ejected. The spout is tapered at the tip and slight puffs will propel small amounts of dust into cracks and crevices. The slight puffs distribute a thin layer of dust in the pest harborage. Bulb dusters have a rubber bulb with a removable spout at one end. The spout screws off to allow for refilling. Dust application is much like the bellows duster except that the bulb is squeezed. Both dusters come in several sizes. Plunger dusters hold more dust than the first two hand-held dusters discussed. Plunger-type dusters have been used for garden dusting for a century, but the plunger duster used in urban pest management is smaller, made of high-impact plastic and has several styles of nozzles. The Author prefers to use electric dusters that emit an electrostatic charge to the dust - to make the dust adhere and work better.

EARTH-WOOD CONTACTS

Remove or correct them all. Wood (not treated with borate or borax) should be at least 8" above the soil.

EXCLUSION

Exclusion is the use of physical barriers to keep pests out. Make sure all screens, doors and windows have tight seals. Keep the outside doors closed when not in use. Repair all door sweeps. Install weatherstripping. All cracks, crevices and other openings inside and outside must be filled in, caulked, cemented, foamed and/or screened or screened. My Mother told me to: "Close the door and you will not let in the flies."

HABITAT REDUCTION

Pests need a nice place to live, something to eat and something to drink to survive. Remove these and they will either die or they will move elsewhere. Eliminate any conditions preferred by pests, including overwintering sites, water and food supplies and hiding places. Remove clutter, paper bags, cardboard and newspapers change the temperature whenever you are not there make it uncomfortable for your unwanted "guests."

INSPECTION

The first step in any successful, true IPM program. Don't just look; carefully observe all the conditions conducive to infestation and/or invasion, possible entrance points and sanitation problems. **Monitoring** is simply ongoing

inspections that tell you how you are doing and where you are headed and what you must do.

MECHANICAL CONTROLS

Involve the use of different kinds of devices, e.g., fly swatters, hair dryers, tile softeners, hoes, rakes, mowers, traps, insect zappers, purple negative ion plates, Safe Solutions, Inc. enzyme cleaners, Not Nice to Critters, vacuums, etc.

MOISTURE REDUCTION

Repair plumbing and roof leaks and/or pop machines; correct moisture and condensation problems. Do not let water remain in the dehumidifier, under your plants or refrigerator or in pet dishes or the sink overnight.

NON-TOXIC CONTROLS OR PESTISAFES®

Water, hot air, fans, salt and thousands of other non-toxic or GRAS materials work better than volatile pesticide **poisons** to safely solve many pest problems. We call these Pestisafes®.

OUTSIDE CONTROLS

Use plastic lumber or borate or borax treated lumber in landscaping. Trim all branches that touch or overhang the home/building. Install proper lighting that does not attract pests into your building. Remove debris and clutter. Properly store firewood and garbage away from your home/building. Remove dead and/or diseased plants, pet droppings, fruit, leaves, branches and/or standing water. Change the lighting so you do not attract pests.

PAINT/VARNISH/SEALERS

These will often prevent pest invasion and/or build-up. Cover all unpainted wood.

PHYSICAL BARRIERS AND CONTROLS

A line of chalk or Vaseline, fences, traps, dusts, doorsweeps, cedar oil or sawdust, caulking, mechanical action, flame weeding and manual removal, screens, moats, food-grade DE, etc.

POWER DUSTERS

Most power dusters use compressed air to deliver insecticidal dusts to large spaces. Fire extinguishers have been converted to dusters and filled with compressed air. Other dusters are plastic and are pumped up much like the hand-held compressed air sprayer used to applying liquids. The plastic dusters release small or large amounts of dust with better control than the fire extinguisher type. Power dusters can be used in spaces where the dust can lie undisturbed providing a residual coating of pesticide. They are also applied in sewers as contact pesticides and in trash chutes of high rise buildings. The dust is introduced at the lowest level at a trash compactor and rises up through the chute where it is vented at the top. The chute must be closed at each floor. Dusts can also be placed in wall voids, crawl spaces and almost any unused space. Sometimes drilling into voids is necessary to inject dust. Great care must be taken to confine pesticidal dust so that it does not drift and is not carried into non-target spaces. Try using talcum powder, baby powder, chalk dust, Gold Bond® powder or food-grade DE instead. Remember to turn off pilot lights and flame, or spark producing equipment if a combustible dust is used. Protect smoke alarms when using dust. Dusters, even canned aerosol units, clog easily. They must be agitated often and the dust kept dry at all times. Dusters work much better if they are vacuumed and/or washed and dried often.

POWER WASHERS

Ideal for cleaning commercial establishments and/or heavy pest infestations; use them with Safe Solutions, Inc. Enzyme Cleaners and/or Peppermint Soaps - you will not believe the instant pest control and cleanliness you can achieve! Make a wonderful power sprayer out of a 3-gallon stainless steel, rechargeable fire extinguisher. Put in 1½ of water with some enzyme cleaner and pump up to 110# of pressure. This mix does not normally

cause any sting.

SANITATION

Pest control is almost directly in proportion to your cleanliness. Remove or properly store all sources of food (including garbage) and water. Wipe the counters and stove and vacuum or mop with diluted Safe Solutions, Inc. Enzyme Cleaners daily. Wash the dishes. Do not let them stand dirty overnight. Bag and remove garbage. Do not leave food (human or pet) out in the open at night. Remove pet droppings and fallen fruit daily. **Check ice machines, food and/or drink dispensers and food areas.**

TRAPS AND BAIT STATIONS - Sticky Traps, Bait Boxes, Monitoring Devices and Pheromone Dispensers

Traps have been used for pest control for centuries. Rodent control traps range from snap traps to boxes that use trap doors, spring-loaded multiple catch traps, and small animal traps. Rodent bait boxes, or bait stations, are containers that hold poisonous baits or glue boards. Under certain conditions, they must be tamper proof for safety. Other traps to catch pest birds are baited so the bird will enter and cannot get out. Fly traps are sticky tapes or cylinders that hang vertically, taking advantage of the fly's tendency to cling to vertical poles, strings, etc. Electric fly traps are made with an attracting light that lures flies to electrocution grids or glue boards. Sticky traps are small glue boards used to catch rodents and cockroaches. These are also used to monitor roach populations and to survey for other insects. You can easily make many safe and effective traps out of duct tape.



Pheromone traps lure insects with a pheromone (a natural attractant), to a sticky holding surface. These traps are used to evaluate insect populations; their catches indicate which species are present. They may also be used to control or reduce pest populations. Take a full one and suspend it over a shallow tray of diluted enzymes.

Bait Stations - There are many kinds of bait stations. These devices confine toxic substances to units that are removable rather than leaving them exposed. Virtually any food source preferred by your targeted pest can be mixed with boric acid (use less than 5%) and/or sodium borate (use less than 3%) to create a toxic bait. If you use 3% food-grade DE, animals and pets can safely eat that bait. Commercial cockroach bait stations offer (often volatile) pesticides as attractive bait. The bait stations themselves offer natural harborage. They can augment sprays, dusts and fogs, or they can be used in place of other more toxic formulations. The key to using these devices is to know where and how to place them. Remember that insects will not usually stray more than 1/2 inch from their designated trails to inspect a new food source! So apply small amounts of bait over as large an area as possible or pinpoint the exact locations where the insects are traveling and bait thoroughly there. Carefully locate all of the infestations - be sure you use enough bait - baits should be placed in all cracks and crevices, holes, undersides of cabinets and appliances, in hollow legs and frames, around stoves, refrigerators, sinks, plumbing, and/or electrical boxes.

VENTILATION

The most destructive factor to wood in structures is moisture, not wood destroying insects, so properly install and maintain proper ventilation (vents, fans, air conditioners) and other moisture reducing tactics.

PARTIAL EQUIPMENT AND CONTROL SUMMARY - Obviously, some of the controls overlap - both controls and equipment are used in urban pest management and control to suppress pest populations; they are effective only when used by caring, competent technicians. Pest control equipment used by an untrained technician who has little practical knowledge will be used ineffectively. Ill-cared-for equipment in bad repair is not only ineffective

but it is dangerous. **All “registered” volatile, synthetic pesticides are poisons** and should only be used as a **last resort**. **These poisons** do not stay in one place...they drift or volatilize and **contaminate everything**. **Your most important responsibility is to cause as little harm to everything except the pest**. Natural forces, e.g., climate, natural enemies, geographic barriers, shelter and food/water availability, act on all organisms, causing their populations to rise and fall naturally. You have a brain over 200,000 times as large as your enemy; use it and you will win; continue to only use “registered” pesticide poisons and you will lose.

TRUE IPM SUMMARY

The Art of War

In any war, one must have a sword (an offensive weapon) and a shield (defensive protection) - with volatile, synthetic pesticide poisons we have no shield, no protection and our only “weapon” is attacking us and not our enemy.

In *our* ongoing war against home and garden pests, over 70 million American households make more than 4 billion pesticide applications each and every year. At least 85% of Americans 84.5 million households maintain a poison arsenal of 3-4 synthetic poisons ranging from no pest strips, pesticidal shampoos, aerosols, granules, liquids and dusts. There are over 20,000 different household synthetic pesticide poison products containing over 300 active ingredients and as many as 1,700 “inert” ingredients per a 1990 EPA study prepared by Research Triangle Institute. The “National Home & Garden Pesticide Use Survey” found at least 75% of all American households use insecticides, and consider cockroaches and ants as the leading pest enemies.

In 1993, 140,000 pesticide exposures, and consider 93% of which involved home use were reported nationwide to poison control centers - about 25% had (acute) pesticide poisoning symptoms (over half involved children under 6).

The poison *industry* is also very aware that volatile, synthetic pesticide poisons kill beneficial insects and fungus better than they do the pest. One University that tests pesticides on pests wrote me how they use synthetic insecticides and fungicides to protect their pest populations! An example of predator-prey relationships that are adversely affected by pesticides is a black fly predator, the caddisfly, which is susceptible to permethrin at rates lower than those necessary to control blackfly. The phytoseiid mites have an LD₅₀ 15 times lower to permethrin than the spider mites on which they prey. Obviously, many beneficial insects, e.g., bees, are also killed when one *treats pests* with volatile, synthetic pesticide poisons!

The Chinese Sage, Sun Tzu’s “The Art of War” written in China 500 B.C. clearly warns: **“There has never been a protracted war from which a country has benefited.”**

Since the 1940’s advent of volatile, synthetic pesticide poisons we have waged a protracted war against pest populations and now our air, water, food, mother’s milk, blood, and adipose tissue all “normally” contain *residues* of these poisons, their metabolites and contaminants! We have suffered an ever-increasing array of health effects, damages, and death - yet our pest “enemy” continues not only to flourish, but to increase. We have continually killed our own allies (the beneficials), poisoned our own wells, air, and food and, thereby, sickened, wounded or killed ourselves and our own forces and continually ignored our enemy’s natural weaknesses and engaged in warfare using only one (useless) weapon! We have totally forgotten how to protect ourselves and how to successfully wage war on our pest enemy. In 1950 fewer than 20 species of insects showed signs of pesticide resistance. In 1960 Rachel Carson had documented 137 species resistant to at least one pesticide poison and noted it was the early rumblings of an avalanche of synthetic pesticide resistance. By 1990 the number of documented pesticide-resistant insect and mite species was 504 and, obviously, is still increasing. In addition, we have many other pesticide resistances developing, e.g., bacteria, fungus, weeds, etc.

In 1993, 1 in 7 Americans got cancer. We now have spent \$25 billion on cancer research (a river of gold); as we begin the 21st century it is now estimated that 1 out of every 2 Americans will get cancer. Breast cancer will soon be the #1 killer and prostate cancer will be the #2 killer of Americans! At present, one in eight women will get breast cancer. From 1960 to 1990, more than 950,000 had died from breast cancer - almost half of these deaths have occurred in the last 10 years! Putting this in perspective - only 617,000 Americans have died in all the wars our country has fought this century! Unless we desire death of our own race, we must stop releasing tons of virtually untested, unstable, synthetic pesticide poisons that are creating a synergistic contamination

that no one can honestly say they can truly assess all of the human health risks for and which still does not even control our pest enemy! Some of the *inerts* can continue to contaminate for much longer than the active ingredients, e.g., some *inerts* have a half-life of greater than 880 years!

Yet, the U.S. annually **still** blasts itself with about 4.6 billion pounds of volatile synthetic pesticide poisons which provide fewer and fewer benefits. Despite a ten-fold increase in the U.S. use of chemical insecticide poisons since World War II, our loss of food and fiber crops to insects has risen from 7 to 13 percent! By 1964 2/3's of all U.S. insecticides were used on only 3 crops: cotton, corn, and apples per the Mrak Commission (In 1969, the U.S. Department of Health, Education, and Welfare prepared a landmark report on the environmental health consequences of pesticides - The Mrak Commission). Pimental et. al., in Environmental and economic impacts noted that despite a thousand-fold increase in the U.S. use on insecticides on corn-losses to insects have an increased 400%! Cornell University researcher, David Pimental in Silent Scourge, Audubon, Jan./Feb. 1997 estimates that of the roughly 672 million birds annually exposed to pesticides in the U.S. - 10% - (at least) 67 million - of our allies are killed annually! (Note: In the 1990s over 5 to 6 billion pounds of insecticides, herbicides, fungicides, rodenticides, and other biocides were added to the world's environment.) The concepts of synthetic pesticide resistance, pest resurgence and the development of secondary pest problems have been taught (and then ignored) in introductory science classes for literally decades! Since synthetic pesticide poisons were introduced into agriculture at the end of World War II, **total crop losses due to insect damage has almost doubled** - from 7% in the 1940's, when all agriculture was essentially organic, to 13% by the end of the 1980's. In 1945 almost no insecticide use was used on corn and the USDA noted insect damage averaged about 3.5%. Entomological Journals are filled with pesticide resistance problems developing all over the world - synthetic pesticides quickly create resistant or immune pests. **Pestisafes® normally do not!**

In the 1990s approximately 5% of all farms controlled over half of the Nation's agricultural production and our smaller farmers were going out of business by the thousands, all while economic consolidations using mergers, takeovers, and conglomerations in the food industry are being magnified a hundred-fold - we now are almost totally dependent on the poison *industry* - and their resulting contamination is now universal. In 1981, A. Robert Abbou'd as president of Occidental Petroleum, a giant energy corporation, spent \$800 million to acquire Iowa beef processors and said "we're going to be running onto a food scarcity situation in the 1990's in the same way we have an energy shortage in the 1980's. We will continue to build in this area." Occidental Petroleum also is known for its Hooker chemical subsidiary and Love Canal controversy/contaminations.

A few multinational corporations and "banksters" now own the new "biotechnology" that is genetically altering or "modifying" all of our (hybrid) seeds, livestock embryos and/or other living organisms (into Frankenfoods) - shifting the ability to produce food from our farmers to the "scientists" and therefore to those that actually own them, their "science" and their chemical poisons and their patents - all at the expense of environmental safety, nutritional value, and biological diversity and therefore our future (altered) harvests - all are sacrificed on the corporate altar of expediency and profit - yet we **still** are being told the same old propaganda/lies that there **still** is nothing to "worry" about - "Hold still please...Trust in me, just in me...Shut your eyes..." - the snake, Kaa, in The Jungle Book. We can no longer produce our own seed as farmers did since the beginning of time. Genesis 1:12: "and the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind; and G-d saw that it was good." **Today we must look to man because most seed is now hybrid and/or genetically engineered and/or "Terminator enhanced" and not G-d for our daily bread.**

The clarity of Sun Tzu's thought is still acted upon by Chinese generals of today; it is "**The supreme art of war is to subdue the enemy without fighting.**" This supreme art is what I have continually developed upon in my intelligent pest management manual The Best Control II®. The Author, like Sun Tzu, believes "The skillful strategist should be able to subdue the enemy's army without engaging it, to take his cities without laying siege to them, and to overthrow his State without bloodying swords". One of Sun Tzu's admirers was Mao Tse Tung - in Chiang Kai - Shek's army - most of the younger officers considered Sun Tzu's thoughts to be out-of-date and hardly worth study in the era of mechanized weapons. Chairman Mao Tse-Tung disagreed with his enemy and in May, 1928 wrote "on protracted war", selected works Vol. II page 156 that "The object of war is specifically to preserve oneself and destroy the enemy" (to destroy the enemy means to disarm him or "deprive him of the power to resist", and does not mean to destroy every member of his forces physically.).

This "truth" taken from the "Little Red Book", contains the essence to **true** IPM. To use toxic poisons that do not preserve us, but rather destroy our own people, pets, and natural allies without even diminishing, much

less destroying our pest enemy, but which in truth actually preserve our pest enemy and even prosper our pest enemy is to insure the annihilation of those things (including yourself) you are trying to protect and preserve!

All of the guiding principles of military operations grow out of this one basic principle: to strive to the utmost to preserve one's own strength and destroy that of the enemy . . . to release toxins nerve gases, carcinogens, mutagens, etc. (poisons) into one's own ambient air, food, or water is to insure our own defeat or destruction - while preserving that of our resistant enemy, and totally ignores the basis of all successful military principles! The communist Chinese Red Army defeated General Chiang Kai-Shek using this very principle and Mao noted that "without preparedness - superiority is not real superiority and there can be no initiative either. Having grasped this point, a force which is inferior, but prepared can often defeat a superior enemy by surprise attack." I warn you our "inferior" pest enemy is already resistant to our "superior" pesticides and is already winning the war - common sense (which is not too common) and the use of **true IPM** as written in **The Best Control II**® will yet turn the tide in our favor.

The purpose of **True Integrated Pest Management or Intelligent Pest Management® or Imaginative Pest Management or Innovative Pest Management (IPM) or Ecologically Based Pest Management (EBPM)** is to render an area more or less permanently uninhabitable for the pest - in as environmentally safe a manner as possible...often it does not even destroy the pest. Rather than simply trying to control pests temporarily at best, using volatile, synthetic pesticide poisons which are very harmful to people, pets and the environment, **IPM** is dedicated to removing the causes rather than *treating* the symptoms. Passive IPM is simply allowing natural programs, predators and controls to remain in place. Active or true **IPM** can be easily understood if you can relate the pest's needs to your own needs and home. If you came home and found every room was filled with foam or concrete (caulking) or that your home had been altered so that your heating/air conditioning were not working or removed (temperature changes) all the locks changed and/or all windows and doors were boarded over (exclusion) and/or steel bars were installed over all windows and doors (screening) all plumbing, gas and electricity lines removed, all food supplies, clothing, furniture and beds either removed or secured in such a way you could not gain access (sanitation and habitat reduction) to your own home or even the things you need to survive you would move - if you still did not move the police would come and take you away (vacuums and/or traps). You now can understand how we will use true **IPM** techniques to permanently eliminate the conditions conducive to an infestation and, thus, the pest. **All of us are capable of waging war on pests directly or indirectly, especially using Pestisafes®, or safe and far more effective alternatives to the "registered" poisons.**

What we must first understand is our enemy - his exact location, weaknesses, strengths, habits and preferences. Remember to remove the cause rather than treat the symptom. If you avoid the use and misuse of poison, you will avoid resistance and contamination problems, conserve beneficials, the environment and yourself. Robert Metcalf, an entomologist said, "The greatest single factor in preventing insects from over-whelming the rest of the world is the . . . warfare which they carry out among themselves". Remember the old childhood riddle: The enemy of my enemy, is a friend of mine? Rachael Carson said, "The second neglected fact is the truly explosive power of a species to reproduce once the resistance of the environment has been weakened". The greatest weapon you have is your imagination - never depend on any one tool other than your brain and always seek a better, safer way! Even if one tool does not work - there are many, many others that will! Seek out knowledge with the same desire - you seek out the source and/or the pest - This manual will always need continual revision - there always will be one more alternative to try - rather than any volatile poison! True IPM is not an acronym for "Include Pesticides Monthly" or "Increase Pesticide Marketing" or "Integrated Pesticide Management" - it stops the terrible "game" called environmental roulette and the pests!

ECOLOGICAL NARCOTICS - The use of "registered" volatile, synthetic pesticide poisons to "control or eliminate" pests is, obviously, not working. With any chemical dependency, routine use invariably makes worse the very problem it will supposedly eliminate, correct, control or fix. Using volatile pesticide poisons has not only created resistant pests, it has increased their numbers and damages and the severity of their attacks. Trying to drown one's sorrows in alcohol only creates bigger problems and greater sorrows and then even greater dependency and sorrow and problems. **It's time to get clean and sober!**

“IPM” As Defined by the Poison “Industry”

The June 1997 Consumers Report had an “IPM” article entitled, “Safe Ways to Banish Bugs,” and noted “In short” (1) Harmful pesticides are still widely used in homes, and (2) you’ll need to ask hard questions to get safe treatment.

Consumers Report sent out a 1996 IPM questionnaire to six state and regional pest control associations. For virtually every category of pest the top three *treatments* included at least one organophosphate insecticide, yet 5 of the 6 associations said “IPM”-style treatment was on the rise in their regions.

One Florida concern advertised itself as “environmentally friendly, environmentally safe,” but the Company President immediately described a course of *treatment* that included indoor and outdoor applications of both an organophosphate and a carbamate.

Occasionally a company’s ad will mention “EPA registered” pesticides implying they are some how *safer*. Consumers Report noted then *any* pesticide - including some that are exceedingly toxic - must be registered by the EPA before they can legally be applied to homes.

The article noted an EPA survey found that only one in four customers had received written identification of the pesticide used in their homes. The article also gave no real IPM alternative controls its readers could undertake themselves that would actually eliminate pests without using any volatile, synthetic pesticide poisons.

COMPETITIVE “IPM” COMMENT - Every *competitive IPM* program we have read states “their first line of defense” is a (*protective*) chemical (poison) barrier! We never use dangerous volatile, synthetic pesticide poisons and only use spot treatments of least-toxic pesticides and then usually only in the form of baits and only as a last resort! We prefer to call our total program, Intelligent Pest Management® or true IPM. At the start of 1998 we had safely controlled all pests inside and outside in over 350 schools without using any volatile, synthetic pesticide poisons! Devices used to control pests, e.g., fly swatters, traps, vacuums, negative ion plates, caulking, repelling and/or exclusion materials can not be accurately tested in a laboratory and sometimes even field tests and/or actual use will give conflicting results. I believe the main reason field tests and actual use give different levels of control primarily is due to the skill, patience, determination and diligence of the user.

According to Webster’s dictionary the word *integrate* means to make whole or complete; to bring parts together into a whole. True IPM is a pest control approach that doesn’t rely on one tool or one type of tool. Rather, true IPM relies on many tools used in an intelligent, cooperative, supportive and common-sense manner. You should first use only those tools that kill or repel or exclude pests that do not harm the environment, humans, their pets, food or non-target animals. All such tools or Pestisafes® or devices are normally species-specific and include things like air currents, vacuums, insect predators, cleaning, proper storage of food and garbage, temperature changes, snap traps, fly swatters, glue boards, sticky traps, insect electrocutors, wind-up rodent traps, caulking, screens, lights, noise, rodent-proofing, negative ion plates, insect and disease resistant cultivars, etc. When you properly use non-toxic controls such as these, properly inspect for pests and conditions conducive to infestation, practice proper sanitation, properly design or improve a building in order to make it pest free, and use tools that exclude the pest or minimize food, water and harborage, you are practicing true or proper IPM techniques.

When you simply spray volatile, synthetic pesticide poisons, you are basically only using one *tool* and are contaminating people, pets and the earth, and are not really solving any pest problems. When any pest population is removed, eliminated, excluded or repelled using proper sanitation, habitat reduction, exclusion, other corrections of those conditions conducive to infestation and by using proper inspection techniques, not only are pest populations smaller, but they are stressed because they must compete for limited resources. It is a biological fact that stressed species in any population, whether they be insects, rodents, birds or animals, are much more susceptible to attacks from natural biological parasites and predators. By keeping pest populations low, via exclusion, habitat reduction, negative ion plates and all the other safe/non-poisonous tools or Pestisafes® the Author advocates and stressing any “survivors” through proper sanitation puts tremendous strain on any pest species so they can be totally **eliminated** (not just *controlled*) by biological controls, vacuums, caulking or safe and far more effective alternatives such as food-grade diatomaceous earth, Safe Solutions, Inc. enzyme cleaners, peppermint soap, salt, vegetable oil, etc. and only as a last resort, a spot application of some least-toxic, non-volatile pesticide. The use of non-toxic controls, e.g., Pestisafes®, saves the beneficials and creates

an environmental balance that naturally provides you with safer and more effective pest control - for free! We must get off the chemical treadmill that continually increases "use of poisons"! Most poison applicators have heard the story of the "Pied Piper of Hamelin", one of the first "IPM" specialists; he completely eliminated all of the rats without using any poison but then was not paid. Subsequently, pest control operators have decided that **in order to keep getting paid they will only use poisons that never will eliminate the pest problem!**

An NCAMP (now NPMA) Evaluation of Federal 'IPM' Practices - Every day millions of Americans - from members of Congress and Justices of the Supreme Court to federal employees, visitors to National Parks and Post Offices to children in day care centers at federal facilities - are being unnecessarily, and often unknowingly, exposed to hazardous pesticides linked to a wide range of health problems. 91% of the facilities surveyed, 37 of 41, earned a failing grade for their pest management programs. They have failed to adopt available "Integrated Pest Management" (IPM) techniques that would eliminate the use of many hazardous pesticides. Most facilities undermine the use of IPM techniques because of their continued reliance on hazardous pesticides; 36 of 41 (88%) continue to use hazardous pesticides. Overall, the 41 facilities surveyed reported using 64 active ingredients in about 250 pesticide products. Of these, 16 cause cancer, 24 are linked to birth defects, 44 are linked to reproductive problems, 49 are nervous system poisons, 54 cause kidney or liver damage, 59 are eye or skin irritants, 55 are known or potential groundwater contaminants, 50 are toxic to birds, 55 are toxic to fish and other aquatic life, and 34 are toxic to bees. 23 facilities reported using chlorpyrifos (Dursban™), a pesticide linked to nervous system damage and numerous poisoning incidents. Chlorpyrifos was the most common pesticide reported in use. 1 facility reported using a banned pesticide, the cancer-causing chlordane. 2 facilities reported using chemicals - alloxym-sodium, calcium cyanamide and trichloroethane - that are not registered for use in the U. S. or have been withdrawn from use ("canceled"). Interestingly, while trichloroethane has been withdrawn as a pesticide, it is found as a significant, unlabeled "inert" ingredient in pesticides used on at least two sites: the U. S. House of Representatives Office Building (DC) and the Veterans' Medical Center in Dublin (GA). 1 facility reported using phostoxin, a dangerous pesticide prohibited for use near people. Facilities using *professional* commercial pest management contractors generally received lower scores than facilities using their own employees to carry out pest management programs. **So - Practice Intelligent Pest Management!**

Pesticide-Free IPM - The City by the Bay goes pesticide-free - San Francisco adopts IPM rule for city owned land. Citing children's safety in city parks, the Country's toughest pesticide law will ban the use of all pesticides by the year 2,000. The January 1997 issue of Farm Chemicals noted that the sweeping new law calls for an immediate ban on chemicals determined to be the most dangerous pesticides. City departments must cut their use of all other pesticides including weed killers in half by 1988 and totally eliminate them by 2,000. Meredith Rehman, Communications Manager for the Western Crop Protection Association commented "We applaud San Francisco's efforts to adopt IPM - but with (her and the poison industry's version of) IPM you do not eliminate all chemicals (poisons). IPM includes the judicious use of chemicals (poisons)." Meredith also noted later in the article it could cost at least \$60,000 per year for a full-time IPM specialist. "Do the benefits outweigh the costs?" she asks. Then later Meredith notes "Certainly with this story coming out of San Francisco and San Francisco's tendency to be in the spotlight, this ban will be picked up by other cities and will impact our industry." Obviously Meredith is concerned more about the costs ("someone" will have to pay) than she is about the safety of our children and other benefits we all will obtain. The San Francisco Examiner found the city's Recreation and Parks Department used more than 10,000 pounds and nearly 800 gallons of pesticides during the last six years. Even more troubling to the editors was that three dozen of the department's 60 pesticides had been classified by EPA as possible or probable carcinogens. What was especially troubling to Meredith was that the "city reacted with a law that goes further (in removing the use of poisons) than any other city or law in the nation. And like many environmental trends that incubate in the West, they grow, mature and gain momentum as they head East. This may be the first ripple in a very large wave." Does anyone (other than the Authhor) believe that if even one child is saved by the maximum \$60,000 cost figure the poison industry "arbitrarily estimated" - this one "benefit" is still worth the price?

Dow defines "IPM": The American pesticide industry should reclaim Integrated Pest Management and embrace the concept as a purely economic method for making value-based decisions about controlling pests, Scott Hutchins of DowElanco said. In a presentation to the American Crop Protection Association's meeting May 1, 1997 Hutchins, who is DowElanco's global development manager for insect/nematode products said that IPM has become a "buzzword" that is wrongly "seen as universally good." Hutchins said his colleagues should aggressively attempt to cure the IPM "identity crisis" by redefining the concept as a sound bu\$INESS decision for farmers and other users.

IPM Concerns Expressed by Others- Charles M. Benbrook is a specialist on pesticide policy and author of the book, Pest Management at the Crossroads. In his speech to the USDA Integrated Pest Management Seminar Series, Feb. 28, 1997, in Washington, DC he noted, "In pest management, the time has come to gradually and consciously shift from today's often excessive reliance on pesticides to more prevention-based approaches. The knowledge and tools needed to incrementally lessen reliance on broad-spectrum, high-risk pesticides through IPM implementation exists in nearly all crops and regions. We ought to use them more fully and to do so we must exercise discipline in our choices...Yet ironically, across the country there has been slippage in the ability of USDA and universities to carry out IPM research and deliver information key to those trying to implement IPM in the field. Most states have had to reduce the number of applied pest management specialists because of budget cuts. Once world-class IPM research programs have been all but dismantled in key agricultural states including California and Florida.

The Clinton Administration had proposed significant increases in IPM funding, through what has been called the 'National IPM Initiative.' But during each of the last budget cycles, the Republican Congress has not approved any real increases in IPM research and education, even those proposed and paid for in the President's budget submissions. Meanwhile, genetic resistance is a growing worldwide problem. Resistant pests pose as great a threat to today's cotton farmer as the boll weevil did before the introduction of modern insecticides in the late 1940s. After just two years of field use, resistance has already been reported to the latest miracle pesticide - the reduced-risk and often highly effective systemic insecticide Admire. The number of resistance weeds in the U. S. is up from about a dozen in the early 1980s to nearly 300 today. Experts acknowledge the pest resistance problem is growing and predict that if herbicide-tolerant plant varieties are a commercial success, it will worsen faster. One weed species is resistant to more than 25 herbicides in four different chemical families. The first cases of resistance to the world's most widely used herbicide, Roundup®, have now been reported and more are expected.

Hundreds of once secondary pests have now become well-established primary pests. New strains of potato late blight disease and other fungal pathogens are threatening the nation's potato, wheat and tomato crops. Fungicide use is up more than 40% since 1991, according to EPA data.

Furthermore, there is a premium on timely Congressional action in light of passage in July 1996 of the Food Quality Protection Act (FQPA). This major bill sets stricter standards governing "registered" pesticide residues in food and will reduce the variety of broad-spectrum pesticides accessible to growers within the next three or four years...The surest way to reduce the economic, environmental and public health costs stemming from today's high level of reliance on pesticides is to invest in the tools and information needed to help growers adopt biointensive IPM."

The California Public Interest Group released a 1998 study entitled, "Failing Health, Pesticide Use in California Schools". Their opening statement is, "Spraying dangerous pesticides in classrooms and school cafeterias is common place in California, yet the State is doing little to control student exposure." A survey of pesticide use patterns in Florida school districts was conducted in 1996 - 77% of the school districts reported they applied pesticide poisons based on a calendar protocol even though in many cases there were no pests in the school to kill.

Definition of True IPM: Intelligent Pest Management® (IPM) is the coordinated use of pest and environmental information with available pest management methods to prevent unacceptable levels of pest damage by the most economical means, and with the least possible hazard to people and the environment. The goal of the IPM approach is to safely manage pests and the environment so as to balance costs, benefits, human health and environmental quality. IPM systems utilize a high quantity and quality of technical information on the pest and its interaction with the environment (site). Because IPM programs apply a holistic approach to pest management decision-making, they take advantage of **all** low risk management options, emphasizing natural biological methods, and the appropriate use of selective Pestisafes® and, as a last resort, selective, non-volatile, pesticides. IPM's strategies incorporate environmental considerations by emphasizing pest management measures that minimize intrusion on natural bio-diversity ecosystems. Thus, true IPM is:

- A system utilizing multiple methods that will not create resistance,
- A decision-making process,
- A risk reduction system,
- Information intensive,

- Biologically based,
- Safety conscious,
- Cost effective,
- Site specific and
- An alternative to volatile, synthetic pesticide poisons.

If you must use non-volatile pesticide poisons, use them only as a last resort, only after trying all other options and, by law, only according to the labeled instructions.

BREAKING THE CYCLE OF VIOLENCE - League of Women Voters

In our concern about "Breaking the Cycle of Violence," we do not want to overlook the neurotoxic and hormonal effects from many of the man-made chemicals that we are spewing into our environment. For example, "a very large proportion of all the pesticides used today are neurotoxic."¹ In experimenting with rats, Professor Warren Porter of the University of Wisconsin, Madison has found that tiny doses of combinations of pesticides, at levels that can be found in Wisconsin drinking water today, can cause both aggression and learning problems in the rats. He states, "Can you imagine any parents exposing their children to a toxic chemical? And yet they do it all the time [by pesticing their homes and gardens, eating pesticided food, and permitting pesticing in their children's schools and on their playgrounds]. The telling comparison is that we protect laboratory rats better from this stuff than we do our kids."² He said, "We will not be able to maintain a highly-ordered technological society if we raise a generation of children who are learning disabled and hyperaggressive."³

Many synthetic chemicals disrupt our hormones. Tiny doses can have devastating effects on the fetus, lasting a lifetime. Even although the genetic makeup of the individual can remain unchanged, the affected hormones control which genes will actually be expressed and in what way. Concerning these effects of man-made chemicals, the authors of Our Stolen Future write: "Wildlife data, laboratory experiments, the DES [a synthetic estrogen] experience, and a handful of human studies support the possibility of physical, mental, and behavioral disruption in humans that could affect fertility, learning ability, aggression, and conceivable even parenting and mating behavior. To what extent have scrambled [hormone] messages contributed to what we see happening around us - the reproductive problems seen among families and friends, the rash of learning problems showing up in our schools, the disintegration of the family and the neglect and abuse of children, and the increasing violence in our society?"⁴

¹ Young, B. B., "Neurotoxicity of Pesticides," Journal of Pesticide Reform, 6(2): 6, Summer 1986.

² Knapp, Dan, "Warning! Good Looking Lawns May Be Hazardous To Your Health," On Wisconsin, page 53, May/June 1996.

³ Telephone conversation between Marjorie Fisher and Professor Warren P. Porter, Chair, Wisconsin, Madison, March 5, 1991.

⁴ Colborn, Theo, Dianne Dumanoski, and John Peterson Myers, Our Stolen Future, Are We Threatening Our Fertility, Intelligence, and Survival? — A Scientific Story, Dutton, 1996, page 232.

Michigan Living, March 1998, Volume 80, No. 6, noted that studies at AAA show the number of aggressive driving incidents has risen 51% since 1990. This study specifically measured only the number of times a driver tries to kill or injure another after a traffic dispute. The study did not note the increased amount of verbal abuse or obscene gestures which we now all have to deal with daily.

RACHEL'S ENVIRONMENT & HEALTH WEEKLY #648, 4/29/99, PESTICIDES AND AGGRESSION

For the past 25 years, tens of millions of Americans in hundreds of cities and towns have been drinking tap water that is contaminated with low levels of insecticides, weed killers, and artificial fertilizer. They not only drink it, they also bathe and shower in it, thus inhaling small quantities of farm chemicals and absorbing them through the skin. Naturally, the problem is at its worst in agricultural areas of the country.

The most common contaminants are carbamate insecticides (aldicarb and others), the triazine herbicides (atrazine and others) and nitrate nitrogen.[1] For years government scientists have tested each of these chemicals individually at low levels in laboratory animals -- searching mainly for signs of cancer --and have declared each of them an "acceptable risk" at the levels typically found in groundwater.

Now a group of biologists and medical researchers at the University of Wisconsin in Madison, led by Warren P. Porter, has completed a 5-year experiment putting mixtures of low levels of these chemicals into the drinking water of male mice and carefully measuring the results. They reported recently that combinations of these chemicals -- at levels similar to those found in the groundwater of agricultural areas of the U.S. -- have measurable detrimental effects on the nervous, immune and endocrine (hormone) systems. Furthermore, they say their research has direct implications for humans.

Dr. Porter and his colleagues point out that the nervous system, the immune system, and the endocrine (hormone) system are all closely related and in constant communication with each other. If any one of the three systems is damaged or degraded the other two may be adversely affected. The Wisconsin researchers therefore designed their experiments to examine the effects of agricultural chemicals on each of the three systems simultaneously. To assess immune system function, they measured the ability of mice to make antibodies in response to foreign proteins. To assess endocrine system function, they measured thyroid hormone levels in the blood. And to assess nervous system function they measured aggressive behavior in the presence of intruder mice introduced into the cages. They also looked for effects on growth by measuring total body weight and the weight of each animal's spleen.

The experiments were replicated many times, to make sure the results were reproducible. They found effects on the endocrine system (thyroid hormone levels) and the immune system, and reduced body weight, from mixtures of low levels of aldicarb and nitrate, atrazine and nitrate, and atrazine, aldicarb and nitrate together. They observed increased aggression from exposure to atrazine and nitrate, and from atrazine, aldicarb and nitrate together.

The Wisconsin research team wrote, "Of particular significance in the collective work of Boyd and others, Porter and others, and our current study is that THYROID HORMONE CONCENTRATION CHANGE was consistently a response due to mixtures, but NOT usually to individual chemicals." [Emphasis in the original].

In the five-year experiment, thyroid hormone levels rose or fell depending upon the mixture of farm chemicals put into the drinking water. Dr. Porter and his colleagues present evidence from other studies showing that numerous farm chemicals can affect the thyroid hormone levels of wildlife and humans. PCBs and dioxins can have similar effects, they note. Proper levels of thyroid hormone are essential for brain development of humans prior to birth. Some, though not all, studies have shown that attention deficit and/or hyperactivity disorders in children are linked to changes in the levels of thyroid hormone in the blood. Children with multiple chemical sensitivity (MCS) have abnormal thyroid levels. Furthermore, irritability and aggressive behavior are linked to thyroid hormone levels.

Interviewed recently by Keith Hamm of the SANTA BARBARA [CAL.] INDEPENDENT, Dr. Porter explained, "Earlier work had shown that thyroid hormone typically changed when exposure to these pesticides occurred. Thyroid hormone not only affects and controls your metabolic rate, that is, how fast you burn food, it also controls your irritability level. For example, Type A personalities are more assertive, more aggressive, more hyper. These people tend to have higher levels of thyroid hormone. Type B personalities--people that are really laid back, really take things very easily--have lower levels of thyroid hormone. We expected that changes in thyroid [would] change irritability levels. This was a concern because there was information that kids are getting more hyper and [that their] learning abilities are going down," Dr. Porter said.

A recent study of 4 and 5 year-old children in Mexico specifically noted a decrease in mental ability and an increase in aggressive behavior among children exposed to pesticides. Elizabeth A. Guillette and colleagues studied two groups of Yaqui Indian children living in the Yaqui Valley in northern Sonora, Mexico. One group of children lives in the lowlands dominated by pesticide-intensive agriculture (45 or more sprayings each year) and the other group lives in the nearby upland foothills where their parents make a living by ranching without the use of pesticides. The pesticide-exposed children had far less physical endurance in a test to see how long they could keep jumping up and down; they had inferior hand-eye coordination; and they could not draw a simple stick figure of a human being, which the upland children could readily do. Notably, in the Guillette study we find this description of the behavior of pesticide-exposed children: "Some valley children were observed hitting their siblings when they passed by, and they became easily upset or angry with a minor corrective comment by a parent. These aggressive behaviors were not noted in the [pesticide-free] foothills [children]."

The human body can defend itself against poisons to some degree, but Dr. Porter and his colleagues describe ways in which low-level mixtures of pesticides and fertilizer might get past the body's defenses:

The body is prepared to protect itself against poisons taken by mouth. The liver begins to produce enzymes that try to break down fat-soluble chemicals. However, if a poison enters through the lungs or the skin, the body does not offer the same kind of defenses. Furthermore, the body's ability to put up defenses may be compromised by taking certain medications (e.g., antibiotics), or by receiving "pulses" of toxins rather than a steady dose.

Receiving "pulses" of poisons would be normal in the case of agricultural poisons which are sprayed onto crops only at certain times of the year. During those periods, people living near sprayed fields might get a sudden dose of poison via their lungs, their skin and their drinking water. Dr. Porter describes such a situation this way:

"Imagine [that] you're standing in a boxing ring and a boxer jumps in with you, and he walks toward you smiling with his hand outstretched. And you reach out to shake his hand and he smacks you in the stomach as hard as he can. And when you bring your arms up to defend yourself, he backs away. Finally you get tired of holding your defenses up and you drop them and he rushes in and smacks you again. That's the physical equivalent to a 'pulse dose,' which is normally what we tend to get exposed to.

"The defenses we have take a while to induce, just like it takes a while to bring your arms up. It takes anywhere from a half a day to five days to induce those [defenses] to appropriate levels. If you're in a particular stage of your hormone cycle or you're taking some antibiotics, it can compromise your ability to defend yourself even if you did have enough time to induce your defenses. If you've got pulse doses coming in under your defenses or coming in faster than you can bring your defenses up then you've got a situation where you're totally vulnerable.

"If you've got a pregnant mom, for example, in day 20 when the fetus's neural tube is closing and she gets an exposure, she hasn't had enough time to induce her defenses. Her thyroid level goes up or goes down, the hormone crosses the placenta and can permanently alter the developmental pattern of the fetus's brain. And then the pulse dose is gone, you have no detection, mom doesn't even know she's pregnant, and you may have an offspring that is neurologically compromised and wonder, 'How did this happen?'"

In the interview with Keith Hamm, Dr. Porter expressed concern for the overall effect of pesticides on the nation's children:

Q: We've known about this stuff since Silent Spring. Why do you think that studies like this haven't been done before?

A: Everybody should be asking that question. We have on the books right now federal legislation mandating that all new registered pesticides be tested for neurological, endocrine, and immune effects. Those laws have been on the books for almost three years and have never been enforced. The American public should ask, "why have they not been enforced?" Of the 77,000 pesticides out there that are registered for use, none of them have been tested for neurological, endocrine, and immune effects.

Hamm: "Are pesticides, herbicides, and fertilizer used more or less these days than fifty years ago and have the toxicities changed?"

Porter: "The usage has continued to climb. There's an enormous amount of these [chemicals being used] right now. There was a recent study that examined the urine of people across the country, [asking] if people are being exposed. On average, anywhere from five to seven compounds were being excreted. There's a great deal of exposure to the general populace.

"And yes, the toxicities have definitely changed. [Some toxicities are now measured] in the parts-per-trillion range. I would point out that fetuses are sensitive to chemicals in the parts per quadrillion range."

Hamm: "I would assume that most people in this country are eating conventionally grown food. If that's the case, wouldn't the problems be more apparent? Why are there not more hyperaggressive dim-witted people with poor immune systems?"

Porter: "If we really looked carefully at what's been happening in this county, you might find exactly that happening."



Because of recent violence in small cities and towns (such as Littleton, Colorado, Laramie, Wyoming, and Jasper, Texas), this is a time when Americans are searching for the causes of violence in their society. Some are blaming a decline in religious upbringing. Others are blaming households with the parents working and no one minding the kids. Some say the cause is violent movies, violent TV and extremist internet sites, combined with the ready availability of cheap guns. Still others point to a government that has often sanctioned the violence of “gunboat diplomacy” to open foreign markets for U.S. corporations.

No one seems to be asking whether pesticides, fertilizers and toxic metals [see REHW #529, #551] are affecting our young people’s mental capacity, emotional balance, and social adjustment. From the work of Warren Porter, Elizabeth Guillette and others, it is apparent that these are valid questions.--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)

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[1] Jack E. Barbash and Elizabeth A. Resek, PESTICIDES IN GROUND WATER (Chelsea, Michigan: Ann Arbor Press, 1996); Richard Wiles and others, TAP WATER BLUES (Washington, D.C.: Environmental Working Group, 1994); Brian A. Cohen and Richard Wiles, TOUGH TO SWALLOW (Washington, D.C.: Environmental Working Group, 1997); Environmental Working Group, POURING IT ON; NITRATE CONTAMINATION OF DRINKING WATER (Washington, D.C.: Environmental Working Group, 1996). See <http://www.ewg.org>. And: Gina M. Solomon and Lawrie Mott, TROUBLE ON THE FARM; GROWING UP WITH PESTICIDES IN AGRICULTURAL COMMUNITIES (New York: Natural Resources Defense Council, October, 1998).

[2] Warren P. Porter, James W. Jaeger and Ian H. Carlson, “Endocrine, immune and behavioral effects of aldicarb (carbamate), atrazine (triazine) and nitrate (fertilizer) mixtures at groundwater concentrations,” TOXICOLOGY AND INDUSTRIAL HEALTH Vol. 15, Nos. 1 and 2 (1999), pgs. 133-150.

[3] C.A. Boyd, M.H. Weiler and W.P. Porter, “Behavioral and neurochemical changes associated with chronic exposure to low-level concentration of pesticide mixtures,” JOURNAL OF TOXICOLOGY AND ENVIRONMENTAL HEALTH Vol. 30, No. 3 (July 1990), pgs. 209-221.

[4] W.P. Porter and others, “Groundwater pesticides: interactive effects of low concentrations of carbamates aldicarb and methamyl and the triazine metribuzin on thyroxine and somatotropin levels in white rats,” JOURNAL OF TOXICOLOGY AND ENVIRONMENTAL HEALTH Vol. 40, No. 1 (September 1993), pgs. 15-34. And see: W.P. Porter and others, “Toxicant-disease-environment interactions associated with suppression of immune system, growth, and reproduction,” SCIENCE Vol. 224, No. 4652 (June 1, 1984), pgs. 1014-1017.

[5] Keith Hamm, “What’s In the Mix?” SANTA BARBARA [CALIFORNIA] INDEPENDENT April 15, 1999, pg. 21 and following pages. Previously at <http://www.independent.com/007/001/002.html>. Thanks to George Rauh for alerting us to this interview.

[6] Elizabeth A. Guillette and others, “An Anthropological Approach to the Evaluation of Preschool Children Exposed to Pesticides in Mexico,” ENVIRONMENTAL HEALTH PERSPECTIVES Vol. 106, No. 6 (June 1998), pgs. 347-353.

Lifetime Risk Starts Young

A 1993 report published by the National Academy of Science entitled, “Pesticides in the Diets of Infants and Children concluded that current government pesticide standards do not protect the health of children. The reason for this include the facts that babies’ bodies are much more vulnerable to pesticides because (1) their brains, immune and detoxification systems are immature and in a state of development, (2) pound for pound babies eat 2 to 4 times more vegetables and fruits than adults and so are exposed to a higher proportion of possible contaminants, and (3) the health effects of chronic low level exposure to pesticide residues are still unknown. A subsequent report released by the Environmental Working Group, “Pesticides in Children’s Food” concluded that the largest contribution to a person’s lifetime risk of cancer from pesticide residues occurs during childhood. **(Whether from food, water, air and/or surface “residues” or contaminations.)**

On March 29, 1999 The Pesticide Action Network sent the Author a letter which noted in part, "The rapid increase in production and use of POPs over the past 50 years also coincides with alarming human health trends, including rising rates of testicular, prostate and breast cancers.

Consider the following:

- Today, the average person has some 500 to 1000 detectable chemicals in his or her body.
- Breast Cancer in women is increasing at a rate of nearly 2% per year.
- Studies throughout the world reveal a 33% to 42% decrease in sperm counts since the 1940s.
- Childhood cancer is increasing at a rate of 1% each year.

As dire as these trends are, we now face an exciting and historic opportunity to act on the POPs problem. In a process guided by the United Nations, an Intergovernmental Negotiating Committee (INC) has been set up to establish a global POPs treaty. Pesticide Action Network and our partner groups are actively involved in the process, working not just for an international ban on these chemicals, but also to make sure that sustainable, non-toxic alternatives replace them.

The UN has targeted a short list of 12 POPs chemicals for initial action. Nine of these compounds are pesticides: DDT, aldrin, dieldrin, endrin, chlordane, heptachlor, mirex, hexachlorobenzene (HCB) and toxaphene. There are, however, many more dangerous POPs in existence today."

Their 3/29/99 letter to me also noted: "We have seen the cycle of chemical substitution many times. We know it doesn't work. For example, the pesticide DBCP was once widely used in California (and many other places). Its use resulted in the sterilization of male workers, as well as other health problems. It was replaced with EDB, a fumigant found to cause cancer. So EDB was phased out and replaced by the pesticide Telone, which was later banned for health reasons. Telone was then replaced by methyl bromide, the highly-toxic nerve gas now slated for a global ban because it depletes the ozone layer. In the mad scramble to phase out methyl bromide, corporate interests are trying to promote the next chemical (poison) solution.

Meanwhile, the toll on human health and the environment continues to mount. This kind of chemical treadmill is senseless when there are many viable alternatives that exist for toxic products like methyl bromide and POPs pesticides. Today, countless organic farmers use natural methods rather than relying on these chemicals. And millions of traditional farmers throughout the world have survived without introducing these pesticides of the so-called 'Green Revolution.'"

Ask yourself one question, "How on earth did mankind ever manage to survive for millennia before the advent of any synthetic pesticide poisons or fertilizers?" Then you can understand how absurd it is to say we "need" these poisons now.

EPA pledges pesticide review

by Curt Anderson - The Associated Press

- Reprinted from Sun-Sentinel, January 30, 1998

Residue taints fruits, vegetables, researchers say

WASHINGTON - Fruit, vegetables and even baby food pose a possible health threat to 1.1 million children age 5 and younger every day because of unacceptable levels of residue from widely used pesticides, an environmental group said on Thursday.

The Environmental Protection Agency is considering whether to ban or restrict use of this **group of pesticides - known as organophosphates, similar in chemical structure to nerve gas - in fresh produce and processed food by 1999.**

"EPA is committed to increased protection for infants and children," the Agency said.

It said that the pesticides "are at the top of the list" for review.

The report from the Environmental Working Group, a research organization that advocates lower exposure to pesticides, examined federal data on 4,000 children's eating habits and compared them to government testing results for residue of a popular class of pesticides on 80,000 samples of food from 1992 to 1995.

THE PESTICIDE TREADMILL

Consumer's Union [CU], publisher of CONSUMER REPORTS magazine, in October, 1996 released a new book entitled PEST MANAGEMENT AT THE CROSSROADS. The main author is Charles M. Benbrook, former executive director of the Board on Agriculture of the National Research Council. During Benbrook's tenure, the Board published several important studies of U.S. agriculture, including ALTERNATIVE AGRICULTURE, which presented case studies of 11 successful farms in the U.S. that don't rely on synthetic pesticide poisons.

CU's new book starts by explaining how IPM works, then explains why it is needed, making the following points:

**** Despite the expenditure of more than \$1 billion per year of taxpayers' funds to regulate pesticides, the public health hazards and environmental damage created by pesticides have not diminished during the past 30 years. [1,pgs.57-87]**

**** The nation is on a "pesticide treadmill" because pests become resistant to the effects of pesticides, requiring farms to adopt new and even more potent poisons, to which pests eventually become resistant. There is no end to this toxic spiral. Resistance to synthetic pesticide poisons cannot be avoided; it is a natural part of the evolutionary process. When a group of pests is exposed to a toxic chemical, some of them survive. These hardy few reproduce and their offspring inherit genes resistant to this particular chemical. Excessive use of a pesticide speeds up the process by which pests develop resistance. More than 500 insects have now developed resistance to one or more pesticides; so have 270 species of weeds and 150 plant diseases. [pg.2]**

The group estimated that 1.1 million children every day eat food that, **even after it is washed or processed, contains an unsafe dose of the 13 organophosphate insecticides.** Of those, 106,600 children exceed the EPA safe daily dosage level for adults by 10 times or more.

The foods most likely to contain unsafe levels are peaches, apples, nectarines, popcorn and pears, the study found. **Among baby foods, pears, peaches and apple juice most frequently had elevated levels.**

The chemicals include such popular pesticides as malathion, diazinon and methyl parathion.

Although research has not conclusively demonstrated a link between chronic low-level exposure to organophosphate residue and health problems in children, the Environmental Working Group found ample evidence in **Animal studies showing loss of brain function with few outward signs.**

"It's been more than 18 months since Congress passed the Food Quality Protection Act, which says the EPA must set exposure levels that are tough enough to protect kids," said Steve Murchie, South Florida program director of the Florida Consumer Action Network, a statewide profit consumer environment advocacy organization based in Fort Lauderdale. **"This study shows that children are receiving the highest exposure at precisely the age when they are most vulnerable to long- and short-term brain and nervous system damage."**

** The pesticide treadmill operates in another way as well. By killing off beneficial organisms that help keep pests in check, pesticides often create the conditions under which pests can flourish. As the World Bank said recently, "Since the 1940s, pest management technology has increasingly relied on chemical pesticides. Although in some cases this use has led to significant short term alleviation of pest problems, it has not led to long term sustainable solutions. In fact, it has often led to further pest problems, putting farmers in a vicious cycle of pests and pesticides, and increasing the burden on the environment."

The truth is that, at present, the pesticide corporations are simply too powerful to be influenced by rational argument or the need to protect public health and the environment. Worldwide, pesticide sales reached \$29 billion in 1995 [1,pg.32]—\$10.4 billion in the U.S. alone. [pg.1] Six corporations dominate the industry, capturing 67.4 percent of total industry sales in 1995. [pg.31] The recent merger of Sandoz and Ciba-Geigy created Novartis, the world's largest agrochemical corporation, with annual sales of more than \$4.4 billion in 1995 —almost double those of the next largest competitor, Monsanto. [pg.31]

In addition to exercising almost unimaginable political power, the pesticide [poison] industry is now off on a new tangent that promises to be immensely profitable by increasing the use of chemical pesticides. The new direction is genetically engineered crops.

There are two major paths being explored now by companies like Monsanto: (1) crops that are genetically engineered to withstand applications of herbicides, so that whole fields can be doused with herbicides to kill weeds. And (2), crops that are genetically engineered so that the crop itself becomes toxic to particular pests. Monsanto is leading the way in both technologies. This year (1996), Monsanto started selling soybean seeds that have been genetically altered to withstand Monsanto's herbicide, named Roundup®. Roundup [glyphosate] kills just about everything green, so it must be applied to weeds with great care and in limited amounts, to avoid harming nearby crops. But now Monsanto has incorporated a petunia gene into soybeans, and the resulting soybeans are not harmed by Roundup. Now an entire field can be doused with Roundup, killing the weeds but not the soybeans. The short-term result is an increased soybean yield, and of course soils and nearby water supplies and wildlife will be contaminated with Roundup. Because neither the farmer nor Monsanto pays the price of ecological or public health damage from such techniques, the result is more profit for farm corporations, more profit for Monsanto, and increased costs to public health and the environment.

Monsanto is also leading the way in the other new genetic engineering *technology* —giving whole plants the characteristics of a pesticide (poison), by gene splicing. For example, consider BACILLUS THURINGIENSIS (Bt) which is a natural (very small, rod-shaped) bacteria that exists in the soil. When caterpillars that have a moth as the adult stage eat Bt, they develop serious stomach problems; within 24-48 hours the stomach wall has broken down and the spores begin to invade the body and they die. The larval stages of many moths and beetles, and certain butterflies and flies, are killed by Bt. In recent years, Bt has been cultivated by fermentation then dried, producing a toxic crystal product that can be sprayed on crops. So far as anyone knows, nothing besides the very immature larval stages of these insects are adversely affected by Bt.

Bt is used by almost all organic farmers, and by many "conventional" farmers as well, especially on fruits and vegetables. (Organic farmers grow and market food and fiber certified as 100% free of toxic chemical residues.) In essence, Bt is a public good —a freely-available benefit that nature has provided to us all, useful to anyone who wants to use it. Bt belongs to no one.

Now, however, Monsanto has decided to put Bt genes into cotton and other crops, for Monsanto's exclusive short-term benefit. There are plans afoot to do the same for corn, potatoes and perhaps other crops as well. All the parts of the resulting plants become poisonous to certain pests. As a result, insect pests of many kinds will soon become resistant to Bt, and Bt will cease to be useful to farmers. No one disputes that this will happen —some say in 10 years, others say as soon as 3 years. [pgs.167,222] The result will be that Monsanto has destroyed this public good. Bt will be rendered ineffective as a natural pesticide. Those who rely on Bt will then have to substitute dangerous, synthetic organophosphate and carbamate chemical pesticides.

As CU says, "The loss of Bt to resistance triggered by Bt-transgenic [genetically-engineered] plants would be a major setback for American agriculture, especially fruit and vegetable growers in the Southeast and organic producers nationwide. Insects that Bt can control include many difficult to manage pests leading to heavy reliance on insecticides in a wide range of crops—the cabbage looper, diamondback moth, major insect pests of cotton (bollworm, tobacco budworm), corn borer, the Colorado potato beetle, the beet armyworm, gypsy moth, spruce

budworm, and many other tough to control pests. Bt foliar products [i.e., sprays] are the foundation of most... [high quality] IPM systems in Florida fruit and vegetable regions.

Organic farmers producing certified produce are even more reliant on Bt products than their conventional neighbors because they are not able to use conventional pesticides without sacrificing their ability to market produce as organic.” [pg.221]

If one were in the business of making (volatile) chemical pesticide (poisons) without a moral compass, there could be no better plan for promoting the sale of pesticide (poisons): use genetic engineering to destroy the effectiveness of the main non-chemical pesticide relied upon by the organic farming community. In a strict business sense, Monsanto has developed a winning strategic attack on its organic-farming competitors—a brilliant, almost diabolical, plan for crushing the competition. However, it is also a ruthless assault on the public, which has an inherent right to use Bt and to not have its use of Bt spoiled by one self-absorbed corporation. Monsanto’s strategy—which it is presently carrying out—will inevitably lead to greater environmental damage and harm to public health from reliance on pesticidal chemical poisons. CU recommends that EPA should become more assertive and “just say no” to “avoid draining agency resources on efforts to manage major new risks, like those posed by... the approval in 1995 and 1996 of plant varieties genetically engineered to produce...

David Pimentel of Cornell University has described dozens of unforeseen problems as a direct result of chemical (poison) pest control, e.g., many insect predators rely on elaborate search and attack strategies to capture their pest prey. Even trace exposures to volatile, synthetic pesticide poisons can alter these behaviors: natural pest enemies may be spared for death but rendered incapable of locating the pests. Fungicides used to control mold can be healthy tonics for crop-eating insects troubled by fungal diseases. Since even sublethal levels of pesticides can impair effective biological control mechanisms and create in turn even greater pest problems, obviously, the only people happy with this are those in the poison *industry*.

BACILLUS THURINGIENSIS (BT).... Widespread planting of BT-transgenic crops is likely to accelerate the emergence of insecticidal resistance to BT, forcing farmers to switch to more toxic insecticides. This will increase risks EPA has been struggling to reduce.”[pg.9] CU goes on: “...EPA should refuse to register new transgenic BT crop varieties and herbicide-resistant crop strains, and should revoke the registrations of any such products... shown to trigger genetic resistance among target pest populations.” [pg.10]

EPA—despite lip service that it pays to IPM—simply hasn’t got what it takes to stand up to power like Monsanto’s. And so the environment continues to deteriorate, public health is increasingly endangered, and public confidence in government diminishes further. The hope of achieving 100% IPM by the year 2020 fades as Monsanto and other giant corporations take the world in a (poison) direction that is profitable for them but destructive for virtually everyone else. Given who funds ‘our’ Congress and ‘our’ Government at re-election time, EPA’s only conceivable role in this drama is to sit by, provide the necessary approvals, and give us empty assurances that “all is well”. **Please refer to Chapter 14 Who is Who in the Poison “Industry”.**

IPM as defined by Florida:

02-18-98 Integrated Pest Management Can Reduce Pests, Pesticides in Schools

By Cindy Spence Source: Phil Koehler, (352) 392-2484

GAINESVILLE (Florida)—When a child on a class picnic found rat poison packed in his school lunch instead of his “Fun Fruitables” packet, State school officials acknowledged that pesticides on campuses could be a problem.

“We almost had a poisoning,” said Eric Althouse, of the State Department of Education. “We’ve got millions of kids and these freak “accidents” can happen. The only safe thing to do is to reduce the use of pesticides (poisons) around kids,” said Althouse.

University of Florida entomologists agree and are coordinating a statewide program of Integrated Pest Management for Schools, or School IPM. “Parents and school officials alike realize that children can’t learn very well with cockroaches crawling across their desks or ants crawling up their legs and biting them,” said Professor Phil Koehler, an urban entomologist at UF’s Institute of Food and Agricultural Sciences.

While parents don't want their children attending school with rats, cockroaches and ants, they don't want them exposed to the nerve poisons used against these pests, either. And schools are becoming more attuned to the liability they face in storing and using pesticides (poisons) around children, Koehler said.

Florida is the first state to coordinate IPM efforts in public schools voluntarily. In a handful of other states, IPM was started after a pesticide (poison) disaster, Koehler said. In Louisiana, for example, the State spent about \$4 million cleaning pesticides out of a school before adopting IPM.

In Florida, school officials have embraced IPM wholeheartedly, Koehler said. One district even predicted the program would save \$1.5 million in liability and legal fees after its pest control program came under fire. The number (of districts) using routine spraying has dropped from 75 percent to 40 percent, and most of the remaining districts say they will adopt IPM after their current pest control contracts expire.

School officials trying to combat pest problems turned to pesticides in the last few decades. In a 1996 survey of Florida school districts, Koehler found that nearly all schools sprayed pesticides routinely, whether roaches, ants and rats were spotted or not.

But pest control presents a dilemma for schools, said Clay Scherer, a doctoral researcher and chairman of the State's School IPM Advisory Committee. The national Academy of Science reports that children may be more susceptible to pesticides than adults because of their small size.

"In the same classroom, you may have a child whose parents demand that he be able to go to school in an environment free of pesticides and another child whose parents demand he be able to attend school without being exposed to pests," Scherer said. "It's a challenging discussion because there are hazards posed by pesticides and pests. IPM offers a balance."

IPM as defined by the California "Regulators" after the local paper reported four young women were killed by pesticide poisons in the Fontana Unified School District. The Author was asked to bid on Integrated Pest Control there in the summer of 1998, but was stopped by Jim Mitchell of the DOA who said "it was illegal in California to control insects with soap and water or talcum powder." You can only use "registered" pesticide poisons to "control" pests. Then Lyndon Hawkins confirmed this in writing. After which the Author wrote Mr. Hawkins hundreds of letters, all of which he totally ignored. The main gist of his letters was "Is it really 'illegal' to wash a garbage can in California?" A dirty garbage can produces 1,000 flies and 2,000 maggots a week in warm weather, but if you simply wash the can with soapy water, you control/kill all of the flies. If the DOA would have simply answered the Author that it was o.k. in California to wash a can, we could have safely controlled pests in California; yet they ignored every letter he sent or faxed to them. When more children die in Fontana or anywhere else in California, a pest control operator will have pulled the "trigger", but the DOA will have surely aimed the "gun." Since that time the Author has written thousands of letters to Paul Helliker, all of which are posted on his web site at: <http://www.getipm.com>, all of which have been ignored.

IPM as defined by the Poison "Industry" - If you think the law or the government can change the poison "industry"; read the November, 1996 issue of Pest Control, President Sue Spiroff of the Pest Control Operators Association (PCOA) of West Virginia commented on their new State *IPM* law that passed in July, 1995: "At first they wanted it (IPM) restricted so much the janitors would only have been allowed to clean the schools with plain water." The PCOA of West Virginia has been instrumental in keeping the (new IPM) law from getting *out of hand* from a pest control operator's (PCO's) point of view. Once the (IPM) law passed, the (PCO) association took the initiative to put on three special seminars before the Sept. 1 due date, thereby *grandfathering in* (all) attending PCO's - (making all the poison applicators - "certified IPM professionals" within hours." John Lyle, a technical sales representative of Residex stated "All of our products (for IPM) are toxic, but none are hazardous." (If that is not double-speak, the Author does not know what is.) President Sue Spiroff then noted, the law mandates that there is a tier system done for treating pests. That is, despite the PCO's *judgment* of using what is considered a Level III pesticide on the situation right away, he or she must (first waste time and) monitor the situation, inspect it and then use a *Level I* which would include sanitation methods of treatment. If the problem persists, a *Level II* treatment, which includes baits, gels and dusts, can be applied. Level III requires 24-hour notification to parents and staff before application (of volatile poisons.) "Ironically more pesticide (poison) is put out in these progressive steps," president Spiroff said, "It takes away all *professional judgment*." "Only time will tell." President Sue Spiroff added: "I think this year is going to be one of trial and error. However, the law

is the law, so I don't know how much trial and error we can stand." (Dear Sue: I don't know how much of your "registered" poisons the children can stand.)

Note: At the time of Sue's comments, Get Set, Inc. had safely controlled all of the pest problems inside and outside at over 350 schools without ever using any Level III poisons, and the Vapor Dragon® cleans with only plain water, but it took us more than a few hours in a special PCO seminar to learn how to use over 2700 safe and far more effective alternatives. Obviously, to President Sue Spiroff, "professional IPM judgment" still means to simply spray volatile poisons whenever you have a pest problem, rather than wasting time learning alternatives, inspecting, cleaning, vacuuming, baiting, trapping, dusting, caulking, monitoring, etc. Truly Amazing! Someone may some day sue Sue. As for Mr. Lyle, someone ought to tell him what *toxic* means: all substances that are just plain poison, and even at low doses they can be fatal to humans; and the word *hazardous* according to the EPA are: Wastes that may burn, dissolve things, explode, irritate or cause allergic reactions. We believe EPA and any sane person would say pesticide poisons are both toxic and hazardous. There is a book entitled, New Solutions for a New Century, National Academy Press, Washington, DC, 1996, 144 pages that comprises the National Resource Council (NRC) recent report. They note "IPM" has strayed from the original ecological underpinnings that made it so novel and desirable in its early days. Current "IPM" approaches are frequently only product (poison) based and no longer emphasize safety, profitability and durability. That's why the Author calls our program Intelligent Pest Management®. **Note: Many entomologists are, in reality, pesticide (poison) salesmen. Always choose the control alternative that will be the safest for you, your family and pets and the environment.**

Your Health, By Vicki Monks

If You Spray Pesticides in Your Home, They Might Coat Your Children's Toys

While video cameras rolled at Rutgers University in New Jersey, a group of toddlers went about their usual business--snuggling noses into soft, plush stuffed animals, moving from toy to toy, sucking on their fingers, sucking on the toys. Later, as researchers reviewed the tapes, they counted each time a child touched a toy or moved a hand to a mouth.

Given the amount of news just before Christmas season about the potential hazards of certain soft plastics used in some toys, you might expect that the researchers were checking out how much those plastics end up in kids' mouths. You would be partially right. But this study was about children's exposure to toxic substances parents themselves unwittingly can put on their own children's toys and elsewhere inside homes.

Along with calculating childhood behavior patterns, the researchers had been analyzing the movement of roach and flea sprays commonly used in American homes. According to team leader Paul J. Lioy of the Environmental and Occupational Health Sciences Institute located at Rutgers, the scientists were surprised by their own results. "We expected the pesticides would volatilize and move outdoors or just dilute," Lioy says.

But instead the team discovered that plastic and plush toys attracted the pesticides; the poisons were evaporating off of floors, carpets and drapes, latching onto the toys and staying there for weeks after rooms had been sprayed.

The study, published last year, raises concerns that children may be at much greater risk from routine pesticide spraying than anyone had previously estimated, according to epidemiologist Devra Davis of the nonprofit World Resources Institute in Washington, D.C., and former science advisor to the U.S. Department of Health and Human Services. Since young children spend a lot of time putting things in their mouths, contaminated toys are likely to give them much higher doses of poison than adults would get in the same environment. "And of course, the younger the child, the greater the risk that exposure to pesticides could cause health problems," says Davis. Pesticides also can be absorbed through the skin.

Generally, exterminators and pesticide labels tell people to keep children and pets away from wet bug spray. Dried spray residues have not been considered a problem. But the researchers at the health-sciences institute discovered that the semi-volatile dried pesticides tend to leap around the room, moving from one object to the next.

Scientists have long known that this phenomenon takes place in the outdoor environment. It's called the grasshopper effect. Pesticides sprayed on southern soils volatilize, or evaporate, move northward and accumulate in cool places such as Lake Superior, where they pose a potential threat to a variety of wildlife species. Lioy's

team suspected that semi-volatile pesticides might behave in much the same way indoors, and their suspicions turned out to be correct. "It's like the grasshopper effect in your house," Lioy says. "But instead of going from Mexico to Canada, the chemicals move from the rug to the toy."

The team used a professional exterminator to treat two university apartments, using a fine mist of pesticide sprayed across carpets and floors. That's the same technique exterminators normally use to treat homes for roaches or fleas. The toys weren't put into the apartments until the rooms were aired out and the spray had dried.

When the scientists measured the amount of pesticide that collected on various objects, they found that plastics and foam attracted the chemicals more than anything else. "Toys are made of materials that have an affinity or ability to capture pesticides in greater concentration than other materials, such as metal or wood," Lioy says. "The polyfoam acts like a sponge for the pesticides. The plastic may electrostatically attract the vapor." And the plastics and foam continued to accumulate the pesticides up to two weeks after the apartments were sprayed.

According to Lioy, anything made of plastic or foam would have the same ability to attract pesticides. Toys are of special concern because children spend so much time handling them. He adds that foam pillows may also be a source of pesticide exposure, but pillows weren't tested in this study.

Davis thinks this study is especially important because the bug spray tested is one of the most widely used pesticides in the nation. Chlorpyrifos, which is also known by the trade name Dursban, is used to kill fleas, roaches, termites and any number of garden pests. The chemical is found in flea collars and dips, and in common household bug sprays such as Raid. The manufacturer, Dow AgroSciences, estimates that chlorpyrifos is sprayed in and around an estimated 20 million American homes every year.

Chlorpyrifos is an organophosphate, a class of pesticide that was originally developed as a nerve-gas agent for chemical warfare. Organophosphates work by paralyzing muscles, and in large amounts they can kill humans and other species in the same way that they kill bugs. In the winter of 1995, for example, biologists in Argentina discovered thousands of Swainson's hawk carcasses near fields that had been sprayed with the organophosphate monocrotophos. Farmers had been using that pesticide to kill grasshoppers. Biologists say as many as 20,000 Swainson's hawks may have died from the poisoning.

No one is certain what the health effects of long-term, low-level exposure to organophosphates might be. Dow AgroSciences researchers say their tests show that low-level exposures pose no threat. But other scientists disagree. Some studies have suggested that these pesticides may contribute to health effects ranging from immunological problems to birth defects, and according to the Environmental Protection Agency (EPA) more than 200 people have filed complaints alleging health problems from exposure to chlorpyrifos in their homes.

Those complaints include headache, dizziness, respiratory distress, abdominal cramps, nausea, vomiting, diarrhea, blurred vision, increased sweating, confusion and muscular weakness. Other studies have suggested a link between exposure to flea sprays and leukemia, brain tumors and other childhood cancers.

The EPA now urges that whenever this pesticide is used, it should be applied only in a fine stream in cracks and crevices and not sprayed in a mist over floors. Lioy agrees with that advice and also recommends that parents keep toys stored whenever children aren't actually playing with them for at least a week after pesticides are used in the home. And Davis adds that the safest course is to find alternatives to pesticides. Other ways to combat flea infestations, for example, include washing pets and frequent vacuuming of floors, carpets and upholstered furniture. "We've got to get smarter about using pesticides in the environments of our children," says Davis. "We can't eliminate all pesticide use, but we've got to start using fewer pesticides."

Free-lance writer Vicki Monks last wrote about the effects of toxics on the young in "Children at Risk," National Wildlife, June/July 1997, which can be found on the web at <http://www.nwf.org>.

Pesticide Law Approved

Elementary Schools Must Advise Parents Before Spraying

By PETER S. GOODMAN
Washington Post Staff Writer

Public elementary schools throughout Maryland soon will be required to inform parents in writing at least a day before they apply pesticides inside school buildings under a law adopted in the final hours of this year's General Assembly session in Annapolis.

In passing the law, Maryland's lawmakers placed the state at the forefront of a growing national movement aimed at ultimately curbing the use of pesticides, some of which contain toxins linked to a range of health problems, including cancer and birth defects.

No other state has passed a law forcing schools to notify parents of its pesticide plans, according to the National Coalition Against the Misuse of Pesticides, though San Francisco recently adopted a similar law and banned several pesticides from school buildings.

"This represents a critical move to educate and inform parents about potential adverse impacts on the health of their children," said Jay Feldman, executive director of the coalition.

Dru Schmidt-Perkins, Chesapeake program director for the environmental group Clean Water Action, said she hopes that the new law, which takes effect this

fall, will encourage school officials to limit their use of pesticides.

The bill was sponsored by Del. Joan Pitkin (D-Prince George's) and supported by an amalgam of environmental advocacy groups, labor unions and medical associations. In a strongly worded letter of support, Gov. Parris N. Glendening (D) called the bill "a small

price to pay to help protect the health of children."

But the bill was opposed by the pesticide industry, which feared it would unfairly demonize its products, and by the Maryland Association of Boards of Education, which argued that the bill amounted to an unfunded mandate that would complicate efforts to protect children from the potentially harmful effects of pests such as roaches and

rats.

"We use pesticides because we do care about children's health," said the association's executive director, Sue Buswell. "To notify every parent of a safe and prudent use of a pesticide is probably an unnecessary cost."

Buswell said most schools already provide parents with advance notification when they specifically request it—say, if they

have a child who is clearly allergic to certain chemicals.

Moreover, most schools already are seeking to limit their use of pesticides by undercutting the conditions that breed pests—cleaning kitchens and eliminating litter, for example.

Those arguments carried the day for the last three legislative sessions and, each year, the bill died in the House Environmental Matters Committee. But this year, a compromise was struck. Environmentalists agreed to limit to elementary schools the requirement that all parents be notified about planned pesticide use. In middle and high schools, parents and staff have the option of asking to be notified, in which case school officials are obligated to do so. Proponents also agreed to limit the law to cases where pesticides are applied inside school buildings, striking language that included outdoor applications as well.

"That's major, because if children are, say, playing soccer outside, they can end up rolling in the grass where pesticides were sprayed," said Ruth Berlin, founder of the Maryland Pesticide Network.

She said her son, now 12, suffered an allergic reaction three years ago that sent him into shock when he was exposed to a pesticide called safrotin at his private school in Annapolis. Safrotin is used to kill ants and roaches.

The bill was further altered when it reached the Senate Economic and Environmental Affairs Committee. Environmentalists agreed to cut the required advance notice from 48 hours to 24 hours.

Despite the compromises, those seeking to limit use of pesticides called the bill a significant accomplishment.

"There's a basic essential piece in there that we're really happy with," Berlin said. "It's a wonderful first step."

RNewswire, 08-APR-99: Mount Sinai School of Medicine and Pew Charitable Trusts Announce New Center for Children's Health and the Environment

Some 75,000 new chemicals have been developed and dispersed in the environment since World War II. The toxicity of the majority of these chemicals has never been tested, and even less is known about their specific effects on children. Moreover, little is known about how these chemicals may act in various combinations to affect human health.

Concern is growing among policymakers and pediatricians who want to protect children from known environmental hazards and to increase research into suspected risks. Recent federal policies on pesticides and air pollution, for example, specifically consider children's special vulnerability to pollutants. The American Academy of Pediatrics will soon release its Handbook of Environmental Health for Children, the "Green Book," a comprehensive guide to children's environmental health for pediatricians.

"Children may be more susceptible than adults to the effects of many pollutants," said Ruth Etzel, M.D., Ph.D., Chair of the American Academy of Pediatrics Committee on Environmental Health and Editor of the forthcoming AAP Handbook of Environmental Health. "Pediatricians welcome the efforts of the Center to better understand those effects, and to train physicians in diagnosing and treating diseases of environmental origin."

Dr. Landrigan, Professor of Pediatrics and Chair of Mount Sinai School of Medicine's Department of Community and Preventive Medicine, has gained national recognition as a leader in the research and prevention of childhood lead poisoning, asthma, and other diseases linked to environmental exposures. He chaired a committee at the National Academy of Sciences (NAS) that in 1993 issued the landmark report, Pesticides in the Diets of Infants and Children.

Research by Dr. Landrigan and others has shown that children differ from adults physiologically and in their degree of exposure to pollutants. Pound for pound, children eat more food, drink more water and breathe more air than adults. In addition, because children's bodies are still developing, they have less ability to metabolize, detoxify, and excrete toxins than adults.

In recent years, government agencies have begun to factor children's special vulnerability into federal health and environmental protection measures. The NAS report concluded that federal pesticide laws do not adequately protect children. Based on the NAS findings, Congress in 1996 passed new legislation that requires children's health to be considered in setting pesticide standards. In addition, recognition of the vulnerability of children's lungs to air pollutants led to new standards for ozone and fine particulates.

Good Housekeeping, May 1999, "Sick Schools" by Jean Davidson & Keith Mulvihill, *Environmental Chemist*, *Good Housekeeping Institute* stated in part: "Almost one in five schools nationwide has unsatisfactory indoor air quality, with problems ranging from asthma-triggering molds to potentially toxic fungi to chemical contaminants from pesticides or cleaning products, according to a 1995 congressional report..."

- ☒ Nazareth Area High School (built in 1955) in Nazareth, PA, where portions of the school still show signs of fungal contamination despite an ongoing cleanup effort that will cost \$2.6 million.
- ☒ Crescent Elementary School (built in 1965) in Suisun City, CA, where students are housed in portable classrooms due to microbiological contamination found in the main buildings, which have been closed since November 1998.
- ☒ Charles Haskell Elementary School (built in 1984), Summit Middle School (built in 1989), and Santa Fe High School (built in 1992) in the Oklahoma City area, all of which have been tested and found to have air-quality hazards including a toxic fungus. Cleanup costs are expected to be about \$4 million.
- ☒ White Center Heights Elementary School (built in 1943) in Seattle, which closed in August 1998 after toxic mold caused by leaky roofs and pipes and inadequate ventilation was discovered.

In each of these schools, students and teachers have complained of nasal congestion, headaches and fatigue, and in some cases, more serious problems have been reported, including dizziness, joint pain and other unexplained chronic illnesses...Health problems often occur among inhabitants of schools and other structures that have 'sick building syndrome,' a condition that causes a pattern of symptoms, which was first recognized by the World Health

Organization in 1983. The syndrome is closely linked to a generation of airtight buildings constructed beginning in the 1970's in an effort to conserve energy. In schools, the problems have been compounded by shoddy maintenance, which has made some buildings ideal breeding grounds for bacteria, molds and fungi, according to Jed Waldman, chief of the indoor air-quality section of the California Department of Health Services. But the problem isn't limited to newer buildings: Classroom trailers, widely used to handle overcrowding in schools, can trap unhealthful gases because these structures tend to have inadequate ventilation systems, and older schools with water leaks are also vulnerable to molds and fungi. Among the most dangerous of these substances is *Stachybotrys*, a toxin-producing fungus that can suppress immunity and cause headaches, fatigue, and, in large doses, even death. According to one study, several infant deaths in Ohio dating back to 1993 are believed to be linked to *Stachybotrys*, which was found in victims' homes following regional flooding. Preliminary research indicates that *Stachybotrys* may exist in up to 20 percent of American schools that have had water damage—and 'almost every school in the country has had water damage,' warns J. Danny Cooley, Ph.D., a microbiologist at Texas Tech University Health Sciences Center. 'Stachybotrys is a bigger player than we ever thought, and that's real cause for concern,' says Cooley. 'We know that high-level exposure to *Stachybotrys* will kill people. Right now, we're doing research to determine the impact of low doses.'...And when it comes to budgets, clean air has not been a high priority. 'Maintenance is expensive, and when education dollars are tight, it often falls to the bottom of the list,' says Minnesota State Senator Charles Wiger, who is sponsoring a measure that would provide \$125 million annually for school repairs, with nearly a quarter of that sum reserved for air-quality hazards. 'Repairs don't have the pizzazz that computers do.'"

On March 17, 1999 the NCAMP wrote:

The Honorable Carol Browner
Administrator
U. S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Re. Immediate action requested regarding public interest participation in a meeting on pesticides and schools taking place today and tomorrow (3/18/99).

Dear Administrator Browner:

I am writing you to express a deep sense of concern and hope for immediate corrective action in the lack of inclusion of public interest and environmental groups in an EPA-funded workshop, entitled National IPM in Schools Workshop, taking place today, March 17 and tomorrow, March 18 in Crystal City, VA. The invitation-only meeting to discuss integrated pest management in schools (IPM) is being organized by Indiana University on a grant that I understand comes through the Biopesticides, Pollution and Prevention Division of the Office of Pesticide Programs.

As a taxpayer, I am outraged. As a parent, I am deeply worried. As an environmentalist, I am disgusted.

Let me be blunt. The level of arrogance and one-sidedness associated with a government-supported meeting on children and schools not including the very public interest groups that at the grassroots have successfully promoted programs and policies to protect our children from pesticide use in the schools is beyond imagination. It runs contrary to EPA's stated interest in transparency and inclusion. This is all made worse by the fact that one of the biggest promoters of pesticide-intensive integrated pest management, the trade association representing conventional chemical-intensive pest control operators, the National Pest Control Association (NPCA), has a seat at the table. So does a consultant that works with the industry. I can assure you that, after having participated in a debate at the annual meeting of NPCA on the definition of IPM, the differences in definition are deep and serious and have profound ramifications when it comes to pesticide use reduction and implementation of programs in schools, homes and communities across the country.

When we brought to the Program's attention that the public interest community was absent from the invitation list, we were extended an invitation to sit in as an observer and asked not to make any comments. While it seemed odd that EPA would not want to reach out to the very people that have been instrumental in effecting practical changes in school pest management, it became absurd when I arrived for the first day as an observer and found the pro-chemical lobby seated at the table.

This is a very serious matter that raises critical concern about the integrity, sense of fair play, and degree to which dialogue on a critical issue that affects the health of children is truncated. For example, when one participant asked whether pesticides could be safely used around children, the response was basically yes. There was no discussion on the critical questions that EPA is struggling with under the Food Quality Protection Act on calculating children's exposure, pesticide impact on developing organs, aggregate risk calculation of dietary and nondietary exposure, and common mechanism of effect. Is it not important for the policy and program leaders who hold the decisions on pesticide use and our children's health in their hands to have the benefit of a full and balanced discussion of these issues? When parents say that they want to embrace the precautionary principle and take the extra steps to adopt an integrated pest management program that utilizes cultural, biological and mechanical practices first, wouldn't these policy and program leaders be better informed by a balanced discussion?

The national IPM meeting continues tomorrow. As an administrator seeking to ensure a thorough, fair and honest discussion of issues critical to the health of our children, I urge you to introduce some balance into these proceedings and invite a member of the public interest community. Many people have worked for many years at the grassroots to bring the issue of children's exposure to pesticides in schools to the level of local, state and national attention that it now receives. I urge you to make sure that these people's voices are heard as the United States Environmental Protection Agency engages in and supports the crafting of national policy on one of the most critical public health issues for our children. As you know, Beyond Pesticides/National Coalition Against the Misuse of Pesticides has a petition in front of EPA calling for the agency to promulgate national standards to protect children from pesticides in schools. I look forward to your response to this petition and working with you.

Thank you for your immediate attention to this request.

Sincerely,

Jay Feldman
Executive Director

CC. Susan Wayland
Marsh Mulkey
Janet Anderson, Ph.D.

National Coalition Against the Misuse of Pesticides
701 E Street, SE #200
Washington, DC 20460

Insecticide Resistance - Dr. Steven Valles noted in the April, 2000 issue of Pest Control that insecticide resistance, which is defined as a genetic change that results in control failure in the field, is one of the most important problems facing entomologists today. There are more than 500 arthropod species that have developed resistance to insecticides and the number is growing at an exponential rate. I would like to note we consider less than 1,000 insect species to be "**pests**".

Salmonella and/or Ecoli have been found on ants, beetles, roaches and silverfish and other crawling insects.

Limited Areas for Eating - If you expect to contain, limit and/or control pest problems, e.g., ants, rodents and cockroaches, it is vital you designate appropriate areas for eating, and then enforce your rules about eating only in these areas. If you do not, you might as well name your "pets" because they no longer are "pests".

"To the lazy hunter the woods are always empty." – E. O. Wilson

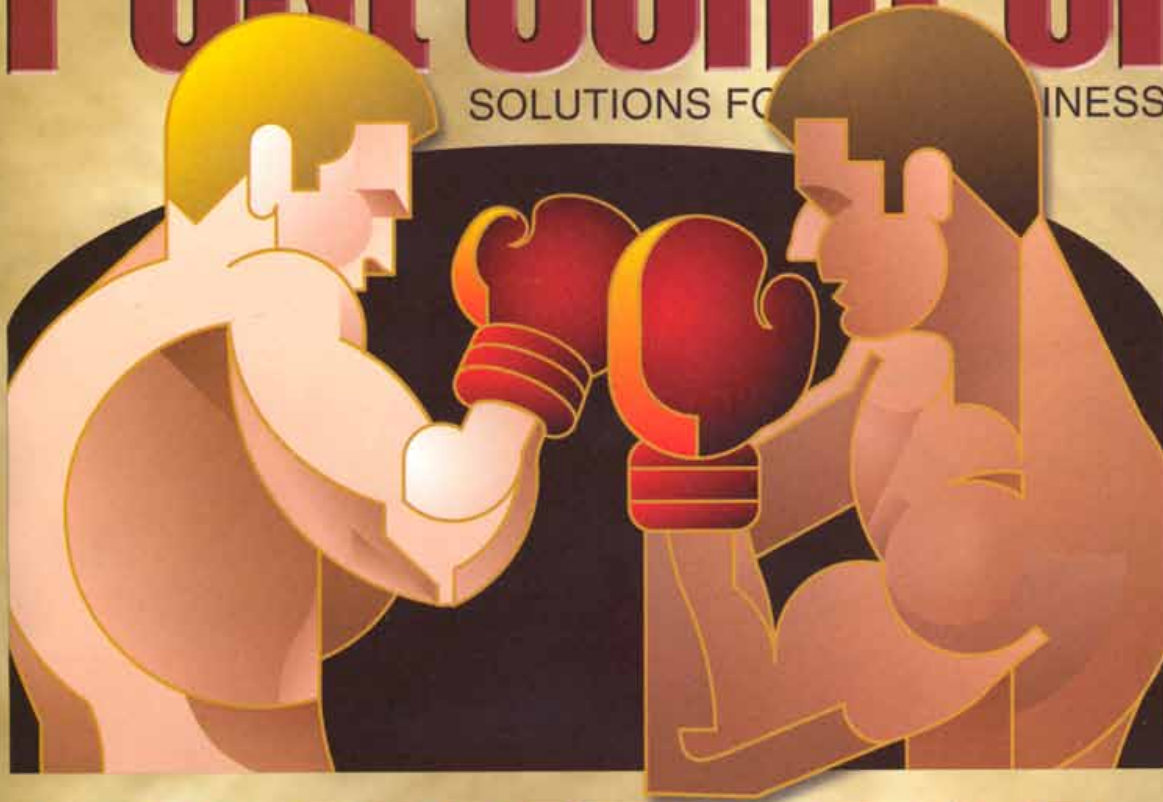
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Give the public what it wants

Offer control without pesticides — profitably

By Stephen Tvedten • Contributor

There are probably between 30 million and 50 million insects. We have named about 1 million, and only about 1,000 are considered to be pests. The rest are beneficial insects — we literally cannot survive without them.

Pesticides cannot distinguish between pests and beneficial species. Before the advent of pesticides, we lost about 3 percent of our crops to insect pests. Now we apply more than 4 billion pounds of pesticides just in the United States, and we lose many more times more of our crops to insect pests now than before we began spraying.

It has been calculated that \$520 million in annual crop losses are caused just by the pesticidal reduction of natural pest enemies in the United States. We accidentally lose about 25,000 to 100,000 species of plants, insects and animals every year to man's "footprint." Still, after waging all-out chemical war against the 1,000 pests for more than 60 years, we have not controlled, much less eliminated, even one pest species.

In the December 1997 article of *Pest Control* ("The future of pest control," page 38), Orkin Pest Control's Glen Rollins addressed the topic of the industry's future. Rollins, at the time vice president of corporate development for the Atlanta-based firm, was a speaker at the National Pest Management Association's Academy '97 in Scottsdale, Ariz.

"The first challenge is safety concerns that exist in the market," he said in the article. "When I started in '79, there was a certain number of customers that had some satisfaction if you treated their homes with malathion in warm weather. They really didn't have the phobia they have nowadays, and I think we've all heard that and known that for a while."

continued on page 57

Pesticides are part of IPM

Responsible, judicious use is the key component

By Alan Feuer • Contributor

Although my role in this debate is in support of the use of pesticides as part of the integrated pest management (IPM) practice, I want to ensure that readers understand that this will not be a polar position statement that makes IPM the enemy. Actually, I will go so far as to support IPM and bring some questions to the table where pesticide application should be reconsidered.

Even with those thoughts in mind, however, I am a supporter for correct pesticide use. I believe pesticides play a critical role in the IPM process.

Whenever I choose to use pesticides, I try to make a comparison between pesticides and medications. I am not a big fan of medication because it always has some sort of negative side effect associated with its use.

There is always risk with the use of medication, and the same applies to pesticides. The reward must simply outweigh the risk.

PERSONAL PERSPECTIVE

A few years ago, I hurt my back. I am sure that this injury was a combination of chronic overuse, and perhaps even some acute trauma. Apparently, years of football, running, weightlifting, crappy work truck seats and 4,000 termite jobs took their toll on my poor lower back.

The symptoms of my affliction were pain (obviously) and numbness in my right buttocks and leg. Quite frankly, it was the worst pain I had ever been afflicted by. On a scale of one to 10, it was an 11. Interestingly enough, though, the pain really did not seem to be where the actual problem existed.

Through advanced examination, it was determined that

I had herniated my L5 disk. The herniation of the disk was pressing upon my sciatic nerve, which was causing the pain and numbness.

On the advice of my doctor and from my own experience as an athlete, I was exercising daily, stretching and watching my posture. I also was drinking large amounts of water to hydrate my disks and regularly applying ice to my lumbar region. In my case, sitting was an excruciating experience, and I would rather walk three miles than ride in a car.

Although the physical therapy and lifestyle modifications allowed me to suffer through my problem, I was, for lack of a better expression, "crazy" from the pain and something had to be done. Back to the doctor I went.

Because my lifestyle modifications and curative therapy were not working, medication was suggested. In this case, the doctor chose advanced medicine in the form of a cortisone injection right into the offending disk. The goal was to stop the inflammation at the joint, which had failed to heal because of the inflammation.

I was in a vicious circle: The inflammation would not let the joint heal, and the injury continued the inflammation.

After two rounds of cortisone, and about five more weeks of clean living and therapy, I was down to a pain level of only one. Heck, at 37 years old, getting out of bed is a pain level of one. This I could live with.

I hope that most of you can connect the comparisons that can be made from this case as it pertains to pest management.

The bottom line is that in this case, there would be no cure without the use of medication.

In many pest management cases,

we cannot readily solve pest issues without the use of pesticides.

I will admit that my personal feeling is that our society is too quick to prescribe both pesticides and medication for maladies that might be avoided or corrected through other sensible steps. We also must consider that, from a safety/health perspective and even from an economic standpoint, pesticides and medicines can be lifesavers.



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THE PESTICIDE CHOICE

It's my opinion that pesticides are as logical a choice for responsible pest management as medicines are for responsible health care. In neither case should chemistry be the first choice to solve the problem.

In our position as pest professionals, we have the duty and obligation to make prescription for safe and sane pesticide applications. As with medicine, our "patients" come to us when they believe they have exhausted all other means to solve their dilemma. Simply put, there are many pest maladies that cannot be sensibly resolved without the proper use of pesticides.

How do we provide control of subterranean termites without the use of pesticides? Sure, if we build the home a certain way, we can avoid termites, but many homes are built in a way that termiticide applications are the only resolution.

I do not see a reasonable remedy to fleas, German cockroaches or many ant infestations without the use of pesticides. I am aware that there are other integrated processes that can be employed to resolve these pest issues, but the practicality of vacuuming, steaming, trapping and other non-chemical treatments is just not there.

The cost is excessive, and the effort for the afflicted party is considerable. Responsible pesticide applications will correct the problem quickly, effectively and affordably so that the victims of these pests can get back on with their lives.

How about our food supply? As a structural pest professional, I can only speak from the point of view as a consumer, as I have no background in pest management in agriculture. It seems to me that we have a greater percentage of our food making

its way to market since the advent of pesticide use in several phases of food production, handling, shipping, processing and storing. Didn't IPM originate with agriculture? Was it not a sensible process to save money and effort if pesticide applications were not needed at that particular time and place?

What I want to know is, when did pesticides become *taboo* within the world of IPM? We must continue to let the world know that yes, we will utilize the full IPM process, but no, it does not mean that we will not use pesticides when they are the logical choice.

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THE GREAT DEBATE

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Because I like to look at both sides to any issue, I might pose this question: When is it questionable to make a pesticide application? We are asked, requested or required to make applications every day that we know are not necessary.

I can think of three issues that torment me on a regular basis. I will defend pesticide use in one case and I will question the establishment on the others. Where does this leave us as professionals?

1. There are no pests present. Maybe we have done such a good job with preventative treatments that pests are no longer an issue. Should we stop making preventative applications to areas we know are likely to allow pest intrusion in the future? What about the financial considerations of not making preventative applications? Who is to lose their job because there are no more pests? Wasn't that the goal in the first place?

There are many of you who might be on the other side of this issue thinking, "There are other IPM-related things that can be accomplished at that account that don't include application of pesticides."

I agree, fully support and even demand efforts such as exclusion, tree trimming, mulch removal, terrain modification, monitoring, trapping, inspecting and reporting. The fact is, our clients do not want to have an influx of new pests into their environment, and a reasonable preventative application just seems sound.

2. Sanitation, exclusion and other cultural modification could be taken to remedy the problem. This is something we are becoming better at every year. In essence, it comes down to communication with the consumers

of our service. We as an industry have come a long way in the last 10 years in sharing ideas and tactfully and effectively communicating with our clientele. We have learned that our



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role is not merely to be the purveyors of poison, but rather true pest management professionals.

Trade publications and associations, as well as national educational seminars, the Internet, manufacturers and suppliers have brought us together to be the true professional industry that we always had the potential to be. We know how to modify environments, and we are really getting good at explaining this process to our clients.

We still find ourselves at odds with some of our clients when we professionally explain that their pest problem can be resolved without the use of pesticides. Why is this? Is it because non-chemical remedies are more expensive, at least in the short term? Is it because the consumer thought that we could apply our "magic dust" to the problem and it would go away? Maybe it is because the consumers themselves have to be involved in the

fix, and they really just wanted to hand their problem to us.

I don't have any easy-to-digest suggestions in this realm. I hope that we as an industry continue to identify, communicate and provide service for environmental modification as a professional pest management solution.

I do know that if we all make this a practice, consumers will see that our entire industry is serious about non-pesticide-based pest management.

3. There is a mandate that for some reason requires pesticide application. This issue is the most upsetting to me. There is nothing more frustrating than being required to make pesticide application without any recognition that the IPM process is available. One can find language in many bid parameters that require the "spraying" of pesticides at a certain

interval of time.

Also, anyone who knows me fairly well will tell you that I am disappointed in the statement "treatment recommended" on the NPMA-33 (formerly NPCA-1) form. Wouldn't the word or term "action recommended" or "take appropriate action for the management of pests" be so much better here? I hope that all of you include provisions or amendments to such shortsighted statements that allow you more sensible pest management options.

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DATA TELLS THE STORY

Rollins went on to say that according to a University of Kentucky study, 66 percent of Americans polled believed that pesticides caused cancer. For both their home and work environments, 77 percent were concerned about pesticides.

In addition, 85 percent wanted pesticides with no odor and 62 percent preferred only outdoor treatments. A whopping 83 percent of those polled would pay extra for a pest management professional (PMP) to use fewer pesticides in the account. In fact, 75 percent of that group would pay between 10 percent and 25 percent more for the same results.

Although 65 percent of Americans confessed to having a pest problem in a Gallup survey, Rollins reported, only about 10 percent of that group actually called a professional pest management firm. Of those surveyed, 54 percent believed pesticides that professionals used were harmful, and 64 percent said they would wait until a problem was severe before calling a professional. The

overriding reasons included the belief that pesticides may jeopardize the safety of their children or pets, and the belief that pesticides professionals use in treatments were too strong.

In 1997, Rollins concluded that he believed "our market could be a lot bigger than it is right now." Eight years later, I'd like to note that public perception of pesticides is even worse today. Obviously, there is greater potential profit today for those of you who want to use safer alternatives.

PERSONAL PERSPECTIVE

My personal transition from "spray

jockey" 35 years ago to an internationally recognized authority on *intelligent* pest management (IPM) today began when I lost family members and became seriously ill myself. I realized my use of pesticides had caused this. I had to detoxify, get well and then either find safer alternatives or leave the pest control business.

This is why I chose, and continue to choose, never to use any volatile regis-



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tered pesticides. First of all, I do not want to re-injure or harm myself, or anyone else. Secondly, I get far better control with my chosen alternatives. I have had schools hire me saying, "We know our pest problems will increase, but we do not want to poison our children." After a few weeks, they call me and ask why they no longer have any pest problems.

I have developed, researched and/or field-tested more than 2,000 safe (and far more effective) alternatives to pesticides. If I asked you to build a home and only allowed you to use one kind of tool — all the hammers or all the

saws or all the screwdrivers — you would think I was crazy. But that is what pest control has been basically since World War II and the advent of pesticides. When one pesticide no longer works, you continue to choose another pesticide, pesticide combination or application frequency. Still, you're using the same type of "tool."

When I started in pest control, we routinely used chemicals like DDT, chlordane, heptachlor and aldrin to such a degree that now it is considered "normal" for every living organism to contain residues of these now-banned toxins. If you think you are the exception, go have a blood test done.

There have been thousands of chemical trespass/injury lawsuits caused by even the labeled applications of these and other volatile pesticides. Even if you win, you still lose a great deal of money. There have been thousands of books and articles on the dangers of pesticides, and it is against federal law to say even

the labeled use of pesticides is "safe." There are thousands of potential customers in your area who want to hire a professional who does not use dangerous pesticides. Why continue to go against public opinion?

If you choose to use only safe and far more effective

pest control alternatives, you will find that there is no way your customers can or will sue you for chemical injury/trespass, and they will gladly sign any release protecting you from subsequent damage or infestation to hire you as a true IPM professional. They will be greatly pleased with the true IPM control you achieve. You will also find as I already have: They will gladly pay you more to truly protect their families and properties. **PC**

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**My rebuttal to those “doctors” who would say
there is no medical evidence that anyone has any
sensitivity to pesticides would be:
“Absence of evidence is not evidence of absence.”**

In 2007, according to the National Marketing Institute, there is a \$227 billion segment of consumers who want to buy green goods and services; because they are concerned and passionate about the environment, sustainability, social issues and health. In 1997, a University of Kentucky study found the primary reason consumers do not call a professional pest control operator when they have a pest problem is fear of pesticides.

Destiny is not a matter of chance,
It is a matter of choice; it is not a thing
to be waited for, it is a thing to be achieved.
– William James Bryan

I have set before you life and death,
blessing and cursing: therefore choose life,
that both thou and thy seed may live.
– Deuteronomy 30:19

Everything has been thought of before.
The problem is to think of it again.
– Von Goethe

Common Sense is not too common.
– Voltaire

“Never try to teach a pig to sing; it wastes your time and annoys the pig.” – The Author’s Dad

Schools are children sensitive facilities
and the job of pest control should not be given to some poison sprayer.

Like Rabbi Ben Ezra - My invitation to practice true IPM is always out:

“Grow old along with me,
The best is yet to be,
The last of life for which the first was made.
Trust G-d, see all, nor be afraid.”

