The IPM Institute of North America, Inc.

Harnessing Marketplace Power to Improve Health, Environment and Economics

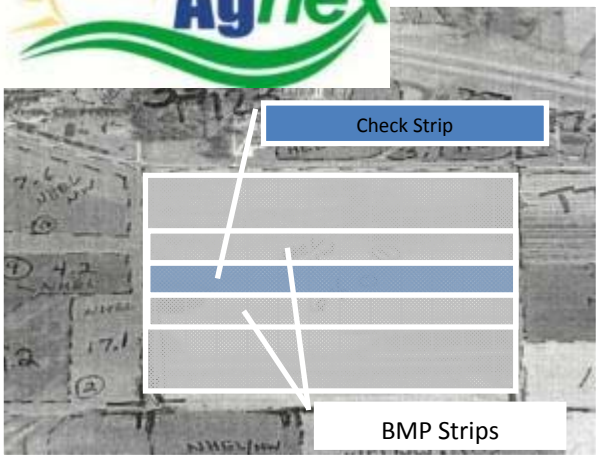
The BUSINESS CASE for IPM in Schools *or* How IPM Can Make Money for Your School District

Thomas A. Green, Ph.D.
President, IPM Institute of North America

Washington Coalition Meeting
Federal Way, WA
April 30, 2015

2014 Whole Foods Market Supplier of the Year Award for Outstanding Quality Assurance
2012, 2009 US EPA Sustained Excellence in IPM Award
2009, 2008, 2005, 2004 National Champion, US EPA Pesticide Environmental Stewardship Program
2005, Children's Environmental Health Recognition Award, US EPA Office of Children's Health Protection

Leveraging marketplace power to improve health, environment and economics

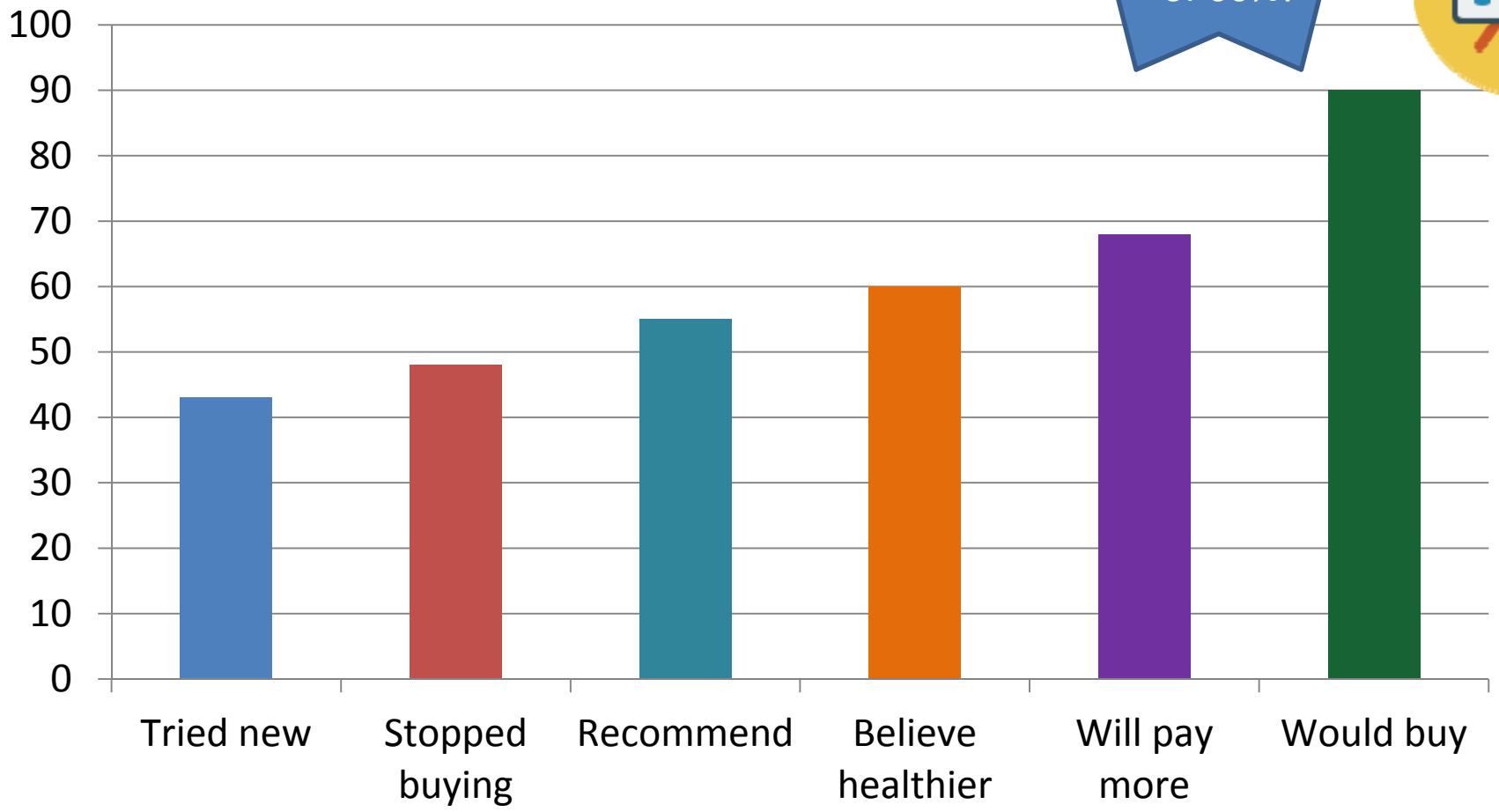


Eighth International IPM Symposium
March 2015, Salt Lake City

Market Drivers

Customers choosing green

Pesticides a top concern of 60%!



Source: http://www.contextmarketing.com/sources/feb28-2010/cm-ethicalfood-cover.pdf

Urban/Community Environments?

Green building accounted for 20% of all new US commercial construction in 2013.

- *National Mortgage Professional Magazine,* Oct. 30, 2014.

We need to be prepared for a future where the expectation is green!

Business Case?

- Fewer staff and student absences
- Better student performance
- Fewer pests, fewer costly complaints
- Greater staff satisfaction
- Lower liability
- Food safety
- Fire safety
- Energy, water conservation
- Better buildings
- *Direct pest management costs*
- *Indirect costs*

A Look at the BIG Picture

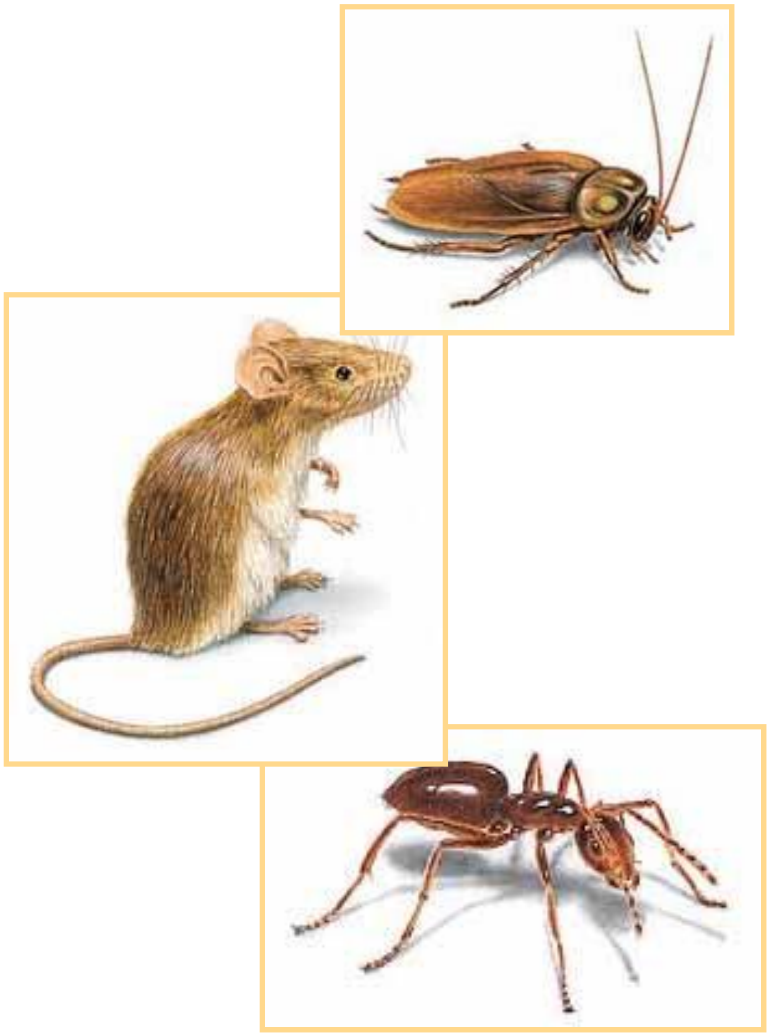
IPM is a Continuum!

I’m the real IPM baby!

BUSINESS CASE?

COMMON PESTS FOR SCHOOLS

- head lice
- bees/wasps
- rodents
- ants
- flies
- cockroaches
- mosquitoes
- termites
- birds
- weeds



IPM AND ASTHMA

Asthma is the number one cause of school absences

- *More than **12.8 million** school days lost every year!*

Affects 6% of school children nationally.

- Up to 28% in urban centers.

Treating children costs $3.2 billion per year!

IPM AND ASTHMA

Asthma symptoms can result from and be triggered by exposure to cockroaches, rodents, **dust mites,** cleaning products, aerosols including pesticides.

Mouse allergen levels higher in schools than in homes; students in classrooms with higher mouse allergens were absent more.

- Sheehan *et al.* 2009. *Ann. Allergy Asthma Immunol.*

Cockroach allergen levels in school highly significantly correlated with student asthma prevalence.

- Amr *et al.* 2003. *Ann. Allergy Asthma Immunol.*

Asthma Allergens?

What school nurses believe

Dust	78.4%
Mold	61.0%
Cleaners	34.1%
School supplies	28%
Bus fumes	26.3%
Construction	23.7%
Pets	19.7%
Paint	12.6%
Latex	4.3%
Drinking water	1.9%
Other	17.7%

- Klelb *et al.* 2007. *J. School Nursing*

Allergens researchers found in Boston schools

Mouse	high
Cat	moderate
Dog	low
Dust mite	zero
Cockroach	zero

- Sheehan *et al.* 2009. *Ann. Allergy Asthma Immunol.*

Review of studies of settled dust in schools showed many report at least one location where concentrations of cat, dog, dust mite and cockroach allergens exceeded risk levels.

- Tranter. 2005. *Clin. Exp. Allergy*

Attendance => Performance!

"student attendance is a statistically significant predictor of performance" on standardized tests.

- Musser. 2011. *Taking Attendance Seriously: How School Absences Undermine Student and School Performance in NYC.*

Long-term impacts!

Chronic absence in kindergarten strongly associated with lower reading and math performance in fifth grade for poor children

- Chang and Romero. 2008. *Present, Engaged and Accounted Ffor: The Critical Importance of Addressing Chronic Absences in the Early Grades.*

Attendance = $$ lost from budgets

% of enrolled students who attend school each day is often used for allocating funding. Los Angeles Unified estimated loss of $32/day (2011). *May only apply to unexcused absences.*

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IPM Reduces Pest Complaints!

School systems: 90% reduction in pesticide use; **85% reduction in pest complaints.**

Costs: no more than conventional

Gouge *et al. 2006. Amer. Entomol.*

Public buildings: 93% reduction in pesticide use; **89% reduction in pest complaints;** 55 buildings over 11 years.

Greene and Breisch. 2002. J. *Econ. Entomol.*

Effective door sweeps alone can cut pest complaints by 65%.

How?

An Ounce of Prevention…

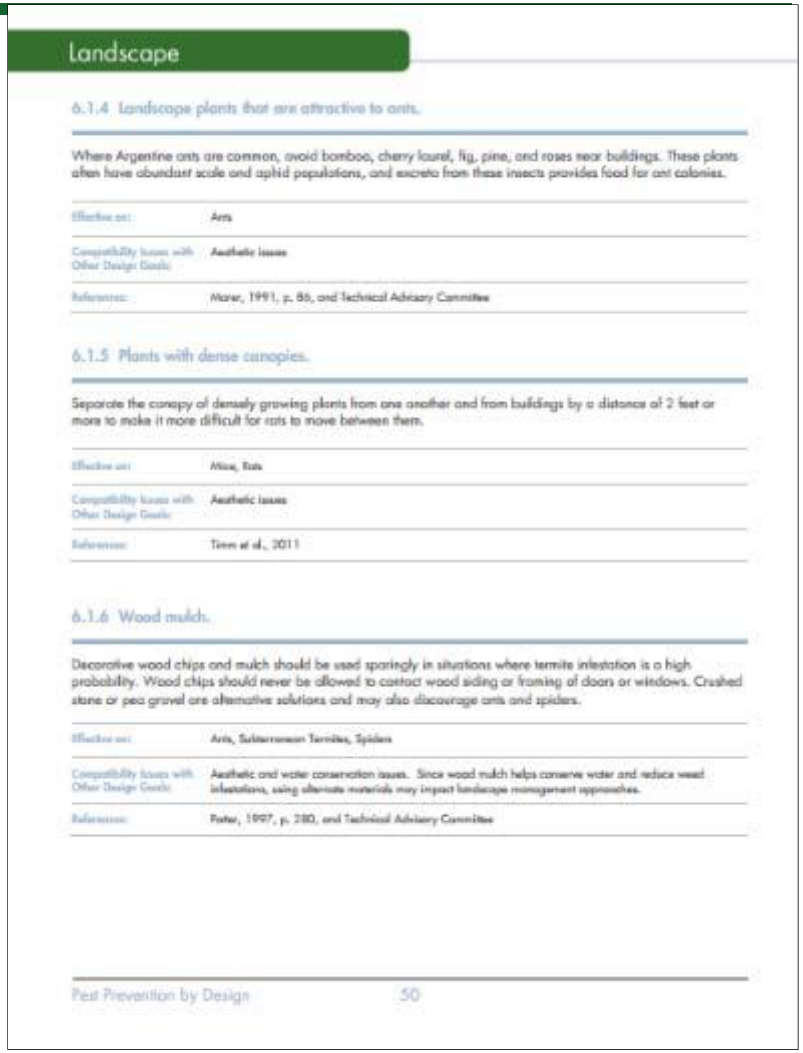
No roosting site here

Bird Heaven!

The school on the right spent $10,000 shortly after construction on bird netting. Netting was ineffective due to corrugations in the metal roofing. Birds were using the netting to support nests!

An Ounce of Prevention…

An Ounce of Prevention…



http://www.sfenvironment.org/download/pest-prevention-by-design-guidelines

Google "Pest Prevention By Design"

Pennywise…

Addressing why Pests are present

Effective door sweeps alone can cut pest complaints by 65%.

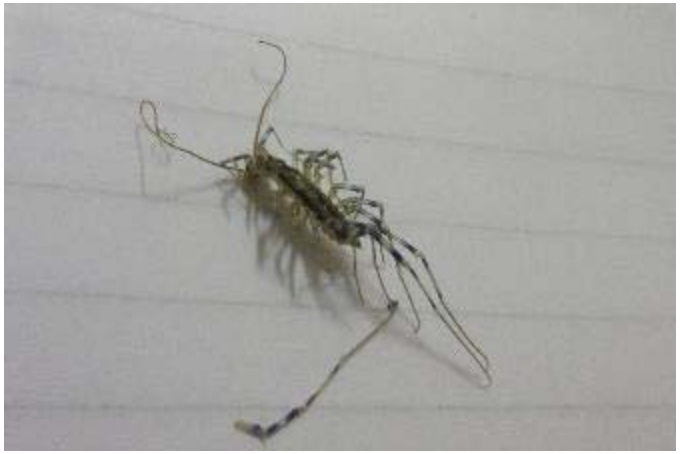
- **Pests, dirt, , staff satisfaction,** fire safety, energy conservation, food safety…

How much does each pest complaint cost you?

1. Stop work, log complaint.
2. Receive complaint.
3. Evaluate complaint.
4. Take action.
5. Log action, close report.

Wouldn’t you like to cut those costs by 90%?

HAPPY STAFF?



HAPPY STAFF?

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Liability

- **38% of first 29 IPM STAR-evaluated schools were out of compliance with own policy or legal requirements for applicator qualifications, posting, MSDS/labels, etc.**
- **38% had unmanaged pest problems**

Texas Boy Dead After Fire Ant Bites

Sept. 16,2013

By LIZ FIELDS and SYDNEY LUPKIN via WORLD NEWS

A Texas middle-school student died after ant bites he received on a football field last week sent him to the hospital with a severe allergic reaction.

Cameron Espinosa, an eighth grade student at Hass Middle School in Corpus Christi, Texas, died Sunday night after spending several days in an induced coma because of swelling in his brain, Driscoll Children's Hospital officials told KIII, an ABC affiliate in South Texas.

Espinosa, 13, had been huddled with fellow players during halftime of a game with nearby Hamlin Middle School when he began to scream, "Ants! Ants!"

A coach ran over and attempted to squirt the ants off Espinosa's legs using a water bottle shortly before the 13-year-old lost consciousness and collapsed on the field, according to a spokeswoman for the school.

The coach called 911 while an assistant coach ran to a nearby gym to find a defibrillator, which they used to restart the boy's heart.

Paramedics arrived shortly afterward and transported the boy to Bay Area Hospital in Corpus Christi. He was later transferred to Driscoll Children's Hospital, also in Corpus Christi.

The school had extra counselors on hand last week to counsel students who were at the

Chemical spray spurs middle school evacuation; students taken to hospital

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Related

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By Denise Wilson

Staff Writer

ST. CLAIR TWP. — A pest-control and weed-killing chemi
sprayed Tuesday into fields behind Edgewood Middle Sch
likely what caused the evacuation of the building and seve
students being taken to the hospital, officials said.

Forty-seven kids were affected — 21 were treated, some
to area hospitals or most were released to parents, said J

Posted: 2:26 p.m. Wednesday, May 21, 2014

VIDEO: School cafeteria shut down after students find roaches in food

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By Samantha Jordan

POLK COUNTY, Ga. — I usually like french fries with my mystery meat but students at Cedartown High School in Georgia got something else: roaches.

Students say they nearly swallowed the critters after discovering the roaches in their school lunch.

Liability

21% of the first 29 IPM STAR-evaluated schools had outdated/unregistered pesticides on the shelf.

Liability

- **Rodents:** transmit Hantavirus, typhus, SARS; trigger asthma attacks.
- **Birds:** carry viruses and other diseases. Airborne droppings can cause histoplasmosis.
- **Flies:** Feed on feces, garbage in one minute, and on food the next. Flies carry staph, *E. coli* and *Salmonella.*
- **Cockroaches:** cause asthma and trigger attacks. They carry germs that can cause pneumonia, diarrhea and food poisoning.

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Properly clean and maintain floor drains
= Improved fly control and food safety!

Clean trash handling areas.
Decaying organic matter =
flies in as little as two days!


CASA SOLANA
Teasdale

Beautiful commercial kitchen include excellent features including equipment on wheels, and good floor clearance for cleaning and inspection. Floor drains are generally easily accessible and fitted with plastic strainers for easy access.

Great access to typically “hard-to-reach” areas for cleaning and inspection.

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Hopatcong schools closed after electrical fire at administration building

By Justin Zaremba | NJ Advance Media for NJ.com
Email the author
on January 07, 2015 at 8:30 AM, updated January 07, 2015 at 8:38 AM

Print

Sponsored by: New Jersey Lottery

HOPATCONG – Borough schools were closed today after an electrical fire occurred at the administration building the night before.

At about 11:14 p.m., sporadic power outages were reported throughout the borough, and, shortly after, patrols responded to Hopatcong High School on a report of smoke in the boiler room,

Hopatcong schools were closed Wednesday after an elect
fire shut damaged the administration building the night b

Mario Tama/Getty

20-25% of electrical fires?

Electrical fire closes Rising Sun High School

BY: WMAR Staff
POSTED: 5:37 AM, Mar 18, 2015
UPDATED: 7:29 AM, Mar 18, 2015

Fire Safety? Energy Conservation?

WATER CONSERVATION?

BETTER BUILDINGS?

But pests are best predicted by the condition of homes, not the use or nonuse of pesticides.

Housing characteristic		% with rodents
Cracks/holes in interior	Yes	37.6
	No	7.7
Interior leaks in past year	Yes	35.8
	No	13.1

NYC Health

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Direct Costs?

1. Complaint processing
2. In-house staff salaries
3. In-house materials costs
   - Traps
   - Pesticides: Insecticides, herbicides, adjuvants, *fungicides*
4. Contractor costs
   - Structural, landscape pest management
   - “Retainer”
   - Add ons
5. Repairs? No
6. Cleaning? No
7. Aeration, overseeding? No, Maybe

IPM Reduces Pesticide Use!

School systems: **90% reduction in pesticide use;** 85% reduction in pest complaints.

Costs: no more than conventional

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Greene and Breisch. 2002. J. *Econ. Entomol.*

Effective door sweeps alone can cut pest complaints by 65%.

To Cut Costs It Takes a Team!

1. Facility Manager/IPM Coordinator
2. Maintenance Staff
3. Administrative Staff
4. Teacher
5. *Food Service Staff*
6. *Custodial Staff*
7. *Landscape and Grounds Staff (~55% of districts contract out at least some)*
8. School Nurse
9. *Technician/PMP (~80%)*

IPM Coordinator

- **Implements IPM policy.**
- **Maintain IPM plan, i.e., these are the pests we can expect, this is what we do to prevent/respond to problems for each key pest.**
- **Oversees contractors.**
- ***Facility manager?***
- **Model plan: *schoolipm2015.org***

Cost-effective Management

Is PEOPLE management!

- ***Everyone has role to play.***

- ***"Do what you're already doing, just think pests!"***
  - ***Maintenance, cleaning professionals***
  - ***School health professionals***
  - ***Food service professionals***
  - ***Teachers, administrators, parents, students.***

One motivated person can make a HUGE difference. And has! YOU can be a CHAMPION for your school district!

REMEMBER THIS GUY?

Visit StopSchoolPests.org!

Online IPM training resources in development

for **nine key groups**:

Introduction to IPM (All hands)

1. Facility Manager
2. Maintenance Staff
3. Administrative Staff
4. Teacher
5. Food Service Staff
6. Custodial Staff
7. Landscape and Grounds Staff
8. School Nurse
9. Technician/PMP

- **Must haves**
  - **Legal compliance**
    - **Applicator licensing, state certification**
    - **Employee right to know, MSDS/labels**
    - **Posting/notification**
  - **Safety**
    - **Proper PPE, spill kits**
    - **Organized, secure, ventilated pesticide storage**
    - **Emergency response plan**
  - **Professionalism**
    - **In business three years**
    - **Written protocol, written training plan**
  - **IPM**
    - **Site inspection, evaluation, testing, recommendations**
    - **Least-toxic chemical controls if reasonable non-chemical measures are not adequate (natural and synthetic)**
    - **Specific criteria for least toxic, reduced exposure**
- **Scored elements: meet minimum score**
  - **Advanced, experimental, variable practices**
  - **Not a "must" for a good green service**
  - **E.g., offering cleaning, maintenance services.**

Common deficiencies corrected…

- **Regular applications of spray-applied insecticides, typically for cockroaches and/or ants.**
- **Routine maintenance of rodenticides in tamper-resistant bait stations, maybe some tracking powder.**
- **“No pest problems reported/observed” noted on invoice, but pesticide applications made anyway.**
- **No training beyond licensed applicator requirements.**
- **Generally cockroaches, mice, drain flies present, lots of conducive conditions.**

People, training, tools…

How much does it cost our industry to pay technicians to rebait escutcheons?

Seal them once and be done with it!


Certification Outcomes – Initial Evaluation/Certification
Initial Evaluation Report
Final Evaluation Report
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent of participants
Inspection is first step
Written and verbal recommendations
Application made only after diagnosis
No routine applications
Pesticide labels & MSDS sheets available
No fogging or residual sprays to exposed surfaces
Dusts sealed after application
Insecticide baits in tamper-resistant container or true crack or crevice
Rodenticides used in ways that greatly reduce exposure potential
Evaluation Criteria

Results!

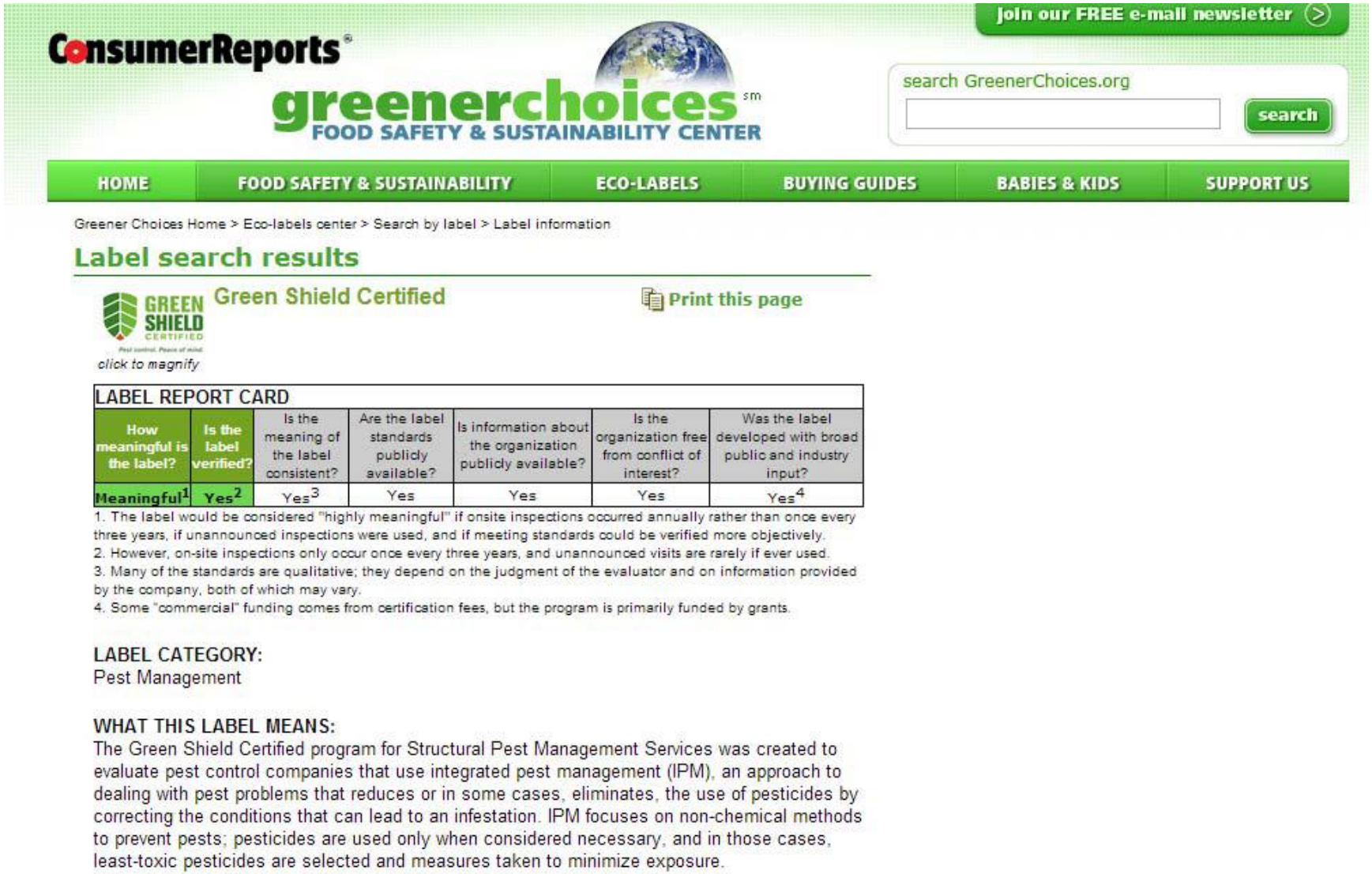
"Green Shield Certification made us aware of areas in our green approach which required more attention. We became more aware, more enthusiastic, more focused, and more committed to green overall."

- Lynn Frank, B.C.E. & Technical Director, Suburban Exterminating, Smithtown, NY

"The certification process helped us improve our IPM services and organization, and we are now more efficient and consistent in our approach to providing effective, prevention-based pest control. We're also better able to communicate that approach to our customers."

- Rita Bonamo, President, Black Widow Termite & Pest Control, Valley Stream, NY

Rated “Meaningful” by CU



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Label search results

Green Shield Certified

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click to magnify

LABEL REPORT CARD

How meaningful is the label?	Is the label verified?	Is the meaning of the label consistent?	Are the label standards publicly available?	Is information about the organization publicly available?	Is the organization free from conflict of interest?	Was the label developed with broad public and industry input?
Meaningful[1]	Yes[2]	Yes[3]	Yes	Yes	Yes	Yes[4]

1. The label would be considered "highly meaningful" if onsite inspections occurred annually rather than once every three years, if unannounced inspections were used, and if meeting standards could be verified more objectively.
2. However, on-site inspections only occur once every three years, and unannounced visits are rarely if ever used.
3. Many of the standards are qualitative; they depend on the judgment of the evaluator and on information provided by the company, both of which may vary.
4. Some "commercial" funding comes from certification fees, but the program is primarily funded by grants.

LABEL CATEGORY:
Pest Management

WHAT THIS LABEL MEANS:
The Green Shield Certified program for Structural Pest Management Services was created to evaluate pest control companies that use integrated pest management (IPM), an approach to dealing with pest problems that reduces or in some cases, eliminates, the use of pesticides by correcting the conditions that can lead to an infestation. IPM focuses on non-chemical methods to prevent pests; pesticides are used only when considered necessary, and in those cases, least-toxic pesticides are selected and measures taken to minimize exposure.

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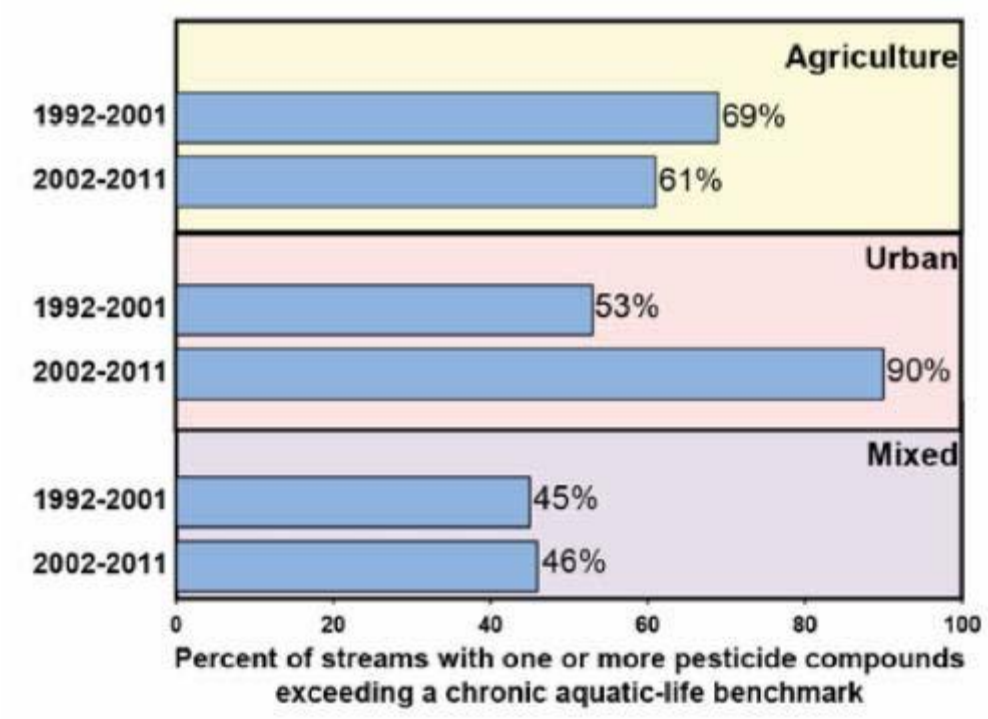
- ✓ *Pest management contract costs*
- *Indirect costs*

Indirect costs?

What's a squirrel worth?

Indirect costs?

Aquatic organisms?

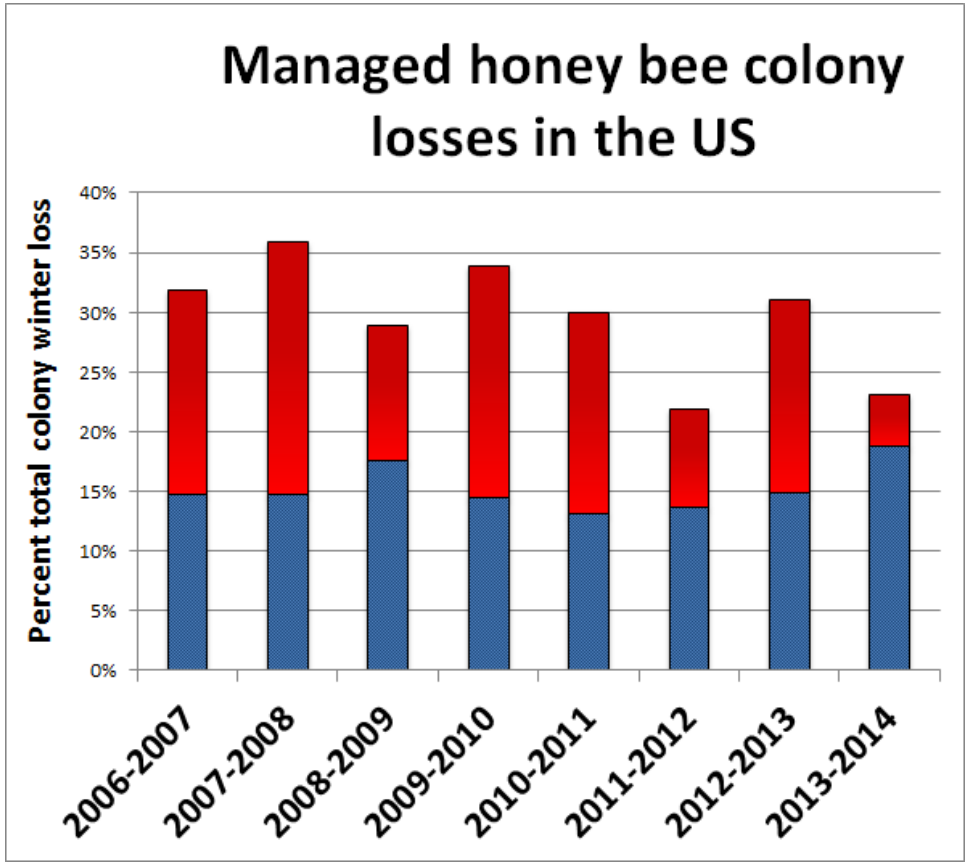


Stone, Gilliom and Ryberg. 2014 Pesticides in U.S. Streams and Rivers: Occurrence and Trends during 1992–2011. *Environ. Sci. Technol. 48*(19):11025–11030.

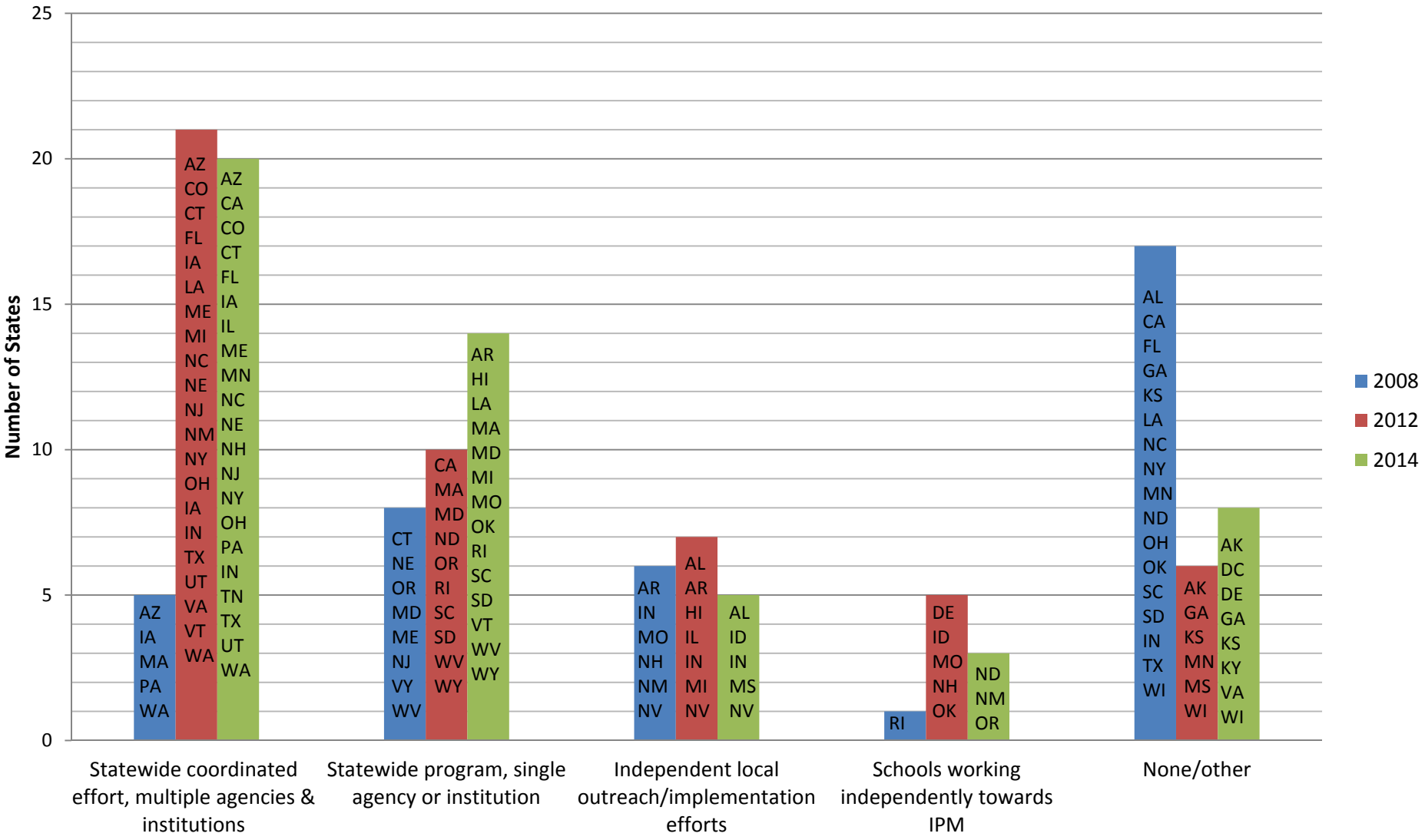
- **From 2002-2011, pesticides above levels of concern for aquatics in 90% of URBAN monitoring sites, up from 53% in the prior decade.**
- **Fipronil was the most frequently found, followed by dichlorvos.**
- **Samples above levels of concern for human health way down in second decade. During the first decade, chorpyrifos and diazinon declined, with pyrethroids increasing.**
- **Changes in pesticides found driven by regulation and new products.**
- ***Not the whole story: Neonicotinoids, fungicides not included.***

Indirect costs?

- **Pollinators? ~$29 billion!**
- ***Read pesticide labels for new and pre-existing cautions.***



Progress towards IPM in all of our schools!



Closing thoughts…

Think Big!

As in BHAG: Big Hairy Audacious Goals

"Remember, they won't be reading your resume at your funeral."

- **Rich Kozlovich, Pest Management Inc., Cleveland, OH**

Join Us!

Contact: ipmworks@ipminstitute.org

Google: Business Case for IPM in Schools