Northeastern IPM Center Partnership Grants Program

Report for State Network Projects – Fall 2008

A. Grant Data

- Today's date: 12/03/2008
- Title: Facilitating Informed Decision-Making on Maryland Pesticides
- Project Type: STATE NETWORK PROJECT
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- Project Director: Amy E. Brown, Ph.D.
- Co-Project Directors/Team members (name, title, institution): N/A
- State(s) involved: Maryland
- Funding Year(s): 2009
- Funding amount: $5000

B. Nontechnical Summary

The Maryland State Network Project (MSNP) was designed to gather and transmit information on issues relevant to current and transitional pest management strategies. MSNP aims to improve the level of knowledge, awareness, and understanding of local, state, regional, and national pest management practices. MSNP is the primary information source for federal and state regulatory agencies and other agencies regarding use and usage of all Integrated Pest Management (IPM) tactics, including pesticides, in all IPM settings in the state.

MSNP delivers pesticide regulatory and policy information to Extension educators, growers, crop consultants, and pesticide users in the state; gathers pest management data from researchers, Extension educators, growers, crop consultants, and pesticide users; analyzes these data to estimate the impacts of changes in pesticide regulations on agricultural productivity in Maryland; solicits input from other states in the mid-Atlantic region on shared commodities; and shares this information with other states in the mid-Atlantic region, the Northeastern Integrated Pest Management Center (NEIPMC), the US Department of Agriculture (USDA), and the US Environmental Protection Agency (EPA).

C. Objectives

Objective 1: Answer queries posed by federal regulatory agencies regarding the use of pesticides and other IPM tactics throughout Maryland.

From October 2007 - September 2008 only two requests were received from NE IPMC. The first communication from NE IPMC constituted a request to inform stakeholders and other interested

parties of a comment period extension on the pesticide endosulfan; this information was duly distributed in a *Just-In-Time* Notice. The second request from NE IPMC (opportunity to comment on a Japanese proposal to revise the Maximum Residue Levels for 11 pesticides on various crops) was unable to be processed because repeated attempts to obtain appropriate background documents from NE IPMC resulted in unreadable or incomplete files.

Objective 2: Help process, when necessary, subcontracts between the Northeastern IPM Center and other entities of the University of Maryland.

MSNP facilitated administration of the grant, Surveying and identifying thrips species in vegetable crops throughout the mid-Atlantic region. The PI on this grant is Dr. Gerald Brust.

D. Results

Historically, MSNP has provided the mechanism to collect information from primary sources and to transmit it back to federal agencies including USDA and U.S. EPA. Requests for information on pesticide use and needs in Maryland are transmitted by the MSNP Project Director to Extension campus-based and field-based faculty, consultants, and other appropriate individuals and groups. Their responses are provided back to NE IPMC both directly and through the MSNP office. MSNP maintains two systems through which pesticide information of interest is collected.

- The first system consists of identifying knowledgeable experts from a list maintained in the MSNP office. The list includes Extension specialists and private consultants in the state and region. Upon receipt of a request for information from NE IPMC, the MSNP Director contacts these individuals directly via email and solicits their input. Details of the request from NE IPMC are provided and a deadline for response is identified. These contacts are asked to provide feedback directly to the office and/or individual identified in the email request and to copy the MSNP Director and the NE IPMC Co-Director. As appropriate, the experts are informed that non-response within the deadline period will be interpreted as either that the pesticide use in question is not important in the state of Maryland, or that the exerts did not feel they could offer meaningful comment.

- The second means by which information flows through MSNP is the *Just-In-Time (JIT)* ListServ, which distributes notices to Maryland stakeholders on pesticide issues. Subscribers to the *JIT* service are notified of upcoming pesticide policy-related meetings; requests for comment on proposed actions such as cancellations, restrictions, or changes in registrations; and other time-sensitive pesticide issues. Being on the *JIT* Listserv maximizes the time subscribers have to plan for meetings, learn about possible actions, or prepare comments. Interested clientele subscribe to the free notification service via the MSNP web site (see above).

From October 2007 - September 2008 only two requests were received from NE IPMC. The first communication from NE IPMC constituted a request to inform stakeholders and other interested parties of a comment period extension on the pesticide endosulfan. This information was duly distributed in a *JIT* notice.

The second request from NE IPMC concerned the opportunity to comment on a Japanese proposal to revise the Maximum Residue Levels (MRLs) for 11 pesticides on a wide range of crops. The pesticides under consideration included amisulbrom, oxadiargyl, chromafenozide, cyazofamid, daimuron, tiadinil, nitrapyrin, novaluron, fenhexamid, penthiopyrad, and metaldehyde. Presumably, the MRL revisions could affect trade. Unfortunately, the Excel file sent by NE IPMC describing the proposal details was unreadable. A draft *JIT* was prepared and a series of emails between MSNP Project Director Brown and NE IPMC Co-Director Koplinka-Loehr ensued in attempts to retrieve a useable file. The file ultimately received contained information on only one of the 11 pesticides. Because MSNP was unable to provide adequate detail to allow interested parties to provide informed comment, the *JIT* notice was not sent out.

ADDITIONAL PROJECT ACCOMPLISHMENTS THAT ADDRESS GENERAL GOALS OF NE IPMC

1. Distribution of information

   a. Conferences

   The Maryland PEAP Coordinator holds annual In-Service Training for Extension field faculty on pesticides. The purpose is to ensure that Extension personnel have the most current information on pesticides, pest management, and alternative strategies before they begin planning grower meetings, plant clinics, recertification meetings, and other opportunities for interaction with producers, dealers, crop consultants, etc. Information and training tools presented during In-Service help them prepare to keep their own clientele informed. Field faculty offer training sessions and various meetings for growers and other Extension clientele during the late fall and winter months when field work is not ongoing. Extension educators use these meetings to educate clientele on new pesticides and/or new uses; new alternatives to control pests; new pest management thresholds, sampling techniques, and strategies; and new policies on pesticides and pest management. In-Service Training sessions serve as a means to distribute new and revised leaflets, bulletins, teaching tools, etc. so that Extension faculty can transmit the information easily to their own clientele. The 2008 agenda included regulatory/policy issues. Information on MSNP, including its objectives and accomplishments and solicitation for input was presented by Director Amy Brown during the 2008 PEAP In-Service Training for Maryland Cooperative Extension agents and regional specialists. Maryland Cooperative Extension personnel were encouraged to participate in activities related to the overall goals and objectives of the NEIPMC. The following outline identifies specific topics presented during 2008 PEAP In-Service Training related to NEIPMC goals and objectives. In addition to materials distributed by the Maryland Department of Agriculture addressing the first topic listed below, Maryland PEAP

distributed a complete packet of informational materials to support the remaining topics (list of handouts attached, Appendix A).

- Maryland Regulatory and Policy Update
  - Ongoing and emerging issues
  - Enforcement trends

- Federal Regulatory and Policy Update
  - Long-term shift: reduced reliance on animal testing for pesticides
  - New trend: label-mandated training / product stewardship
  - New issue: label language pointing to "safer" products for consumers

- Emerging / Evolving Issues
  - New pesticide resources
  - Colony Collapse Disorder resources
  - Agricultural Health Study

- Research Report from Pesticide Education & Assessment Program
  - Wear testing of garments for pesticide applicators
  - Motivators and barriers to adoption of IPM practices by consumers
  - Disease avoidance behaviors in pesticide applicators

b. Publications

Extension publications: Publications in the *Briefs* series are aimed at Extension educators to provide background in their contacts with pesticide applicators, government agency officials, consultants, other stakeholders, and the general public. During the project reporting period, seven new *Brief*s and one Cooperative Extension report (identified below; attached as Appendices B – I) were developed to meet MSNP objectives.

- Pesticide Educators' Brief, *Pesticides in the News: Azinphos-Methyl*
- Pesticide Educators' Brief, *Pesticides in the News: Carbofuran*
- Pesticide Educators' Brief, *Pesticides in the News: Rodenticides*
- Pesticide Educators' Brief, *Pesticides in the News: Soil Fumigants*
- Pesticide Educators' Brief, *New Pesticide Resources on the Web*
- Pesticide Educators' Brief, *Tackling Pesticide Policy Issues through EPA Workgroups*
- Pesticide Educators' Brief, *PEAP Current and Planned Research Projects*
- Report to Maryland Cooperative Extension, *In the Pipeline -- Pesticide Policy and Regulatory Developments*

Peer-reviewed publications: A paper addressing implications of web-based labeling was published during the grant period. Although targeted to pesticide safety educators, the issues discussed in the paper are pertinent to the user community in general. The paper may be accessed at http://jpse.org/

- A. E. Brown. 2008. *Web-based Distribution of Electronic Labels: Implications for Pesticide Safety Education.* J. Pestic. Safety Educ.

2. Coordination with other agencies and programs

a. Maryland IPM

The Coordinators of the PEAP and IPM Programs both hold appointments in the Department of Entomology at the University of Maryland. During the grant period, the Coordinators worked closely on projects and issues of significance to all programs. The programs are already strongly linked, with both formal and informal avenues of communication.

b. State and Federal Agencies

MSNP Project Director Amy Brown serves as the principal liaison to federal and state agencies and to the land grant institution on pesticide issues. The PEAP Coordinator serves on the U.S. EPA Pesticide program Dialogue Committee (PPDC), the Agricultural Health Study National Advisory Panel and the (Maryland) Governor's Controlled Hazardous Substances Advisory Council, and is a member of the University of Maryland Homeland Security Panel of Experts.

c. Other State Network Programs in the Mid-Atlantic Region

MSNP continued to cooperate and communicate closely with Delaware, New Jersey, West Virginia, and New York on issues of interest to the region. The Northeast TriAgency Meeting at Rutgers in September 2008 served as a primary forum in addition to email and telephone communication between SNP PIs year-round.

E. Impacts

MSNP provided opportunity for informed comment to stakeholders and interested parties to help regulators develop and implement sound policy on pesticides. News on pesticide-related developments including new or updated policies and regulations as well as actions proposed for consideration was distributed to stakeholders and interested parties throughout the project period. Extension educators extended the information through their own county newsletters, plant clinics, meetings and other outreach to ensure growers were kept informed and could plan appropriately for changes. Growers were enabled to continue to produce crops with available pesticides.

F. Appendices

Appendix A: MSNP Materials Included in Packets for In-Service Pesticides Training 2008
Appendix B: Pesticide Educators' Brief, *Pesticides in the News: Azinphos-Methyl.*
Appendix C: Pesticide Educators' Brief, *Pesticides in the News: Carbofuran.*
Appendix D: Pesticide Educators' Brief, *Pesticides in the News: Rodenticides.*
Appendix E: Pesticide Educators' Brief, *Pesticides in the News: Soil Fumigants.*
Appendix F: Pesticide Educators' Brief, *New Pesticide Resources on the Web.*
Appendix G: Pesticide Educators' Brief, *Tackling Pesticide Policy Issues through EPA Workgroups.*
Appendix H: Pesticide Educators' Brief, *Pesticide Education & Assessment Program Current and Planned Research Projects.*

Appendix A.

MSNP Materials Included in Packets for InService Pesticides Training 2008

Conference Details
Agenda
Instructors List
Attendees List
Evaluation Form

Emerging/Evolving Issues
Pesticide Safety Educators' Brief: *New Pesticide Resources on the Web*
Colony Collapse Disorder -- *Home page, North American Pollinator Protection Campaign (NAPPC)*
Colony Collapse Disorder -- *NAPPC web page, Reducing Risk to Pollinators: Pesticide Use in Agriculture*
Pesticide Information Leaflet No. 44: *Recent Findings from the Agricultural Health Study*

Pesticide Updates for Trainers
Pesticide Safety Educators' Brief: *Pesticides in the News -- Azinphos-Methyl*
Pesticide Safety Educators' Brief: *Pesticides in the News -- Carbofuran*
Pesticide Safety Educators' Brief: *Pesticides in the News -- Rodenticides*
Pesticide Safety Educators' Brief: *Pesticides in the News -- Soil Fumigants*

Pesticide Updates for Applicators
EPA Soil Fumigants Fact Sheet: *Buffer Zones*
EPA Soil Fumigants Fact Sheet: *Posting Requirements*
EPA Soil Fumigants Fact Sheet: *Agricultural Worker Protections*
EPA Soil Fumigants Fact Sheet: *Site-Specific Fumigant Management Plans*
EPA Soil Fumigants Fact Sheet: *Emergency Preparedness and Response Requirements*
EPA Fact Sheet: *RED Fact Sheet for Methyl Bromide*

Pesticide Policy
Pesticide Safety Educators' Brief: *Tackling Pesticide Policy Issues through EPA Workgroups*
Outline: *In the Pipeline -- Pesticide Policy and Regulation Developments*

Pesticide Education & Assessment Program Activities
Pesticide Safety Educators' Brief: *Pesticide Education & Assessment Program Current and Planned Research Projects*

Appendix B.

– Pesticide Safety Educators' Brief –

Pesticides in the News: Azinphos-Methyl

Amy E. Brown, Coordinator
Pesticide Safety Education Program
Maryland Cooperative Extension

July 2008

Issue Summary

EPA has published an order canceling and amending the registrations of pesticide products containing azinphos-methyl (AZM) to terminate the remaining uses of this pesticide by 2012, as voluntarily requested by the registrants. AZM is an organophosphate insecticide that poses potential risks of concern to farm workers, pesticide applicators, and aquatic ecosystems, while also providing important pest control benefits to growers of apples and other crops.

Risks Identified

AZM poses risks to agricultural workers, water quality, and aquatic ecosystems. There are no residential uses and no dietary risks of concern. Since there are no dietary risk concerns for AZM, no tolerances are affected by this action. Cumulative dietary risks from the organophosphate pesticides also are not of concern. For additional information, see the OP cumulative risk assessment at http://www.epa.gov/pesticides/cumulative/index.htm.

Actions Taken

Consistent with EPA's November 2006 final decision for the remaining uses of AZM, the cancellation order published in the Federal Register on February 20, 2008 terminates the last AZM products registered for use in the United States. It includes the following provisions.

- Brussels sprouts and nursery stock. Distribution and sale of AZM products labeled for use on these crops was terminated effective February 20, 2008, and use of AZM products on these crops is prohibited effective September 30, 2008.
- Walnuts, almonds, and pistachios. AZM use on these crops is prohibited effective October 30, 2009.
- Apples, pears, cherries, blueberries, alkali bee beds, and parsley. AZM use on these crops is terminated effective September 30, 2012.

All distribution, sale and use of remaining AZM products will be prohibited as of that date, except as provided in the existing stocks provisions of the order.

Data Considered

In arriving at the decision to phase out uses, EPA reviewed registrant-submitted data on AZM use, ecological effects, and biomonitoring of workers performing post-application tasks, such as thinning and harvesting fruit trees. The Agency also considered information from other sources including Washington State Medical Monitoring, a 10-year compendium of National Water Quality Assessment (NAWQA) Program water monitoring data, comments from stakeholders, and ecological and worker exposure incident reports. EPA conducted extensive stakeholder outreach and information gathering during the comment period on the proposed decision, including visits to growers and farm workers in Michigan, California, Oregon and Washington.

The Agency expects growers of the crop uses of AZM being phased out to successfully transition to the available safer alternative pesticides. To facilitate this transition, growers, registrants and other stakeholders are meeting periodically during the phaseout to discuss transition issues including the availability of alternatives, as well as newer pesticides in the pipeline to replace AZM. Co-sponsored by EPA and the U.S. Department of Agriculture (USDA), this AZM Transition Issues Workgroup meets under the auspices of EPA's Pesticide Program Dialogue Committee (PPDC).

Additional Information

Further information about EPA’s review of AZM is available in docket number EPA-HQ-OPP-2005-0061 at http://www.regulations.gov and on the Agency's AZM Web page, http://www.epa.gov/pesticides/reregistration/azm/ .

References

1. Azinphos-Methyl Phaseout. http://www.epa.gov/pesticides/reregistration/azm/phaseout_fs.htm. Accessed 08/04/2008.

2. *Pesticide Program Updates*, U.S. Environmental Protection Agency, Office of Pesticide Programs, 02/22/08.

Appendix C.

– Pesticide Safety Educators' Brief –

Pesticides in the News: Carbofuran

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July 2008

Issue Summary

Due to considerable risks associated with the pesticide carbofuran (Furadan) in food and drinking water, EPA is revoking the regulations that allow carbofuran residues in food. Even though carbofuran is used on a small percentage of the U.S. food supply and therefore the likelihood of exposure through food is low, EPA has identified risks that do not meet food safety standards. In addition, EPA is proceeding on the path toward cancellation of the pesticide registration, which will address the risks to pesticide applicators and birds in treated fields. As part of this effort, EPA is also releasing its response to the peer review conducted by the independent Scientific Advisory Panel and the agency's response to the U.S. Department of Agriculture's comments on the effect of the cancellation of carbofuran on the agricultural economy.

Risks Identified

Aggregate Exposure

EPA has determined that aggregate exposure to carbofuran greater than 0.000075 mg/kg/day (i.e., greater than the acute Population Adjusted Dose [aPAD]) does not meet the safety standard of the Federal Food, Drug and Cosmetics Act (FFDCA). Aggregate exposure includes exposure from all sources, including foods, drinking water, occupational exposures and incidental exposure.

Sensitive Subpopulations: Children

Based on the contribution from food alone, the more sensitive children's subpopulations receive unsafe exposures to carbofuran. At the 99.9th percentile of exposure, aggregate carbofuran dietary exposure from food alone was estimated to range from 160% of the aPAD for children ages 6 - 12 to 210% of the aPAD for children 3 - 5 years old. The latter group (3 - 5 year olds) is the population subgroup with the highest estimated dietary exposure.

Drinking Water

In addition, EPA's analyses show that both adults and children who receive their drinking water from vulnerable sources are also exposed to levels that exceed EPA's level of concern, in some cases by orders of magnitude. This primarily includes those populations consuming drinking water from

groundwater from shallow wells in acidic aquifers overlaid with sandy soils that have had crops treated with carbofuran.

Aggregate exposures from food and from drinking water derived from groundwater in vulnerable areas (i.e., from shallow wells associated with sandy soils and acidic aquifers, such as are found in the Delmarva Peninsula of Delaware, Maryland, and Virginia) result in even higher estimated exceedances. The aggregate estimates for food and ground water exposure range between 1100% of the aPAD for adults over 50 years, to over 10,000% of the aPAD for infants.

Similarly, EPA analyses show substantial exceedances for those populations that obtain their drinking water from reservoirs (i.e., surface water) located in small agricultural watersheds, prone to runoff, and predominated by crops that are treated with carbofuran, even though there is more uncertainty associated with these exposure estimates.

Risk Summary

Every sensitivity analysis EPA has performed has shown that estimated exposures (both for food alone as well as for food and water) significantly exceed EPA's level of concern for children. Although the magnitude of the exceedance varies depending the level of conservatism in the assessment, the fact that in each case aggregate exposures from carbofuran fail to meet the FFDCA section 408(b)(2) safety standard, including where EPA relied on highly refined estimates of risk, using all relevant data and methods, strongly corroborates EPA's conclusion that aggregate exposures from carbofuran are not safe.

Actions Proposed

EPA is proposing to revoke all of the existing tolerances for residues of carbofuran. Currently, tolerances have been established on the following crops: alfalfa, fresh; alfalfa, hay; artichoke, globe; banana; barley, grain; barley, straw, sugar beet; sugar beet, tops; coffee bean; corn, forage; corn, fresh (including sweet corn); corn, grain (including popcorn); corn, stover; cotton, undelinted seed; cranberry; cucumber; grape; grape (raisin); melon; milk; oat, grain; oat, straw; pepper; potato; pumpkin; raisins, waste; rice, grain; rice, straw; sorghum, fodder; sorghum, forage; sorghum, grain; strawberry; soybean; soybean, forage; soybean, hay; squash; sugarcane, cane; sunflower, seed; wheat, grain; wheat, straw. The Agency is proposing to revoke tolerances for these crops because aggregate dietary exposure to residues of carbofuran, including all anticipated dietary exposures and all other exposures for which there is reliable information, is not safe.

Additional Information

The Agency will accept public comment on the proposed tolerance revocation through September 29, 2008. For additional information, or to submit comment, visit: http://www.epa.gov/pesticides/reregistration/carbofuran.

References

1. Carbofuran News Release, EPA-OPP, 07/24/08

2. Carbofuran; Proposed Tolerance Revocations. *Federal Register*: July 31, 2008 (Volume 73, Number 148)

3. *Pesticide Program Updates*, U.S. Environmental Protection Agency, Office of Pesticide Programs, 07/17/08

Appendix D.

– Pesticide Safety Educators' Brief –

Pesticides in the News: Rodenticides

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July 2008

Issue Summary

A final risk mitigation decision was issued for the following ten rodenticides: brodifacoum, bromadiolone, bromethalin, chlorophacinone, cholecalciferol, difenacoum, difethialone, diphacinone (and its sodium salt), warfarin (and its sodium salt), and zinc phosphide. The Agency's decision will reduce rodenticide exposures to children and non-target wildlife, while ensuring residential users, livestock producers, and professional applicators have access to a variety of effective and affordable rodent control products.

Risks Identified

Exposures to Children

The use of these products has been associated with accidental exposures to thousands of children each year. Fortunately, only a small number of exposed children experience medical symptoms or suffer adverse health effects as a result of their exposure. EPA believes, however, that the number of exposure incidents is unacceptably high. Further, data indicate that children in low income families are disproportionately exposed. EPA's risk mitigation measures address this situation by significantly reducing the likelihood of rodenticide exposure to children, including those children who may be disproportionately at risk for exposure.

Risks to Wildlife

Rodenticides pose significant risks to non-target wildlife including birds, such as hawks and owls, and mammals, including raccoons, squirrels, skunks, deer, coyotes, foxes, mountain lions, and bobcats. Rodenticides applied as bait products pose risks to wildlife from primary exposure (direct consumption of rodenticide bait) and secondary exposure (predators or scavengers consuming prey with rodenticides present in body tissues). Several reported incidents have involved Federally listed threatened and endangered species.

Risks Related to Modes of Action

The ten rodenticide active ingredients covered by this action can be divided into three categories:

First-Generation Anticoagulants:
warfarin, chlorophacinone, and diphacinone

Second-Generation Anticoagulants:
brodifacoum, bromadiolone, difenacoum, and difethialone

Non-Anticoagulants:
bromethalin, cholecalciferol, and zinc phosphide

The anticoagulants interfere with blood clotting, and death can result from excessive bleeding. Bromethalin is a nerve toxicant that causes respiratory distress. Cholecalciferol is vitamin D3, which in small dosages is needed for good health in most mammals, but in massive doses is toxic, especially to rodents. Zinc phosphide causes liberation of toxic phosphine gas in the stomach.

The second-generation anticoagulants are especially hazardous for several reasons. They are highly toxic, and they persist a long time in body tissues. The second-generation anticoagulants are designed to be toxic in a single feeding, but since time-to-death is several days, rodents can feed multiple times before death, leading to carcasses containing residues that may be many times the lethal dose. Predators or scavengers that feed on those poisoned rodents may consume enough to suffer harm.

Actions Taken

EPA's final decision on the rodenticides includes two major components as follows.

(1) To minimize children's exposure to rodenticide products used in homes, EPA is requiring that in the future, all rodenticide bait products available for sale to general consumers be sold only in bait stations. Loose baits, such as pellets, will not be available for sale to consumers.

(2) To reduce wildlife exposures and ecological risks, bait products containing the rodenticides that pose the greatest risk to wildlife (the second generation anticoagulants - brodifacoum, bromadiolone, difethialone, and difenacoum) will no longer be allowed to be sold or distributed in the consumer market. In addition, bait stations will be required for all outdoor, above-ground uses for products containing these ingredients.

Additional Information

More information on the rodenticides risk mitigation action is available at http://www.epa.gov/pesticides/reregistration/rodenticides/finalriskdecision.htm

References

1. Final Risk Mitigation Decision for Ten Rodenticides, http://www.epa.gov/pesticides/reregistration/rodenticides/finalriskdecision.htm, accessed 08/04/2008.

2. *Pesticide Program Updates*, U.S. Environmental Protection Agency, Office of Pesticide Programs, 05/30/08; 06/06/08.

Appendix E

– Pesticide Safety Educators' Brief –

Pesticides in the News: Soil Fumigants

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Maryland Cooperative Extension

July 2008

Issue Summary

On July 10, 2008, EPA announced that the soil fumigants are subject to new safety measures. EPA reviewed the soil fumigants together as a group to ensure that similar risk assessment tools and methods were used for all, and risk management approaches were consistent. For the soil fumigants methyl bromide, chloropicrin, dazomet, metam sodium, and metam potassium, EPA will require a suite of new mitigation measures that will work together to protect human health.

Risks Identified

EPA identified risks to agricultural workers and to bystanders from application of soil fumigants. Bystanders, who are not involved in the fumigant application but who live, work, or are otherwise located in nearby areas, may also be exposed to airborne fumigants that move off the application site. Bystanders include agricultural workers in nearby fields who are not involved with the fumigant application. Incidents of bystander exposure demonstrate that fumigants have the potential to move off-site at concentrations which produce adverse health effects in humans, over periods of several hours to days after application. These health effects may range from mild and reversible eye irritation to more severe and irreversible effects, depending on the fumigant and the level of exposure.

Timing

The implementation of risk mitigation measures, to be reflected on the product labels, is not anticipated to occur until 2010. EPA's decision will also halt the use of methyl bromide on sites where alternatives are available. The newly registered fumigant iodomethane will be reexamined later in 2008 to determine what new mitigation or restrictions are necessary. The soil fumigant 1,3-dichloropropene, which was evaluated previously, may be subject to similar provisions when the soil fumigants are evaluated together again in 2013.

Actions Taken

The following mitigation measures are designed to protect bystanders and workers.

- Users must complete written, site-specific fumigant management plans before fumigations begin. (See details, below.)

- Buffer zones around treated fields will reduce the chances of immediate harmful effects to bystanders from fumigant concentrations in air. Buffers can be adjusted based on the use of other good management practices that also reduce risks to bystanders.

- Posting requirements will inform bystanders and field workers about the location and timing of fumigations and associated buffer zones so people do not enter these areas.

- To ensure emergency preparedness, registrants must provide first responders with fumigant-specific safety information and training.

- Fumigant applicators must monitor buffer zone perimeters or provide emergency response information directly to neighbors.

- Fumigant registrants must conduct outreach programs to educate community members about fumigants, buffer zones, how to recognize early signs of fumigant exposure, and how to respond appropriately in case of an incident.

- Fumigant registrants must adopt more stringent worker protection measures, and develop training for fumigation handlers and workers to enhance their knowledge and skills and to promote product stewardship.

- All soil fumigant products will be classified as restricted-use pesticides to ensure that only specially trained individuals can apply and oversee fumigant operations.

- The Agency has determined that including certain practices on labels as requirements rather than recommendations will minimize inhalation and other risks from fumigant applications. Examples of good agricultural practices include proper soil preparation/tilling, ensuring optimal soil moisture and temperature, appropriate use of sealing techniques, equipment calibration, and weather criteria.

Fumigant Management Plan Details

The certified applicator supervising the fumigation must verify in writing that the Fumigant Management Plan (FMP) is current and accurate before fumigation begins. A post-fumigation summary report describing any deviations that may have occurred from the FMP will also be required within 30 days of the end of the application.

The fumigator and the owner/operator of the fumigated field must keep the FMP and post-fumigation summary report for two years and make them

available upon request to federal, state, tribal, and local enforcement officials.

The following list constitutes the elements that must be included in a soil FMP:

- general site information,
- applicator information,
- application procedures,
- measurements taken to verify compliance with good application practices,
- how buffers were determined,
- worker protection information,
- procedures for air monitoring,
- posting,
- training of applicators supervising fumigations,
- communication among key parties,
- hazard communication,
- record keeping,
- site-specific response and management activities,
- emergency plans,
- procedures for controlling fumigant releases in case of problems during or after the application.

Additional Information

Although the decisions are final, due to the broad scope and complexity of the decisions, EPA believes that stakeholders may be able to provide information on implementation approaches that would be useful to the decisions. Therefore, EPA established a comment period and is currently considering these comments. After considering new information received during the comment period, EPA may refine plans for implementation of the risk mitigation measures, as needed.

For additional information, see the EPA Federal Register notice available at: http://www.epa.gov/fedrgstr/EPA-PEST/2008/July/Day-16/p16266.htm or visit EPA's soil fumigants Web page at: http://www.epa.gov/pesticides/reregistration/soil_fumigants/index.htm.

References

1. *Pesticide Program Updates*, U.S. Environmental Protection Agency, Office of Pesticide Programs, 07/17/08.

2. Risk Mitigation Measures to Address Inhalation Exposures from Soil Fumigant Applications; http://www.epa.gov/pesticides/reregistration/soil_fumigants/index.htm, accessed 08/04/2008.

Appendix F

– Pesticide Safety Educators' Brief –

New Pesticide Resources on the Web

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July 2008

Several Web sites with both Extension and research applications have recently become available. Other sites have been around longer but may not be familiar to Extension personnel. These Web sites may be of interest to Extension faculty and/or their clientele.

Current Issues within EPA

EPA has a new Web page, Pesticide Issues in the Works. The fact sheets on this page are designed to provide information about issues that are under consideration within the Office of Pesticide programs (OPP) but that may be early in the development process or for which information is currently limited. The first three issues are colony collapse disorder, pesticide volatilization, and nanotechnology. Subsequent topics will be added as they become available. The Web page is available at http://www.epa.gov/pesticides/about/intheworks

Multilingual Pesticide Information

The U.S. Environmental Protection Agency has launched a series of consolidated Web sites in Vietnamese and Korean as part of its ongoing effort to provide environmental information in Spanish, Chinese, Korean and Vietnamese, in addition to English. These new sites compile EPA multilingual publications and materials in Korean and Vietnamese on a variety of environmental issues such as children's health, indoor air quality in nail salons and dry cleaners, asthma, fish consumption, proper pesticide usage, among others.

The sites are intended to serve as valuable tools in delivering important health and environmental information to the Vietnamese and Korean communities in the United States and worldwide. This initiative promotes environmental protection in local communities as well as the global environment regardless of language.

EPA's multilingual Web sites may be accessed at:

http://www.epa.gov/vietnamese/
http://www.epa.gov/korean/
http://www.epa.gov/chinese/
http://www.epa.gov/chinese/simple/
http://www.epa.gov/espanol/

Integrated Risk Information System

The Integrated Risk Information System (IRIS) is a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects. IRIS was initially developed for EPA staff in response to a growing demand for consistent information on substances for use in risk assessments, decision-making and regulatory activities. The information in IRIS is intended for those without extensive training in toxicology, but with some knowledge of health sciences. IRIS is maintained by the EPA's National Center for Environmental Assessment (NCEA) within the Office of Research and Development (ORD).

IRIS can be accessed at http://cfpub.epa.gov/ncea/iris/index.cfm. The database is searchable by active ingredient and contains descriptive and quantitative information on both cancer and non-cancer effects.

Pesticide Toxicity

EPA has launched ToxCast, a web site aimed at predicting hazard, characterizing toxicity pathways, and prioritizing the toxicity testing of environmental chemicals. The database was developed primarily to aid EPA in developing a cost-effective approach for prioritizing the toxicity testing of large numbers of chemicals in a short period of time, but it may be of interest to others, particularly researchers. In its current phase, ToxCast profiles over 300 well-characterized chemicals (primarily pesticides) in over 400 high throughput screening (HTS) endpoints. Additional chemicals will be added in the future. ToxCast may be accessed at http://www.epa.gov/ncct/toxcast/chemicals.html

Importation/Exportation of Pesticides and Devices

EPA has developed a Web portal to help importers and exporters of goods meet requirements to protect human health and the environment. The portal is available at: http://www.epa.gov/compliance/international/ importexport.html. The portal provides information about:

- pesticides, including pesticide residues on foods,
- vehicles and engines,
- fuel and fuel additives,
- ozone depleting substances,
- chemical substances regulated under the Toxic Substances Control Act (TSCA),
- hazardous wastes,
- plumbing products, and
- scrap metal.

All pesticides and devices imported into the United States must comply with U.S. pesticide law. They must be registered with EPA, except where exempted by regulation or statute. Imported pesticides and devices may not be adulterated or otherwise violative, must be properly

labeled, and must be produced in an EPA-registered establishment that files annual reports with the Agency.

Pesticides intended solely for export are not required to be registered provided that the exporter meets certain labeling and recordkeeping requirements.

Additional information on international pesticide issues is available at http://www.epa.gov/oppfead1/international/.

Pesticides, Insecticides and Herbicides through Science.gov

Science.gov is a gateway to over 50 million pages of selected science information provided by U.S. government agencies. The title of the page itself (Pesticides, Insecticides and Herbicides) is obviously not grammatically correct since herbicides and insecticides are both types of pesticides, but the Web sites identified may be quite useful. The site can be accessed at http://www.science.gov/browse/w105H.htm. The portal contains sites from USDA, EPA, National Institutes of Health (NIH), US Geological Survey (USGS), and other government agencies.

Pesticide Label Information

There are two good sources on-line.

- Crop Data Management Systems (CDMS) at http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=

  The CDMS resource offers labels and material safety data sheets (MSDS). You can choose either agricultural or ornamental & turf options on this site. It is searchable by brand name only.

- Kelly Solutions database on MDA's web site at http://www.kellysolutions.com/md/pesticideindex.htm

  The Kelly Solutions database is searchable by various keywords and choices. For instance, you can find out what crops or sites the pesticide is registered on, and which pests are controlled. You can search by either active ingredient or brand name.

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EPA Pesticide Program Updates, 03/05/08, 03/28/08, 05/23/08, 7/01/08

Importing and Exporting Pesticides. Accessed 07/31/2008. http://www.epa.gov/compliance/monitoring/programs/fifra/importexport.html

Appendix G

– Pesticide Safety Educators' Brief –

Tackling Pesticide Policy Issues through EPA Workgroups

Amy E. Brown, Coordinator
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August 2008

Background

Like all federal agencies, the US Environmental Protection Agency (EPA) is required to establish a transparent and open process to consider policy issues. As part of their effort, the Agency established the Pesticide Program Dialogue Committee (PPDC) in 1995. The Committee consists of a diverse group of stakeholders who meet approximately twice each year to provide feedback to EPA's Office of Pesticide Programs (OPP) on regulatory, policy and program implementation issues. Topics of discussion at recent meetings have included the registration review process, spray drift, substitution of non-animal testing, antimicrobial pesticides, endangered species, reduced risk (Section 25(b)) pesticides, labeling policies, minor uses, disclosure of inert ingredients, fees for service to registrants, experimental use permits, cause marketing, outreach to the public, and several implementation issues emanating from the Food Quality Protection Act (FQPA) of 1996.

Members may be nominated or self-nominated. The Agency considers the nominees' credentials and ultimately appoints individuals to represent the interests of environmental and public interest groups, pesticide manufacturers and trade associations, user and commodity groups, public health and academic institutions, Federal and State agencies, and the general public. At the biannual meetings, updates on various policies and programs are presented, usually by EPA staff, and new or emerging issues are identified and discussed. All meetings are open to the public.

To address emerging policy issues or procedures, as well as those proposed for specific changes, OPP establishes broadly representative workgroups to consider defined issues in a more intense manner. The workgroups consist of various members of the PPDC with a special interest in the topic. In addition, non-committee members with experience or knowledge pertinent to the topic are also often appointed to these subcommittees. EPA tries to achieve a balance of interests in appointing the members to the workgroups.

Past Workgroups

Consumer Pesticide Label Improvement Workgroup.

Objectives were to (1) improve consumer understanding of safe use, storage, disposal and environmental and health information on household pesticide product labels and (2) design a Label Improvement Program that can be easily implemented by EPA and the registrant community. The Workgroup recommended the addition or substitution of baseline statements, based on product formulation and use patterns. The Workgroup also recommended toxicity statements added to the baseline statements as needed. Both types of statements would be voluntary additions or substitutions.

Registration Review Workgroup and Registration Review Implementation Workgroup

The goal was to assess key issues surrounding the process of registration review for consideration by the full PPDC. The Agency wanted to assure a process that would maximize the usefulness of public comments and prepare for an efficient and effective review process.

Performance Measures Workgroup

In 2005, EPA identified three major missions for OPP: (1) protect human health, (2) protect the environment, and (3) realize other benefits from pesticides. The Performance Measures Workgroup was convened to study and recommend possible benchmarks and qualitative or quantitative measures of impact in these areas. In its deliberations, the Workgroup expressed concern that having measures aimed at reducing the levels of pesticides without any qualification of that statement could give the impression that current levels are unacceptable. The Workgroup recommended it may be more appropriate to use the term “minimizing exposure” rather than “reducing exposure.”

The Workgroup also noted that EPA’s proposed performance indicators for objective 2 (protect the environment) were too tightly focused on endangered species and should be broadened.

Finally, the group recommended EPA change the name of its third objective to ”value of pesticide availability” or “societal benefits.”

Worker Safety Regulations Workgroup

EPA is considering changes to the pesticide applicator certification regulation and to the agricultural worker protection regulation. Which have remained unchanged to date for 32 and 11 years respectively. This Workgroup was established to provide a mechanism for stakeholder input on the proposed regulatory changes. The Workgroup’s objective is to help EPA narrow down the focus of the options under consideration for this final proposed rule. More details on the proposed changes can be found in the 2006 Pesticide Educators’ Brief, *Federal Changes Under Consideration for Pesticide Applicator Certification and Training and Worker Protection*.

Pesticide Spray Drift Workgroup

This Workgroup decided to focus primarily on: (1) labeling to mitigate spray drift, (2) the role of education, training, and stewardship, and (3) practices and equipment to mitigate drift and adverse effects from drift. Issues the EPA decided were beyond the scope of this workgroup include: 1) the content of EPA's proposed rule concerning whether use of a pesticide requires a National Pollution Discharge Elimination System (NPDES) permit (because the rule concerned aquatic pesticide applications, not pesticide spray drift, and because the comment period for the rule was closed and it was still in internal Agency review) and 2) the off-target movement of pesticides through volatilization.

Important issues to be addressed included concise, enforceable language, design versus performance standards, and legal definition of harm. For the scope of the Workgroup's discussions, the following concepts were agreed to:

- Spray drift means pesticide droplet and particle movement that occurs during the initial application resulting in deposition onto non-target sites.
- Spray drift does not include particle movement onto non-target sites caused by erosion, migration, volatilization or wind blown soil particles that occurs after application.

- The Workgroup made several recommendations:
  - Consider far-reaching changes to pesticide labeling in terms of formatting, structure, text placement, etc. EPA is considering asking stakeholders, for example, aerial applicators and/or other user groups to review possible labeling.

  - Continue or expand federal funding for education, training, and stewardship. The Agency is exploring (1) mechanisms for evaluating the effectiveness of spray drift mitigation training and identifying gaps and (2) promotion of voluntary site-specific drift management plans. EPA plans to develop a Citizen's Guide for spray drift which would explain how to protect oneself if drift occurs and what recourse one has if drifted upon.

  - Continue support of Drift Reduction Technology (DRT). In response to this recommendation, EPA is initiating testing of technologies and assessing the efficacy and economic impacts of adoption of new technologies.

In addition to acting on the Workgroup's recommendations, EPA is exploring a Best Management Practices pilot program and is developing a systematic approach to labeling. EPA will collect feedback on user response to labeling.

Current Workgroups

Pesticide Program Dialogue Committee 21st Century Toxicology/New Integrated Testing Strategies Workgroup

This workgroup will focus on communication and transition issues as EPA phases in new predictive and testing methods over the next three to five years. The workgroup will help to focus EPA's efforts on the key activities needed for successful communication and transition, including identifying ways to improve understanding and how to best communicate complex science to all stakeholders, and providing process recommendations to ensure smooth transition of the new testing paradigm.

Comparative Safety Statements or Logos for Pesticide Product Labeling Workgroup

This workgroup will address possible development of Agency or third party endorsements/ statements or logos on labels regarding comparative product safety. The workgroup will make recommendations as to whether the government should pursue a policy and regulatory change in order to develop or allow these types of statements or logos.

Web-Distributed Labeling Workgroup

The workgroup will recommend a process to ensure that the most current version of pesticide labeling is available to purchasers and users electronically.

Azinphos-Methyl (AZM) Transition Issues Workgroup

EPA and USDA are co-sponsoring this workgroup tasked with working towards a reasonable transition for pesticide uses that have been canceled or phased out. Objectives of the Workgroup include (1) identifying a framework for reasonable transition towards lower risk strategies, taking into account grower concerns over economic, trade and regulatory barriers to adoption of alternatives; (2) identifying ways to improve understanding of critical grower needs and the perspectives of all stake-holders; (3) identifying programs and mechanisms to provide reduced-risk pest management strategies and techniques to growers; and (4) recommending ways to assist growers in their good faith efforts as they try AZM alternatives and feasible, cost-effective techniques.

PRIA Process Improvement Workgroup

In 2004, President Bush signed The Consolidated Appropriations Act, under which the Pesticide Registration Improvement Act (PRIA) was established. PRIA set up a registration service fee system for applications for specified pesticide registration, amended registration, and associated tolerance actions. Expenditures from the fund can be used to cover the costs associated with the review and decision-making. By agreement between registrants, EPA, and other stakeholders, a certain percentage of these fees was set aside to support worker protection and, more recently, state Extension pesticide safety education programs. The Workgroup reviews and considers the Agency's implementation, distribution, and impacts of

the fee-based system, and makes recommendations for improvements.

Regional Representation on Workgroups

MidAtlantic states pesticide extension and regulatory program representatives who serve or have served on these workgroups include:

- Amy Brown, Professor & Coordinator, Maryland PSEP and a regular member of PPDC since 2004 – (1) Consumer Pesticide Label Improvement, (2) Performance Measures Workgroup, (3) Worker Safety Regulations Workgroup, and (4) Comparative Safety Statements or Logos for Pesticide Product Labeling Workgroup.

- Mary Ellen Setting, a regular member of PPDC from 2002 - 2006 and formerly, Chief, Pesticide Regulation Section, Maryland Department of Agriculture – (1) Mosquito Labeling Issues, (2) Consumer Pesticide Label Improvement, and (3) Worker Safety Regulations Workgroup.

- Dave Scott, Certification & Education Specialist, Pennsylvania Department of Agriculture – Spray Drift Workgroup.

- Kerry Richards, Extension Associate, Penn State Pesticide Education Program – Worker Safety Regulations Workgroup.

- David Jefferson, Coordinator of the District of Columbia Extension Pesticide Safety Education Program – Consumer Pesticide Label Improvement Workgroup.

- Jerry Baron, Executive Director, Minor Use Pesticides Interregional Project (IR-4), Rutgers U. – (1) Web-Distributed Labeling Workgroup and (2) Azinphos-Methyl (AZM) Transition Issues Workgroup.

Further Information

More details on the PPDC and its workgroups including full membership lists, objectives, and progress can be found at http://www.epa.gov/oppfead1/cb/ppdc/#about.

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Appendix H

– Pesticide Safety Educators' Brief –

Pesticide Education & Assessment Program
Current and Planned Research Projects

Amy E. Brown, Coordinator
Pesticide Safety Education Program
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September 2008

The Pesticide Education & Assessment Program (PEAP) has two main research foci: (1) categorizing and minimizing human exposure to pesticides and (2) identifying improvements for educational outreach to occupational pesticide users, as well as occasional users such as consumers and homeowners. Both of these research foci grow out of and feed back into PEAP Extension activities.

Minimizing Exposure to Pesticides

Wear Testing Protective Clothing for Applicators

Agricultural workers need work clothing that is durable, comfortable, and provides protection from substances encountered in their occupation. Previous work has characterized the protective ability of various fabrics and fabric treatments using fabric that has undergone simulated wear in the laboratory; however, there is limited data on durability, comfort and penetration of pesticides through used garments that have been worn and laundered for an extended period of time.

The University of Maryland PEAP is collaborating with The University of Maryland-Eastern Shore (UMES) and Cornell University on a study of how wear and laundering affects garments' ability to protect against pesticide penetration. The project is being conducted as part of USDA's multi-state NC-170 project, Mediating Exposure to Environmental Hazards Through Textile Systems.

The research is a "wear" study to investigate the performance of cotton/polyester garments with repellent finish after they have been worn. Cooperators at three Research & Education Centers as well as workers in the Landscape Services unit on the UM campus wore investigator-provided garments during part or all of their routine duties (which may or may not have included actually applying or handling pesticides) from February – May 2008. Each subject kept a log of how often the garments were worn and laundered. The garments and logs were collected and are being subjected to laboratory tests for

durability and penetration of an indicator pesticide.

Ultimately, data on fabric performance will be added to an existing database at UMES for use by textile scientists, garment manufacturers, and educators. The authors (A. Brown, A. Shaw, and C. Coffman) expect to submit a publication to a peer-reviewed journal in early 2009. We will also develop a leaflet suitable for Extension teaching.

Identifying Motivators and Barriers to Adoption of Best Pesticide Practices

PEAP has two projects, one underway and one proposed, aimed at determining what motivates people to adopt improved practices regarding pesticide handling.

Targeting Consumers – Master Gardener-facilitated IPM education for consumers

The University of Maryland PEAP is conducting a multi-state IPM Issues Project funded by the Northeastern IPM Center. Supervised by Dr. Amy Brown, this project forms the M.S. degree work of Ms. Amanda Matheny. The project targets consumers with outdoor pest problems and has both research and Extension components.

Consumers' attitudes, knowledge, and use of IPM strategies are being investigated through a series of questionnaires. This project seeks to identify motivating factors and barriers to adoption of IPM strategies and best pesticide handling practices by consumers. The project will also investigate actual adoption of IPM and/or best pesticide practices by consumers through a survey beginning in late fall 2008.

IPM and pesticide safety outreach materials, including two brochures and a PowerPoint presentation, have been developed through the project. These materials are being distributed/implemented by Master Gardeners at various venues including farmers markets, plant clinics, etc. These materials have been / will be shared with other states in the Northeast.

Information gained through the project will be used to refine and improve educational outreach for consumers on IPM and pesticide handling. Various media (consumer-oriented publications, web sites, and audiovisual presentations) could benefit from the knowledge gained through this series of investigations.

Targeting Pesticide Applicators – Using attitudes and beliefs to identify critical arguments for improving best practices

The University of Maryland Pesticide Education & Assessment Program at UMCP has the lead, through Dr. Amy Brown, on a proposed collaborative investigation with Drs. Laundette Jones and Shiraz Mishra, UM-School of Medicine, Baltimore. This exploratory/developmental study utilizes a cross-sectional quantitative study design to document knowledge and awareness about adverse effects of pesticide exposure, attitudes and beliefs regarding preventative practices, risk perceptions, risk management, and cancer and health screening behaviors among pesticide applicators.

The project's long-term goal is to design and implement culturally sensitive, linguistically and health literacy appropriate educational programs tailored to community needs. Short-term goals are to assess risk perception, pesticide handling practices, and communication needs in terms of self-reported motivating factors and barriers to adoption of best pesticide handling practices and health screening.

The project's specific aims are:

- Understand and characterize pesticide applicators' current beliefs regarding their own personal risk from pesticides.

- Identify self-reported motivating factors and barriers to the adoption of best pesticide handling practices as well as preventive health measures by pesticide applicators.

- Determine risk communication needs, especially in terms of outreach and educational programs (their content, nature, mode of delivery, linguistic and health literacy appropriateness), for the different categories of pesticide applicators.

The target audience will consist of private and commercial applicators. A survey questionnaire will be developed and will be administered to the applicators via three methods: (1) as a hard copy at recertification conferences throughout the state, (2) in electronic format via email, and (3) posted on a website that applicators may visit. The surveys will be conducted throughout the 2008-2009 training season (principally October – March). Participants receiving the survey at recertification sessions will be requested to complete the survey during a session break. Participants receiving the survey via email will be asked to return the completed survey within two weeks of the initial contact.

Results will provide valuable information about how best to target educational messages for pesticide applicators, potentially including different motivators and barriers for specific groups. These outcomes will be used to develop a more comprehensive project to implement and evaluate the effectiveness of targeted educational programs to reduce pesticide exposure and enhance preventive health screening for pesticide applicators in agriculture, structural pest control, and other categories.

Appendix I

In the Pipeline -- Pesticide Policy and Regulatory Developments

Pesticide Safety Education Program
Maryland Cooperative Extension

Report prepared for Maryland Cooperative Extension faculty and staff
August 2008

The following topics are hot off the presses and will be discussed more fully during 2008 In-Service Training. These issues were literally discussed at the federal level within days of the scheduled In-Service meetings.

Funding for Certification/Training

- Historically, pass-through funding for state Pesticide Safety Education Programs (PSEPs) comes from EPA and has been passed through USDA
- New additional funding for state PSEPs comes from Pesticide Registration Improvement Act (PRIA) II.
- Base level of funding remains the same
- Change in formula used to distribute the excess federal funds (above that needed to meet state's baseline amounts) announced Sept. 11, 2008
- PRIA funds, originally slated for distribution as competitive funding, were instead
- Maryland's total funding in pass-through + PRIA for FY 2008 represents an increase of approx 25%

Comparative Safety Claims for Pesticide Labels

- EPA asked stakeholders whether the Agency should allow comparative safety statements or safety logos on pesticide labels. Reasons stated were:
    - facilitate informed purchaser choices w/re to "safer" or "more desirable" products
    - move the market as a whole toward "safer" or "more desirable" products through peer/marketing
- Types of statements registrants want to make
- Examples of comparative logo programs:
    - EPA Design for Environment (DfE)
    - EPA Energy Star
    - USDA Organic certification
    - Green Seal
    - Canadian EcoLogo
- Under discussion:
    - whether should be EPA-run program vs. private corporation vs. some combination
    - what standards to use
    - whether to focus on a particular category of products to start (consumer products, antimicrobials) or to establish for all types (ag, structural, etc.)
    - how to include nuances yet facilitate understanding the meaning of the logo / certification
- Likely outcomes
    - purchasing agents (WalMart, etc.) will choose to carry (or at least to highlight) products with the logo
    - schools, towns will face pressure to use only products with the logo
    - if extended to ag products, food stores might also feel pressure to carry only foods produced with logo products
    - could have unintended consequences such as resistance development, public health pest outbreaks, etc.