

FLORIDA PESTICIDE REVIEW COUNCIL 2005 – 2006 ANNUAL REPORT



SEPTEMBER 30, 2006

**FLORIDA
PESTICIDE REVIEW COUNCIL**

2005-2006 ANNUAL REPORT

(For the period from October 1, 2005 through September 30, 2006)

**Pesticide Review Council
October 27, 2006**

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I. Executive Summary

Mr. Anderson Rackley, the new Director of the Division of Agricultural Environmental Services (AES) appointed in March 2006 by Charles H. Bronson, Florida Commissioner of Agriculture, recognized the great responsibility that the Florida Department of Agriculture and Consumer Services (FDACS) has in regulating pesticides in Florida. As the state's rapidly growing population expands into agricultural areas, conflicts can arise that need to be addressed by good science. Mr. Rackley stated that it is extremely important that the use of pesticides in Florida be judicious, safe and environmentally sound. He noted the advantage of the Florida Pesticide Review Council (PRC), whose scientists and professionals have a broad range of expertise and are able to provide sound advice on pesticide-related issues. The advice that comes from the PRC is valued and appreciated.

During the two regular meetings of the PRC in Fiscal Year 05-06, a variety of pesticide issues were discussed. Recurring issues included potential environmental impacts of arsenical herbicides, pesticide detections in the Lake Wales Ridge Monitoring Well Network, citrus greening disease in Florida, compliance activities related to farm worker protection, and legislative issues affecting pesticide use and regulatory programs. In addition, the Council participated in the discussion of a number of special presentations. The PRC continued to coordinate pesticide-related efforts of state agencies such as the Florida Departments of Agriculture and Consumer Services, Environmental Protection (FDEP), Health (FDOH), and the South Florida Water Management District (SFWMD) and also provided the opportunity for concerned citizens to comment on issues regarding the use and regulation of pesticides in the state.

II. Introduction

This document summarizes the activities of the PRC from October 1, 2005 through September 30, 2006 as reported in the minutes of two PRC meetings held during the aforementioned period. Copies of the agenda and minutes for each meeting may be obtained by contacting FDACS Bureau of Pesticides by mail (3125 Conner Boulevard, Building #6, Tallahassee, Florida 32399-1650), by phone (850-617-7917) or by visiting the Bureau's website:

http://www.flaes.org/Pesticide/BoP_PRC.htm

III. Administrative Activities:

Mr. Steve Rutz, former Chair of the PRC, resigned from the Department of Agriculture in January 2006. According to PRC guidelines, the vacated Chair position is to be filled by the Vice-Chair. However, since Dr. Mark R. McLellan, the new vice-chair, had not yet served on the council, the decision was made to keep a FDACS representative as the Chair and Dr. Dennis Howard, Chief of the Bureau of Pesticides, was asked to fill that vacancy.

Officers for 2005-2006 were:

Dr. Dennis Howard, Chair
Dr. Mark R. McLellan, Vice-Chair
Dr. Christopher Saranko, Secretary

Officers for 2006-2007 are:

Dr. Dennis Howard, Chair
Dr. Mark R. McLellan, Vice-Chair
Dr. Christopher Saranko, Secretary

IV. PRC Members and Status

Member	Affiliation	Term Expiration
Jerry Brooks	Department of Environmental Protection	Indefinite
Ed Irby	Environmental Groups	09/30/06
Dave Eggeman	Fish & Wildlife Conservation Commission	Indefinite
Wendy Graham	Hydrologist	09/30/07
Christopher Saranko	Toxicologist	09/30/07
David Johnson	Department of Health	Indefinite
Mark R. McLellan	Institute of Food and Agricultural Science	Indefinite
Richard Pfeuffer	South Florida Water Management District	06/30/06
Mel Kyle	Agricultural Chemical Industry	09/30/09
Dennis Howard	Department of Agriculture & Consumer Services	Indefinite
Bobby W. Newsome	Grower/Producer Representative	09/30/06

V. Guest Speakers

To provide the PRC with information on current pesticide-related subjects, the following invited presentations were given during the year:

- “Arsenical Herbicide Update”, Dr. Robert Demott, Environ International, consultant to the Methane Arsonic Acid Research Task Force (MAARTF).

Dr. Robert DeMott presented a report on recent regulatory determinations affecting environmental arsenic. He provided some background on differential toxicity for organic and inorganic arsenic, which regulatory agencies have been struggling to address. The challenge is in determining how to quantify important distinctions in environmental and human health effects. Earlier this year, the US Environmental Protection Agency (EPA) recommended reinstating the differential handling of cacodylic acid (which can break down to inorganic arsenic) as a pesticide. In the past the Agency had taken separate tracks on how to address the potential toxicity of cacodylic acid and inorganic arsenic. This was retracted a few years ago in conjunction with reviewing health effects, specifically, the way cacodylic acid may cause cancer. EPA released a draft report that requested the review by a panel of experts on whether to go forward with making differential toxicity recommendations.

While toxicologist always say the “dose makes the difference”, with arsenic the situation becomes more complicated. Arsenic does not occur in one chemical form but rather, may form compounds with other elements and may itself occur in various chemical forms, all of which are critical to its environmental fate and toxicity. There are important electro-chemical differences or “valence states” of +3 (arsenite) or +5 (arsenate) and methylated and unmethylated forms. The distinction between the forms is not controversial. Inorganic arsenic is widely recognized as a human carcinogen. Arsenite (III) is considered more toxic than arsenate (V), which is more prevalent in the environment and these are the forms we are most concerned with since they may interconvert and can move through the environment. This is not to say that organic forms are not toxic. In fact, all federally registered pesticides are in organic forms; however, there is a wide disparity in that some of the arsenicals are detoxified through the methylation process.

The carcinogenicity of arsenic is the key regulatory determinant. Potential carcinogens are evaluated using a specialized risk-based approach. The most protective regulation is based on cancer end points for arsenic. Inorganic arsenic is a human carcinogen and cacodylic acid has been shown to be carcinogenic in animals. Inorganic arsenic has the highest carcinogenic potential and for years has been in the regulatory process dealing with setting new ground water and drinking water standards. Regulation based on inorganic arsenic has been expanded to include all forms of arsenic for regulatory standards.

Separate toxicity values for dimethylarsenate (DMA) would require handling organic forms separately. EPA has determined that the monomethyl arsenate form (MMA) is not a carcinogen; however, DMA does have carcinogenic potential and because there is only

one methyl group difference between them, the removal or addition of a single methyl group could affect the toxicity. This toxicological distinction would carry over to cleanup targets and allowable limits. The inter-conversion between inorganic and organic arsenic is not a one-way street. Inorganic arsenic in the environment is commonly converted in soil and water to methylated forms. However, the process can go the other way, with “de-methylation” removing methyl groups.

The Science Advisory Board (SAB) is a high level oversight board that appoints technical specialist to review specific topics. EPA charged the SAB with looking at specific questions. First, in order for cacodylic acid carcinogenicity to be relevant to humans, there had to be agreement that organic arsenic ingested remained organic and did not become inorganic. The next question was does the mode of action make biological and regulatory sense? Can we determine how cacodylic acid causes cancer? In this case, it is a direct effect of damage when the chemical contacts cells, resulting in recurrent re-growth of cells to fill in the damage, and not a DNA interaction. The last question is if this is the mode of action, is it relevant to use for human regulation?

The SAB positions were that “DMA does not cause cancer in humans at plausible exposure levels.” The rat bladder tumors were due to the conversion of intercellular DMA (5) to DMA (3), resulting in direct cell damage and repeated tissue repair and formation of tumors. The mode is relevant to humans, but humans do not metabolize DMA (5) to DMA (3), therefore, it is metabolically inoperative. The SAB recommended a non-linear threshold approach extrapolation for DMA. It called for a benchmark approach as a threshold level reduced by safety factors. It recommended the rat data as most sensitive since humans do not form cancer-causing metabolite. It also agreed rats have a high metabolic capacity.

- “*Citrus Greening*”, Mr. Richard Clark, Chief of Plant and Apiary Inspection, Division of Plant Industry, Florida Department of Agriculture and Consumer Services.

Mr. Richard Clark presented the Council with an overview of citrus greening in Florida. Citrus greening is the most serious pest threatening citrus at this time. Citrus greening is an insect-vectored bacterial disease and may be referred to as a phloem-limiting bacteria. This means the bacteria prevents nutrients from moving through the tree and subsequently kills the infected tree. The bacterium affects citrus and other members in the rutaceae family. The disease is only spread by one insect vector, the citrus psyllid. The psyllid in Florida is the Asian citrus psyllid. The Asian citrus psyllid completes its life cycle on the host plant laying eggs which develop into nymphs and then into adults. In large numbers, the psyllid can cause significant damage to the host plants where they feed. The Asian citrus psyllid was first detected in Florida in 1998.

In China, this disease is referred to as “huanglongbing” or “Yellow Dragon Disease” which refers to the yellow shoots produced by infected trees. Citrus greening disease was found in Florida in August of 2005. The disease has also been found Texas, but not in other citrus producing states such as Arizona or California. This disease naturally occurs in Asia and sub-Saharan Africa and has never been eradicated anywhere in the world

where this disease occurs. There are three different types of citrus greening: Asian, which is transmitted by Asian citrus psyllid; African, which is transmitted by African citrus psyllid; and a third form which is found in Brazil. The Asian strain has been found in Florida. This strain is particularly infectious on grapefruit and pummelos.

Citrus greening is a devastating disease. Infected trees will only live for about 6-8 years and most never bear usable fruit. The fruit from an infected plant has poor color (green) and bad flavor. In some areas where citrus greening is epidemic, it is no longer economical to grow citrus. A tree infected with citrus greening will develop severe mottling of the leaves. Classic symptoms of citrus greening can vary from light green leaves to a bright yellow leaf mottling. The disease may only infect one branch, leaving most of the tree green and apparently healthy looking. However, when an infected tree bears fruit, the fruit are small, lopsided with no seed produced, and the fruit has poor color, and a bitter taste. Citrus Greening can also dwarf or cause malformations of the fruit or it can completely abort the fruit from the tree. Currently, citrus greening disease has been confirmed in Miami-Dade, Broward, Palm Beach, Martin, Hendry and St. Lucie Counties. We have found citrus greening in two commercial groves. Citrus greening has been found infecting pummelos, orange, grapefruit, lime and kumquat.

In south Florida, a plant called orange jasmine is used extensively for ornamental landscaping. Although orange jasmine has not yet been found to be a host of citrus greening disease, it is an excellent host for the citrus psyllid. Therefore, in an effort to limit the spread of the citrus psyllid, we are requiring nurserymen who produce this plant in citrus greening infested counties to enter into a compliance agreement before they move any orange jasmine. Prior to movement all orange jasmine plants must be treated with a pesticide containing imidicloprid (Marathon) within ten days of movement and they must also must be treated with a foliar treatment within two days of movement.

In Florida, current plans call for a survey to be conducted on the east coast through Indian River County and then all survey activities will move to the west coast of Florida. In addition, FDACS is working with the University of Florida to develop a citrus greening educational program for commercial citrus fruit producers and homeowners that will be presented through the county extension offices. Citrus greening research is underway to identify the critical biological parameters necessary for managing this disease in Florida. The Citrus greening survey activities will be an ongoing event. In Florida, we will always have to survey for this disease. If we are going to live with this disease, we must develop sound management tools that will enable our citrus industry to remain viable well into the future.

- *“Selection of a site for a prospective groundwater study”, Dr. Richard Lewis, MAATF.*

The MAA Task Force is evaluating sites for a prospective groundwater (PGW) study with the arsenical herbicide, MSMA. Dr. Richard Lewis, the study director, gave a report to the Council on the progress of this endeavor. This PGW study is being undertaken to determine whether the application of the monosodium methanearsonate (MSMA) herbicide in Florida soils under reasonable “worst case conditions,” can lead to

unacceptable concentrations of arsenic in groundwater. “Worst-case” site selection criteria were determined to be: soil type - Entisol Quartzipsamments; depth to groundwater - 10 to 30 ft below land surface; no known land-applied arsenicals; organic content below 2%; absence of flow-restrictive layers; site grade - less than 2%; adequate distance from production wells; undisturbed geology; mature Bermudagrass turf; two-acre minimum site which is available for 2 years.

FDACS and the MAATF agreed upon the Central Ridge area as a representative area for location of the “worst-case” soil type, outside of South Florida. A database from Environmental & Turf Services, Inc. and internet resources were used to locate golf courses and sod farms in the Central Ridge area. Topographical maps were used to determine the approximate depth to groundwater on each site by comparing adjacent lake elevation to ground surface elevations. A National Resource Conservation Service (NRCS) database was used to confirm the soil types and their approximate extent. Aerial photographs were employed to find areas on the golf courses and sod farms that could be used for the study. More specific site data were gathered during initial site visits. Several sites were selected for additional visits and soil sampling. In total, HSA investigated nearly 100 golf courses and approximately 30 sod farms. Most of the sites did not meet the requirements due to multiple issues. Realizing that golf courses and sod farms are too restrictive, the search was expanded to include vacant land, which is more abundant and easily located via aerial photographs. To consider vacant land, the Bermudagrass criterion has to be omitted from the list of requirements for suitability of the site. However, Bermudagrass sod can be transplanted, and, at the same time, vacant land has the advantages of undisturbed geology: no prior arsenical applications, availability of larger areas and fewer limitations (bunkers, etc.), as well as study security (the area can be fenced to prevent trespassers).

The search covered 100 square miles of aerial photographs south-southeast of Haines City and more than 50 potential sites were identified. Sites that did not suit the required criteria were ruled out. A suitable area was located south of Haines City on H.L. Smith Road. The land in that area is clear and undisturbed, depth to groundwater is about 24 ft below land surface, soil meets protocol criteria, sufficient acreage is available to conduct the study, the land is available for the duration of the study, and the owner is very cooperative. The site is generally flat with minimal vegetation. City water and electric service are available. There is no known prior arsenical usage on the site. The soil classification was confirmed by an NRCS soil scientist to be Candler sand-uncoated Typic Quartzipsamments (Entisol). Additionally, local sources of Bermudagrass have been located. Vendors of weather stations and irrigation systems have been contacted. Subcontractors to install the irrigation system and turf and to maintain the area (mowing, etc.) have been contacted. FDACS was invited by the MAA Task Force to visit the site. Upon approval, a site-specific protocol will be developed, and the study will proceed.

VI. Agency Briefings

Staff from FDACS, FDEP, FDOH and the Water Management District (WMD) provided briefings to the PRC relating to their regulatory activities. Because the PRC lacks staff support, agency briefings are the principal method of information gathering used by the PRC, and agency action is the only method of carrying out the PRC's recommendations.

(A) FDACS Briefings

(1) Legislative and rulemaking updates

- Several legislative issues were addressed in 2006 by FDACS. The first issue is the strengthening of pest control independent contractor provision to reduce the potential for abuses relative to how pest control companies operate and use independent contractors. There was some effort to amend the pest control statute to reduce unnecessary restrictions on commercial landscape maintenance licenses. Currently the eligibility criterion that applies does not have bearing on the person's competency to apply pesticides.
- The FDACS will be proposing an amendment to the mosquito control statute that clears a conflict with the pest control laws as it relates to a new industry that installs a mosquito misting system. Companies install a series of pipes and pumps that create an automated delivery of insecticides to control flies and mosquitoes in barns and in residential settings. Emerging concerns that relate to the operation of these systems are the potential for chemical trespass and the impact on non-target species. The FDACS believes that as the systems control more than just mosquitoes, they should fall under the pest control statutes and not just the mosquito control statutes. There have also been efforts to address the larger policy questions as they relate to the materials used in these systems. The National Pest Management Association (NPMA) has scheduled stakeholder meetings to begin dialog on how to move forward.
- In 2004, the legislature passed the Florida Agriculture Worker Safety Act, a package of legislative changes to improve pesticide worker safety issues. The changes mirrored what is currently in the federal worker protection standard. The law established a state level mandate for the Department to enforce the federal and state requirements and the Department has seen an increase in the demand for investigations through a complaint hotline. As a result of the increased workload, requests for additional positions to expand the compliance and educational activities have been approved in the 2006 legislative session.

(2) *Bureau of Pesticides* - Programmatic focus this year has been on the following Issues:

o *Arsenic updates:*

Arsenical herbicide monitoring studies. Over the last few years the Bureau gathered evidence regarding elevated levels of arsenic in shallow ground water underlying golf courses, but not in potable water wells. That evidence prompted FDACS to investigate whether there may be a relationship between the elevated levels and the application of organic arsenical herbicides such as MSMA. The FDACS has been negotiating with the MAATF about the need for a prospective study in Florida. Since there are potential multiple sources of arsenic and since arsenic is a naturally occurring element, it is difficult to look retrospectively to determine with certainty that a certain product or another contributed to the elevated levels of arsenic. FDACS has determined that the appropriate action would be to conduct a prospective study under controlled conditions to determine how arsenical herbicides move into ground water. The Task Force did not feel that there was a statutory-derived need for them to proceed; however, his group of registrants agreed that it was responsible to assist in determining where the elevated levels were coming from and to answer other questions. We have been in the process of working out a protocol with the MAATF. Some progress had been made with the protocol; however, the Task Force would like to put the study on hold pending a review of EPA on the toxicity of arsenic. If the results indicate that MSMA is less toxic than previously thought, they agree that there may not be a need for the prospective study.

The Bureau has also been working with Collier County investigate arsenic levels found in groundwater beneath golf courses there. The County has requested that the Bureau determine whether MSMA was contributing to that problem. FDACS' laboratory has established a method to determine the presence of MMA which is an organic arsenical that results from MSMA. MMA was detected in some wells at low levels.

Arsenic toxicity concerns: In response to a presentation by the MAATF on arsenic toxicity, FDACS responded that it is known that the inorganic arsenic causes cancer in humans, but not necessary in animals. Di-methyl forms cause cancer in animals and the mechanism appears to be relevant to humans. The approach of a threshold for cancer is unique, but a specific threshold has not been determined yet for the dimethyl arsenical form. Methylization is no longer considered to be a detoxification mechanism; in fact it is likely part of the cancer process. There has recently been a change in thinking in the methylization, demethylization process. The risk assessment will progress from the particular arsenical species that was studied, to addressing the environmental fate of the chemical and the extent to which organic arsenicals revert back to the highly carcinogenic inorganic forms in the environment.

EPA's draft risk assessment on organic arsenical herbicides an update: On October 19th, 2005, staff of the MAATF, their consultant (HSA Engineering), FDACS, and FDEP met to discuss changes to the MSMA and DSMA master labels and the design of the prospective ground water. A proposed label revision of note was the insertion of "spot treatment only" language on the labels of MSMA and DSMA products intended for use on turf in Florida. In addition, stakeholders also discussed details of the study design relating to (1) the study plot size- ¼ acre vs. one acre, (2) the number of soil borings/samples, (3) the sampling frequency- monthly vs. quarterly, (4) the analytical requirements (i.e., when to speciate arsenic), and (5) the duration of the study. In April 2006, HSA submitted a site selection status report and described efforts to identify a site for the study. Participants are continuing to move forward with site selection activities.

On April 5, 2006, EPA released its initial draft risk assessments on the organic arsenical herbicides: MSMA, DSMA, DMA, and CAMA. These assessments were conducted as part of EPA's re-registration process which is conducted on "older" active ingredients to ensure that they meet current scientific and regulatory standards, and to consider new research on the toxicity and carcinogenicity of arsenical herbicides and their degradation products in the environment. EPA requested stakeholder/public input by June 5, 2006.

The EPA's risk assessments evaluated multiple exposure routes (food, soil, and drinking water), chronic and acute exposure scenarios, and cancer and non-cancer endpoints. The risk assessment was complex, reflecting the complex nature of arsenical chemicals and their behavior in the environment. Questions critical to the risk assessments included: Do organic forms of arsenic persist in the environment? Do organic forms of arsenic convert, with time, to inorganic arsenic forms? The complexity of these risk assessments was attributed, in part, to the following factors: (a) arsenic can occur in various forms in the environment (organic vs. inorganic), (b) various forms of arsenic may have varying toxicities (moderate vs. low), (c) various forms of arsenic may have carcinogenic and non-carcinogenic effects, (d) the environmental fate of arsenic is dynamic and impacted by environmental conditions (e.g., methylation vs. demethylation, bound vs. unbound, soil chemistry).

In conducting their risk assessments, EPA considered the following questions:

(1) Could the application of organic arsenical herbicides lead to accumulation of total arsenic in soil? If so, could this accumulation be mitigated and what effect might mitigation have on use practices? (2) Could application of arsenical pesticides increase total arsenic in water (surface and ground)? If so, could this be mitigated and what effect on use practices would mitigation have? (Mitigation measures could include reducing application rates and frequencies, requiring buffers from wells or water supplies, etc.) (3) Would use of the organic arsenical herbicides expose homeowners to unacceptable risks from total arsenic in the residential setting? (4) Would use lead to risks for non-target organisms?

In their risk assessments, the EPA assumed that arsenic from pesticides is not lost but redistributed and transformed throughout the environment and the agency based the risk assessment of MSMA, DSMA, and CAMA on the toxicity of MMA. EPA made no evaluation of cancer risks for the organic forms of arsenic, since no cancer endpoint was selected for these forms. The EPA evaluated the risks to humans and non-target organisms and considered dietary exposure, drinking water exposure, occupational (handler) exposure, residential incidental soil ingestion, and residential dermal exposure. Where appropriate, EPA considered the role of inorganic and organic arsenic in the risks associated with the arsenical herbicides.

The EPA concluded that the Margin of Exposure for occupational exposures (mixers, loaders, applicators, etc.) all exceeded 100 for CAMA, MSMA, DSMA and DMA, suggesting no unacceptable risk. With the exception of DMA use in turf renovation (MOE 75), all post-application, occupational exposures, were not associated with any unacceptable risks. In addition, on the day following application, the risk associated with DMA use in turf renovation was acceptable. Residential mixer, loader, applicator exposures had no unacceptable risks.

Regarding residential, post-application exposure, acute incidental oral exposure to DMA was found to be unacceptable, as was the aggregate residential post-application risks for DMA (MOE 3) and CAMA (MOE 85). No unacceptable acute risks were associated with post-application, residential exposure to MSMA or DSMA. A further conclusion of note by EPA was, "...risks to toddlers [or adults] incidentally ingesting soil from an area that had been treated with compounds that transformed to inorganic arsenic for several years might be a concern." Therefore, FDACS suggests that this pathway should be evaluated.

EPA's estimates of surface water arsenic concentrations (ppb) were made for both turf and cotton uses using PRZM-EXAMS, and reported concentrations exceeding the MCL of 10 ppb. The risk assessment made no assessment of the potential effect on ground water, but stated that, "Based on the environmental fate properties of organic arsenicals, leaching to groundwater is not expected to contribute significantly to the already existing burden of arsenic in groundwater except in highly vulnerable situations."

Although there are minimal food uses for these herbicides, EPA conducted a dietary risk assessment based on the FQPA's statement that, "acute and chronic dietary risk estimates cannot be limited to residues of DMA and MMA and their salts on cottonseed but must include all sources of dietary exposure." Therefore, background levels and other sources of arsenic have been included in these assessments. The EPA risk assessment found that all acute risks were below levels of concern and chronic risks were acceptable when assuming 100% organic residues.

FDACS believes that the EPA risk assessments have several limitations. First, EPA did not evaluate the risks associated with a site that had received multiple years of applications (i.e., residential, golf course, or athletic turf). EPA did suggest that a single application would result in soil levels greater than EPA's soil screening level of 0.4 mg/kg and also stated in its assessment that "..., arsenic in its inorganic form does not metabolize and evidence indicates that it may build up in soil over time as applications are repeated." Second, EPA conducted no assessment of the long-term (i.e., chronic) risks from arsenic species in post-application, residential exposure scenario. If organic species are persistent or can be converted to inorganic species in the environment, should this scenario be evaluated? Third, the drinking water assessment only focused on surface water, although EPA states, "In most situations, organic arsenical pesticides should not contribute significantly to the already existing burden of arsenic in groundwater from all sources, natural and anthropogenic. In certain vulnerable circumstances in areas with low background arsenic, application of organic arsenicals may lead to an increase in groundwater total arsenic." Florida soils typically have a shallow depth to ground water, sandy soils with low clay and organic matter, >50 inches of rainfall per year, and a background arsenic concentration of 0-4 ppb, all of which result in Florida's groundwater being particularly vulnerable to leaching compounds.

- *Lake Wales Ridge Monitoring Program Update:* An update to the Council on the Lake Wales Ridge Monitoring Network (LWRMN) was provided. Oxamyl, a nematocide, registered by DuPont, was a main focus. The LWRMN is a network of monitoring wells located in the central part of Florida in a citrus growing area in Highlands and Polk Counties. Originally, it was established to evaluate the fate of pesticides in sandy soils that are considered to be very vulnerable to groundwater contamination. The network could also serve as an early warning system if any detection exceeded groundwater guidelines. The network was established in 1999 with the inclusion of the first 14 wells. With additional wells installed in 2000 and 2001, the number of wells was increased to 31.

The network is a cooperative effort between FDACS, the Southwest Florida Water Management District, and the United States Geological Survey. The 31 surficial monitoring well depths vary from 9 to 150 feet and are sampled every three months. Since 1999 six compounds were detected at greater than allowable limits for groundwater. These compounds are aldicarb, bromacil, nitrate, diuron, simazine and oxamyl. In the latest round of sampling (July 2005), exceedences for aldicarb, nitrate and oxamyl were observed. Oxamyl is a carbamate and a restricted use pesticide based on acute mammalian toxicity and bird toxicity. Originally, oxamyl was not in the analyte suite; however, following detections in the October 2004 sample series the analyte was added to the suite. Out of the 31 wells, three had confirmed oxamyl detections. The Maximum Contaminant Level for oxamyl is 200 ppb and in May 2005, the Altvater Road the detection spike was at 550 ppb. In August 2005, a spike of 240 ppb in the Old State Road 8 well was detected. After the detections exceeded the guidelines, FDACS notified the

registrant and conducted confirmation sampling at both of the well sites. In addition, FDACS investigated oxamyl historical use in nearby groves. As a last investigative step, FDACS surveyed potable wells in the area. Since the spikes, oxamyl has shown a decrease in concentration from May 2005 (550 ppb) and July 2005 (13 ppb) in the Altvader Road well. The pH plays a major role in how the chemical degrades. Lower pH reduces the degradation, whereas higher pH values speed the degradation. No oxamyl was detected in any soil residues around the well-head. FDACS is currently working to understand the nature of the contamination (i.e., spill or point source vs. leaching from compliant application, vs. faulty microjet application equipment. The potable well survey has yielded no oxamyl detections to date but there has been no testing for this chemical since 2003.

(3) FDACS Bureau of Compliance Monitoring -

- *Worker Exposure Issues:* The 2004 passage of the Florida Agriculture Worker Safety Act allowed for the creation of an interagency work group. The work group has been very active and meets about once a month to discuss all of the agricultural worker issues that each state agency oversees. The work group established a toll free hotline that allows for farm workers to easily access the agency needed. This system is working well with currently a total of 122 complaints among all agencies. 114 of those complaints have come to FDACS for worker safety issues. The establishment of the hotline has caused an increased workload and more positions have been requested.
- *2006 Worker Protection Standards (WPS) Legislative Update:* A report was provided on the 2006 legislative year pertaining to the Worker Protection Standard. The Governor's Office has re-established a joint commission on migrant worker affairs. This is composed of members of the House and Senate who examine all issues involving migrant workers. Pesticides were the number one issue on the agendas of those meetings. The Department requested ten new positions and \$730,000 to assist in compliance regulation of the worker protection act. As with a past request for more personnel and funding, this was granted. Eight of the ten positions will be for field inspectors; the others will be for a case processor and for clerical support.
- *WPS Compliance Report:* There are about 300,000 farm workers in the state of Florida. After analysis, FDACS determined where to geographically locate the eight new inspectors to best address compliance issues. For the period between 1995 and 2001, we have compiled a list of total inspections vs. violations which shows that nurseries are a major source of worker safety issues, accounting for 40 percent of the total violations. Thus, more focus will be on the horticulture industry to reduce their violations of central posting of information and other requirements. Training will be an important path to solving most of the compliance issues in Florida. Worker Protection Standards will be a continuing issue and will be on the forefront of rule-making by EPA and Florida.

- *WPS “Road Show” Accomplishment Report:* The Worker Protection Safety Road Show is a cooperative effort with the University of Florida to help growers understand and comply with the standards of worker safety. The Road show was held in various cities and counties in the state: Homestead - March 6, Belle Glade - March 7, Palm Beach - March 7, Immokalee - March 8, Palmetto - March 8, Bartow - March 9, St. Augustine - March 9, Plant City - May 8, Quincy - May 9. The major goals of the program are to improve compliance with the standard, ensure a healthy workforce, and to provide a better understanding of recordkeeping, posting (central and field), the new manual and training.

- *Operation Cleansweep 2005-06:* The Bureau of Compliance Monitoring operates the Cleansweep Program for FDACS. Operation Cleansweep is a program for the collection and proper disposal of cancelled, suspended and unusable pesticides, at no charge to the participants. Items accepted are: cancelled pesticides, suspended pesticides, unusable pesticides, restricted-use pesticides, unknowns, custom blends, experimental use pesticides, and pesticides in aerosol cans. Items that are not accepted in the program but are dealt with in other programs are: pesticides in pressurized cylinders, fertilizers, spreaders, stickers, adjuvants, nutritionals, dyes, household chemicals, etc. Industries that have taken advantage of this program are: farms, golf courses, pest control, citrus, landscape, nurseries, veterinaries, forestry, parks/cemeteries, private applicators, greenhouses, and dealers/manufacturers. These participants have accounted for the following yearly totals:

Year	Participants – lbs.
2000-2001	374 - 236,000 lbs.
2001-2002	357 - 225,000 lbs.
2002-2003	145 - 126,000 lbs.
2003-2004	211 - 251,000 lbs.
2004-2005	57 - 73,785 lbs.
2005-2006	104 - 89,000 lbs.

After funds were expended this year, 14 counties were still awaiting service and the operation will be continued in the future.

(4) FDACS Bureau of Entomology and Pest Control- In addition to routine functions, the Bureau was involved in the following special activities:

- *BEPC Legislative Update:* The number one complaint about pest control services involves wood destroying organism inspections (WDOI). Complaints usually come in two forms: (1) misunderstandings by customers, and (2) the quality of the WDOI. This affects licensee liability because these complaints are often litigated

and place great demand on the regulatory agency's resources. To address these issues, the Bureau requested the industry consider three areas which need to be addressed to improve WDOIs, including statutory changes designed to clarify licensee-employee relationships, new requirements for training and certification specific to WDOI and standardization of procedures under which WDOI are conducted. The industry agreed to statutory changes and the development of WDO inspection standards. In addition, a number of pest control licensees were issuing pest control identification cards to individuals who technically meet the definition of "employee" but, behave as "independent contractors". These companies have been found to lack proper training and supervision, further exacerbating the poor performance record of WDOI in the industry. Changes in the statutes were made to make language more enforceable. For example, Chapter 482.091(2), F.S. removed the word "may" and replaced it with "shall". Further changes were also made to F.S. 482.021(7) and (12) to make the definitions clearer.

Other statutory changes included a change to the rules section of Chapter 482.051, F.S., to provide authority allowing licensees to perform secondary treatments for new construction following a complete primary treatment, to enhance the protection of a structure. The proposed changes to the Chapter 482.156, F.S. include: clearly defining certification to mean "an individual"; expanding the types of chemical tools to include fungicides (already includes herbicides, and insecticides); eliminating the 3-year experience requirement to cut grass prior to taking the training for the limited certification and reducing from 8 hours to 6 hours the training needed prior to examination. Proposed changes to the Chapter 482.211(7), F.S. exempted "Mosquito control" but did not specifically define the term. The changes to the statute now include a clarification for the exemption to include activities conducted by a local government or district established under chapter 388 or by special act or by a contractor of the local government or district.

Rules were also affected in the 2006 legislative session. The rule 5E-14.105 F.A.C. on contractual agreements in the public's interest now requires licensees to issue contracts within 30 days of the initial or final treatment and must be for no less than 1 year from the date specified, must specify wood destroying organisms covered in the contract, have a spot treatment disclosure and must comply with terms of each contract it issues. Also, an entire new section was added which includes time to retreat limitations. Once notified in writing, a licensee must inspect within 30 days and retreat an infestation within 90 days of discovery or 180 days, if access is restricted, treatment is waved or postponed in writing or property is commercial/multiunit. The licensee cannot use limitations, exclusions or conditions clauses to deny treatment or repair to a contract holder unless the infestation or damage was primarily caused by the limitation, exclusion or condition in the contract. If the licensee was aware of a condition, exclusion or limitation, they must provide written notification to the consumer to allow time to correct the condition. If the consumer has not corrected the condition within 60

days of written notification then the licensee may use the condition to deny repair or re-treatment.

The final workshop was held in March 2006 for Rule 5E-14.149. The Enforcement Response Guideline was amended to promulgate FDACS procedures for enforcement into rule. It lists penalties ranging from a warning letters to revocation of credentials and criminal prosecution. Further, a quarterly list will be published identifying individuals or companies that operated illegally and providing a description of actions taken.

- *Borate Update:*

Borates continue to rise in popularity in Florida as a barrier method termiticide which is applied directly to the wood. The rise in popularity comes primarily because of cost and convenience to the builder, but also from the ability to be more flexible with the timing of the applications. In March, a special enforcement operation targeting pretreatments was performed. Over 60 inspections were carried out over a three day period, 75% of which involved borates. Enforcement operations can inspect borate applicators after the application is completed.

Some potential problems were noted during the inspections. The majority of homes built in the central and south Florida areas are now constructed with concrete block. This creates a problem with borate product label language which specifies that at least 60% of the linear footage of interior and perimeter base plate must be made of cellulose materials. Many block homes do not meet this rule and therefore should not be treated with borates. A secondary product can be used in conjunction with borates, however, inspections have not seen applicators performing secondary treatments to enhance the protection of structures. Also, a debris issue is apparent: Any debris must be removed prior to the borate solution being applied. A proper barrier cannot be produced when debris or obstructions interfere or prevent the establishment of a barrier and this is a clear violation of the label and the rule.

Other noted problems are: potential mixing problems; lack of proper training; label statements being unclear; and efficacy on metal studs. Currently the Standard Operating Procedure (SOP) for the pesticide laboratory is the development of a field test kit to determine the specific gravity of a tank mix. A spray is applied to the wood and a color test is given to determine compliance. A new test is being considered for enforcement purposes.

A new product on the market is Perfect Barrier DOT Wood or "Bluewood". It is a wood preservative (registered on April 15, 2005) labeled for use against wood decay, fungi and wood destroying insects. This product is applied to the entire stud before installation. Since the product is not approved for termite protection,

some other approved form of termite treatment is necessary while using this type of product.

- *Asulox (label interpretation)*: The Bureau received information that some licensees in the state were using asulam on residential lawns. Upon further investigation we found that the applicators were interpreting the label differently than the state. This product is limited to use in agriculture and commercial turf due to toxicity concerns. Use is allowed on rights-of-way, and this statement was being interpreted by applicators to indicate that it could be used on portions of residential lawns. The label specifically states that this product is for agricultural use only, not for use by homeowners. Inspections also revealed that there were possibly violations of mixing and applications to lawns.
- *Africanized Honey Bees (treatment strategies)*: A video was shown that dramatized the nature and ferocity of the Africanized Honey Bees. The program included a recreation of actual events following an emergency call from the victim and showed that responders put themselves at risk without adequate training and equipment. Programs are available to train emergency personnel to combat the aggressive bees.

(B) Florida Department of Health (FDOH) Briefings- The following special activities were reported:

- *Mosquito Control and Pesticide Exposure in Florida*: A recent study conducted in St. Johns County in 2004 was reported to the Council. There were five hurricanes in Florida during the fall of 2004 that we all had to deal with. The conditions afterward are conducive to mosquito population increases; therefore, there may be an increased risk of mosquito borne illnesses during the aftermath of a hurricane. In the efforts to combat increased mosquito populations, aerial applications of pesticides post-hurricane gave rise to some concerns regarding potential exposure to pesticides. In collaboration with the Center for Disease Control and the Department of Health, a study was conducted to see if people living in the area of aerial pesticide applications experienced a significant increase in exposure to pesticides as evidenced by biomonitoring. This was accomplished through laboratory analysis for metabolites of pesticides in urine samples from volunteers. In October 2004, there was aerial spraying in St. Johns County after Hurricane Francis. There were pre- and post-aerial application interviews of citizens about previous exposure to pesticides.

One urine sample was collected from participants prior to aerial spraying and up to five collected after the aerial spraying of pesticides (pre-samples were the control). The urine was tested for metabolites of naled, the pesticide used in the aerial sprayings. Census blocks were used to select from the population using five proposed spray zones. Of 626 people asked to participate, 253 agreed and 210 finished the study, accounting for >80 percent of the final participant number. Preliminary results indicated that on the average, the urine levels of naled

metabolites were less after the aerial sprayings as compared to levels before the sprayings. Also, it was concluded that mosquito spraying did not increase the nated metabolites in the urine of the participants of this study. The data and the full content of the study are currently under review.

(C) Florida Department Of Environmental Protection (FDEP) Briefings-

- *Pesticide Detections in the Caloosahatchee River:* A brief presentation to the Council on pesticide detections in the Caloosahatchee River was made. The South Florida Water Management District has been collecting water samples from the Caloosahatchee and St. Lucie Rivers on a quarterly basis. When a draft list of impaired surface waters was compiled, malathion was included. Initially, when the data were reviewed as part of an automated process, the data provider failed to include a lab remark code, which qualifies the value being reported. Therefore, malathion was indicated as being at an unacceptable level, as opposed to the actual, undetected level. As this notation was not transferred, the data were misrepresented. Once the lab remark codes were received and evaluated, malathion was removed as a parameter of concern from the verified list of impaired waters in the Caloosahatchee River Basin.

With events like the addition and removal of pesticides to an impaired water body, these lists can cause some media interest. There are some data that show sporadic low level detections occurring in ambient surface waters and sediments in the Caloosahatchee River Basin. FDEP believed that it was in our interest to come up with a program that was well thought out. This prompted discussions with the South Florida Water Management District and FDACS. The goal of this interagency effort was to cooperate and not repeat work already done by the different agencies. A study plan was distributed to the Council and contained descriptions of how the study was to proceed in a cooperative manner. The water samples are to be taken monthly at the sites listed and will be quarterly for sediments. A list of pesticides were presented that would be tested for. In addition, a cost estimate was presented that exceeded \$100,000 to complete the study. As this is an important study, FDEP is committed to completing this cooperative effort. Through this study, FDEP and the other participants will be able to confirm if there are significant issues to address. If we do find significant loads that exceed the limits, we must come up with best management practice to reduce the load of pesticides on these waterbodies.

(D) SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD) briefings:

- *Caloosahatchee River Project Update:* A summary of the cooperative monitoring program for the Caloosahatchee River was presented. Participating agencies include Ft. Myers FDEP, FDACS, and SFWMD. The data summary covered samples collected and analyzed for the first and second quarter of 2006. With the exception of aldicarb, the detected concentrations were similar to the historical

SFWMD data collected. Aldicarb (carbamate) analysis is not part of the District's current monitoring program, since the previous analytical protocol involved a significantly higher minimum detection limit.

VII. Working Committees

Working committees can be formed at the discretion of the PRC to more fully explore individual issues. No working committees are currently operational.

VIII. PRC Actions

No non-administrative actions were taken by the PRC.

IX. Conclusions

In the year 2005-2006, the PRC made continuous progress in providing a framework to scientifically address pesticide issues. With timely cooperation and assistance from the state regulatory agencies, the PRC has been successful in minimizing duplication and maximizing the limited manpower and monetary resources of the state. This foundation will help the PRC assure (1) that state regulatory agencies can coordinate the management of pesticide issues, (2) that a forum for review and discussion of pesticide-related issues can be provided, and (3) that the PRC can meet its obligation to serve Floridians by addressing pesticide issues in the future.