

PESTICIDE REVIEW COUNCIL MEETING

MINUTES

May 23, 2007

Florida Department of Agriculture & Consumer Services

Division of Plant Industry

1911 SW 34th Street

Gainesville, Florida 32614

MEMBERS PRESENT:

Dr. Brian Hughes, Department of Health (FDoH)

Mr. Ed Irby, Environmental groups

Dr. Dennis Howard, Florida Department of Agriculture and Consumer Services (FDACS)

Dr. Christopher Saranko, Toxicologist

Dr. Mark McLellan, Instit. of Food & Agric. Sciences (IFAS)

Mr. Richard Pfeuffer, South Florida Water Management District (SFWMD)

Dr. Mel Kyle, Agricultural chemical industry

Mr. Dave Eggeman, Florida Fish and Wildlife Conservation Commission (FFWCC)

MEMBERS NOT PRESENT

Dr. Wendy Graham, Hydrologist

Mr. Jerry Brooks, Department of Environmental Protection (FDEP)

Vacant, Grower representative

OTHERS PRESENT:

Mr. Andy Rackley, FDACS

Dr. Davis Daiker, FDACS

Mr. Charlie Clark, FDACS

Mr. Dale Dubberly, FDACS

Mr. Max Feken, FDACS

Mr. Steve Dwinnell, FDACS

Mr. Alton Straughn, Straughn Farms

Mr. Josh Craft, FFBF

Mr. Mike Page, FDACS

Mr. Mike Aerts, FFVA

Ms. Patty Lucas, FDACS

Mr. Thomas Eberhart, FDACS

Dr. Ashok Shahane, FDACS

Ms. Marie Lopez, FDACS

Mr. Paul Rygiel, FDACS

Mr. James Dodson, FDEP

Dr. Fred Fishel, UF/IFAS

Ms. Hina Patel, FDACS

Ms. Marian Berndt, USGS

Ms. Narquinta Richardson, FDACS

Mr. David Whiting, FDEP

Mr. Gary Mahon, USGS

Opening Remarks:

Dr. Dennis Howard, Chair, called the Pesticide Review Council (PRC) meeting to order at 9:00am, noting that this is a public meeting and the Council welcomes input; those who wish to comment or make a statement should fill out a speaker request form at registration. The Chair requested that people in attendance announce their names and their affiliation.

Agenda Review and Modification:

Dr. Howard outlined the agenda and asked if any revisions were needed. No amendments were suggested.

Review of Draft Minutes from, January 19, 2005, Meeting:

A suggestion was made to define and clarify “RED” statement as the Reregistration Eligibility Decision in the document. The change was noted and will be addressed. The minutes were nominated for acceptance by Dr. Mel Kyle, seconded by Mr. Ed Irby and approved by unanimous vote.

Old/New Business:

Dr. Howard reminded the Council of prior discussion of purpose and scope of the PRC. While the PRC is defined statutorily, the Council has considerable latitude in determining its direction. The Council primarily is informational but it can be proactive on emerging issues and members are encouraged to bring forth issues of importance. A straw poll of members indicated that the greatest area of interest is in emerging research on pesticides. Dr. McLellan agreed that UF/IFAS would be a good resource in this field. Ranking second in importance was decision-making on arsenical herbicides. Impacts of pesticides on air quality ranked third. Additional issues of interest included: alternatives to arsenical pesticides; education of residents in agricultural areas on agricultural practices; and education of growers to help avoid conflicts over pesticide use at the agricultural/urban interface. Dr. Howard noted that at the end of the agenda he would like to have discussion on any items that are of concern to the members.

Mr. Ed Irby noted that he had been reading in the media that spray drift is a problem in the western states; he asked if this has been an issue here in Florida and what is being done about this potential problem. Dr. Howard said that spray drift is indeed an issue and some concerns

have risen in the west about drift into schools. He noted that he would be talking today on a Florida issue that is similar.

He also stated that officer elections are due in October and that an establishment of a nominating committee is needed. Currently we have three officers, a chair, vice-chair, and secretary. The Vice-Chair is, by tradition, slated to succeed as chair. Before October we will need to select nominees for the officer positions. Mr. Richard Pfeuffer was designated chair of the Nominating Committee. Volunteers to assist in the nominations were Dr. Mel Kyle and Mr. Ed Irby. Dr. Howard thanked the Committee and will assist them in the selection process rules.

Agency Status Reports:

FDACS, Agricultural Environmental Services, Mr. Steve Dwinell:

Legislative Report, Pesticide Program Review/Budget, Farm Worker Protection

Mr. Steve Dwinell, Assistant Director of the Division of Agricultural Environmental Services provided an update of legislative activities for the past session, pesticide program budget and fee review, and Farm Worker Protection.

In the past session, SB-1372 passed and is awaiting signature by the Governor. This new law would establish a biennial registration fees for pesticides effective January 1st, 2009. There is no increase in registration fee; registrants would pay \$500 during the first year of a two year cycle rather than paying \$250 per year. Registrants generally favored this change because it would reduce their administrative costs for registering pesticides in Florida. This bill would also clarify the definition of a pesticide brand and would impose a late fee of \$25 per brand per month of delinquency, with a cap of \$250 per brand.

The Department has been going through a legislative-required fee review for 2006-07. This evaluation was mandated under the premise that regulatory programs should not rely on general revenue, but should use fees to sustain program costs. The Department found a significant gap in revenues from fees versus program costs for laboratories, field work, registration and indirect support.

Mr. Dwinell provided figures to the Council on how much funding versus costs required for the programs. Total projected 2007-08 expenditures for the pesticide program are \$6,010,292. That figure does not include contracts and grants since this category falls under a cost reimbursement process, where spending equals grant funding. Licensing and fees are

projected to raise \$4,105,371. The resulting \$1.9 million dollar shortfall is reconciled with general revenue funding of \$1,698,670 and \$206,251 in transfers from other trust funds. The Department receives about one million dollars in pesticide contracts and grants.

Some options that were presented to make up for the shortfall included a registration fee increase. The Department could try to raise revenues by identifying unregistered brands in trade channels. The Department could also consider raising support from the Pest Control Trust Fund, since the pest control program benefits from the laboratory services and other activities of pesticide program. In response to a question about fines for unregistered pesticides, Mr. Dwinell stated that for first-time violations, fines are typically double what the registration fee would be. Unregistered brands usually involve products produced by small-scale domestic and imported operations.

Replacement of laboratory equipment emerged as an important issue in the budgetary process. The Department's legislative request for \$317,400 to replace aging instruments was not approved this year and prospects for funding next year are not encouraging. The Department has been able to obtain some new equipment from grant funds provided by the Department of Homeland Security, however this source is not expected to be available on a recurring basis and it covers only a portion of the laboratory's equipment needs. A suggestion was made by Mr. Irby to invite the budgeting Committee to the laboratory to show them the lab's capabilities and needs.

Mr. Dwinell asked Dale Dubberly, Chief of the Bureau of Compliance Monitoring, to give a presentation on Farm Worker Protection Standards. Mr. Dubberly circulated a handout. The Worker Protection Act was adopted by rule in 1995 and the Florida Agricultural Worker Safety Act was changed to require a Material Safety Data Sheet (MSDS) be provided to the purchaser and an MSDS or fact sheet provided to farm workers. It also prohibits retaliation for workers who report violations to regulatory agencies and allows us to increase staff for enforcement in the Department.

From March 2006 through April 2007, there were 902 inspections. 241 had one or more violations for a total of 437 separate incidents. Approximately \$26,000 was collected from fines for first-time violators. Commonly encountered violations include deficiencies in central posting of pesticide information; lack of proper training for workers; inadequately maintained/stored

personal protection equipment; lack of safety equipment; and inadequate decontamination facilities.

Dr. Mel Kyle asked about fines and their effect on the violation rate. Mr. Dubberly stated that fines may have played a roll in decreasing the violation rate by about 10 percent over the previous year. However, training is an area where we can see the most improvement. Dr. Brian Hughes asked about the violation levels on the handout and to explain tier levels and if they are re-inspections. Mr. Dubberly explained that the term tier level is used by EPA to categorize inspections. Tier 1 refers to an inspection within 30 days with the Reentry Interval (REI) and tier 2 is any thing after the REI. Mr. Dubberly concluded his presentation with statistics on inspections. In all ten regions of EPA, a total of 3800 inspections conducted. Region 4 accounted for 1888 of these inspections, and Florida led the region with 1200 inspections.

FDACS, AES, Bureau of Pesticides, Mr. Max Feken

Endangered Species Protection Plan/ESPP Bulletins, Mosquito Control

Mr. Max Feken (Scientific Evaluation Section) provided the Council a presentation on the Endangered Species Protection Program (ESPP), new endangered species protection bulletins and an update on the Miami blue butterfly. Mr. Feken showed a map of Florida with shaded regions representing endangered species habitats. Currently there are 104 endangered species - nearly evenly divided between between plants and animals. Overall, Florida ranks fourth in the number of federally listed species.

Since last November, EPA has been adding finishing touches on their new Endangered Species Program website that will host their new and improved pesticide county bulletin system referred to as "Bulletins Live!" Before the program was finalized in 2005, the old endangered species program was completely voluntary and consisted of pesticide county bulletins that contained information on the federally listed species that need protection in the county, map(s) where the species were located, and a list of pesticides with restrictions (i.e., buffers to mitigate potential impacts to listed species. The new program will consist of similar pesticide county bulletins, now called "Endangered Species Protection Bulletins"; however, these bulletins now will be considered as an extension of the pesticide label and, therefore, enforceable under FIFRA.

For those pesticides listed on Endangered Species Protection Bulletins, a generic statement will be placed on the pesticide label informing the applicator that a Bulletin may be available for the county where they will be applying the pesticide. The statement instructs the user to consult EPA's website to see if a Bulletin exists for a county of interest. As of May 2007 the generic label language stated: *"This product may have effects on endangered species. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. To obtain Bulletins, consult www.epa.gov/espp, or call 1-800-447-3813 no sooner than six months before using this product. You must use the Bulletin valid for the month and year in which you will apply the product."*

EPA decided to provide pesticide applicators the ability to download and print a bulletin up to six months in advance of applying the product. Why six months? This was likely a compromise between growers and environmental groups. The purpose of the 6-month window is to allow pesticide users an opportunity to plan for any restrictions that may impact how they apply a particular pesticide product. Pesticide users should know that purchasing a product more than six months prior to use could result in subsequent restricted use of that product. In addition, a pesticide user should not wait until right before applying a pesticide to check on the availability of a bulletin since pesticide use limitations may significantly alter the usability of the product.

In order to check the availability of the Endangered Species Protection Bulletin, an applicator will click on the "EPA Bulletins Live!" web link (not yet available) found on EPA's Endangered Species Protection Program webpage (www.epa.gov/espp). The pesticide user then selects the state and county in which they plan on applying the product and selects the month, up to six months in advance, during which they plan on using the pesticide. The Endangered Species Protection Bulletin will then appear on the screen with information on the listed species that require protection. Map(s) will also be available showing the location of Pesticide Use Limitation Areas (PULAs). These PULAs identify the areas of the county where pesticide use restrictions are required to protect the species, although these areas may not include all areas of the county where the species is located, just those areas where pesticide restriction are required (i.e., areas where listed species may be exposed to pesticides). Finally, the Bulletin will contain a list of pesticide active ingredients with limitations

(e.g., buffers) that are required to protect the listed species. Users are encouraged to print the Bulletin for their records.

There are several reasons why pesticide users should comply with the restrictions provided in the Endangered Species Protection Bulletins: (1) it's the law; (2) most people do not want to deliberately harm endangered species when using pesticides; (3) the program represents the Office of Pesticide Program's effort to comply with the Federal Endangered Species Act (ESA). Section 7 of the ESA requires that federal agencies consult with the U.S. Fish and Wildlife Service for any federal program that may impact endangered species. It is important that EPA continue to move forward toward compliance with ESA so that litigation does not unfairly limit the availability and continued use of pesticide products.

EPA will review pesticides for their potential effects to threatened or endangered species as pesticides are registered or amended and during the newly implemented 15-year registration review cycle (approximately 45 active ingredients per year). Unscheduled reviews could also occur if EPA becomes aware of significant risk or if mandated by the courts. EPA must review each use pattern to determine if that use may have an effect of each of the 1,200 species listed as endangered or threatened in the US.

EPA is currently reviewing aldicarb, carbofuran and 9 rodenticides. EPA cannot predict a date when a pesticide product label will reference a bulletin since this depends on when a pesticide is reviewed by EPA and the outcome of the assessment. EPA has published a schedule for those pesticides for which registration reviews will begin in the next four years.

During the registration review process, EPA will provide opportunities, through the docket process, for interested parties to provide input into the endangered species (and other non-target) assessments. Applicators can work with their state representative to identify potential mitigation such as limiting pounds of active ingredient per year, restricting use to certain times of the year, creating buffers around water bodies, prohibiting use in certain areas, etc. Growers can also identify how use instructions could be modified to reduce the potential risk. All affected parties are encouraged to participate early in the process.

Mr. Feken then provided the Council with an update on the Miami Blue Butterfly reintroduction program and noted that the Miami Blue subcommittee is now the "Imperiled Species Subcommittee" of the Florida Coordinating Council for Mosquito Control. The new subcommittee will be permanent and will be responsible for advising the Coordinating Council

on issues dealing with mosquito control and imperiled species (including federally and state-listed threatened or endangered species). The Miami Blue is historically found in the Florida Keys. The species is currently being captive-reared by the University of Florida and reintroduced to its former habitat. Population numbers on Bahia Honda, previously considered the last remaining natural population, have rebounded to pre-2005 hurricane season numbers. In addition, new populations have been found on several islands in Key West National Wildlife Refuge. This summer, truck spray trials will be conducted in Alachua county and aerial trials will be conducted on North Key Largo to determine effects of mosquito adulticides on larvae under field conditions.

Dr. Mel Kyle asked whether the responsibility for getting the bulletin to the applicator in the field will fall to the registrants, growers or the applicators. Mr. Feken said it will primarily be on the applicator. Mr. Feken also noted that EPA feels that electronic distribution of labels is preferred; for a certain percentage of users who will not use the internet, bulletins can be obtained by calling a toll free number and having them shipped.

Dr. Chris Saranko posed a question on how the scale of the map in the bulletin will be discernable when the areas of note may be 20 yards. Mr. Feken stated that the restricted area will be determined by the habitat area. Surface water bodies will be easily observed, but for plants it will be difficult. What will be of more concern is registration of pesticides that are used to combat invasive species and how those are applied.

Dr. Brian Hughes asked if the EPA has mandated to the states when they should have their bulletins online. Mr. Feken stated that the states can elect to have their own bulletins under their programs and if EPA agrees on how they are distributed. There are no mandates. To date, only Washington and California have state programs.

Mr. Mike Aerts asked if Mr. Feken had heard of the case on the west coast involving a species of frogs where the 66 active ingredients are restricted for use in their potential habitat area. For example, a celery field can be a potential habitat for these frogs, so would that area be restricted under EPA's bulletin system? Mr. Feken indicated that it was too early to predict how EPA would respond.

FDACS, AES, Bureau of Pesticides, Dr. Davis Daiker

Arsenical Herbicide Update

Dr. Davis Daiker, Scientific Evaluation Section, Bureau of Pesticides gave an update to the Council on arsenical herbicides. On August 9, 2006, EPA released the Reregistration Eligibility Decision document for arsenical herbicides. The document included a redefined assessment of risks to non-target organisms and the agency's decision on re-registration eligibility. It opened a 60-day comment period that was subsequently extended to a closing date of January 19, 2007. The document identified unacceptable risks under the following scenarios: dimethyl arsenate under both occupational and post application scenarios, dimethyl arsenate and calcium methane arsenate under aggregate residential exposure and cancer risks associated with consumption of inorganic arsenic in surface water.

In August, EPA determined that the organic arsenical herbicides are not eligible for reregistration due to the assumption that organic species can convert to inorganic forms in the environment and result in an unacceptable cancer risk through ingestion of surface water. This decision was made after evaluating: (1) the risks to non-target organisms; (2) potential risk mitigation measures, such as lowering the application rates, extending reentry intervals and restricting areas of application; and (3) potential alternatives to these products.

Since the November PRC meeting, EPA has received numerous comments from various agencies and associations including FDACS, FDEP, and MAATF. FDACS' letter reiterated concerns posed in a previous letter regarding the vulnerability of Florida's ground water to contamination by organic arsenicals. FDACS agreed in the letter with the EPA's environmental concerns and their decision to not reregister arsenical herbicides based on uncertainties about the fate of the organic arsenical herbicides and the toxicity and carcinogenicity of inorganic arsenical species.

FDEP also submitted a letter to EPA on their position related to arsenical herbicides. Ultimately FDEP supported EPA's decision stating, "The introduction of arsenic into the environment is a significant concern in Florida." They noted that repeated applications could lead to accumulation in soil and contamination of water supplies and cited concerns over the conversion of agricultural and recreational lands to residential uses and the potential impact of arsenical herbicides on this process.

EPA closed the comment period on January 19th, 2007; we are currently awaiting the final decision from EPA on reregistration of these compounds.

Dr. Daiker then discussed the progress of the Prospective Ground Water Study being conducted by the MAATF. There has been significant movement on finding a site for the study. In the spring of 2006, a site was identified in Polk County near Haines City, Florida. The site runs along the central ridge of Florida in a citrus-rich growing area with sandy soils. In November 2006, MAATF installed 5 shallow piezometers, four on the perimeter and one in the center of the site. In addition, a deep piezometer was installed within the site. Depth to water measurements was conducted and soil and water samples were collected arsenic analysis. The background levels of arsenic in soil were <0.6ppm and levels in ground water were below the minimum detection limit of 0.3ppb. The site is not a turf farm or golf course; however, it appears suitable for establishing Bermuda grass and simulates the typical areas of application. Two issues of concern for FDACS is the presence of gopher tortoise burrows on the site and the depth to water.

Due to drought, the depth to water is greater than anticipated (28-32 feet in November 2006) and the upper limit of acceptability is 30 feet. FDACS asked the MAATF that additional measures be taken if the water table does not recover or continues to recede. The Task Force was asked if the study could be extended or perhaps deeper wells constructed. The Task force was open to these conditions.

A final comment that FDACS provided to the MAATF was that the analytical method for bromide that was used on the sample from November was not sensitive enough to adequately characterize the background levels of this analyte. The minimum detection level for the method used was 1ppm, while background concentrations are typically less than 100 ppb. Using this high MDL will not allow for investigators to identify when the bromide tracer has made it to ground water.

A question was posed by Ed Irby on what will happen with the study if EPA makes the same decision on the reregistration eligibility of the arsenical herbicides? Dr. Daiker stated that the MAATF will have a few options, one of which is they can appeal or challenge the decision. It is Dr. Daiker's position that if EPA decides to phase out the product it will be difficult to continue to request the study. Dr. Howard stated that we need to await EPA's decision to

determine our course of action. Meanwhile, EPA is planning on holding a final, limited stakeholder meeting later this summer.

FDACS, AES, Bureau of Pesticides, Dr. Dennis Howard

Emerging Air Quality Issues

Dr. Howard reported pesticide-air quality issues, including concerns about spray drift at an elementary school and emerging federal fumigant mitigation requirements. The school exposure issue involves South Woods Elementary School, in Hastings (St. Johns County). The school is bordered on three sides by agricultural fields where pesticides are applied.

Two high school students from Pedro Menendez High School conducted air quality testing at the school with the assistance of an environmental advocacy group, the Pesticide Action Network of North America (PANNA). The project concluded that unacceptable concentrations of several pesticides occurred near the school, which resulted in media attention and concern by the school community. A separate study, funded by the St. John's School District, concluded that pesticides did not pose a safety risk at the school.

Dr. Howard explained how the studies by the high school students/PANNA differed from the school board's study in data collection, chemical analysis, and interpretation. The different approaches yielded contrasting findings. The pesticides analyzed for in both data sets were diazinon, endosulfan, and trifluralin. The data interpretations for the science fair students relied on a Reference Exposure Level (REL) used by PANNA; it is based on 24-hour outdoor exposure for a 1-year old child. PANNA's RELs are not equivalent to EPA levels of concern, despite media reports to the contrary. For diazinon the REL is 145ng/m³; the students reported finding an average of 312ng/m³ with a maximum of 897ng/m³. Endosulfan has a REL of 339ng/m³; the students found an average 280ng/m³ and a maximum of 630ng/m³.

Data from the school board's sampling compared Minimum Detection Limits (MDL) to OSHA occupational air quality standards TLVs. OSHA TLVs are considered to be safe concentrations for an adult working 8 hours per day, 40 hours per week over a working lifetime. For diazinon, the comparative TLV is 100,000ng/m³ and the school board test found < 2,100ng/m³. For endosulfan the TLV is 100,000ng/m³ and they found 3,300ng/m³.

When comparing the findings of the science fare project with federal guidelines, significant differences appear. The maximum detection limit for diazinon found by the students

was 897ng/m³. This is significantly lower than a MRL of 10,000ng/m³, the level considered safe by the US Agency for Toxic Substances Disease Registry ATSDR MRL. The maximum concentration is also much lower than OSHA's guideline of 100,000ng/m³. Similarly, the student's reported a maximum endosulfan concentration of 626ng/m³, whereas OSHA's level is 100,000ng/m³. For trifluralin, the students found maximum level of 376ng/m³ while the TEEL0 (US Department of Energy Temporary Emergency Exposure Limits) values are 25,000ng/m³ and TEEL1 is 75,000ng/m³. TEEL0 is defined as levels considered safe with no expected health effects in the general public, including children for up to an hour of exposure. TEEL1 is levels where there may be some mild transient effects.

FDACS' next steps are to complete an inspection by the Bureau of Compliance Monitoring to determine whether the pesticides were applied according to regulations. The Bureau of Pesticides plans to produce a report after consulting with other agencies, to put it into perspective the results of the studies done at the school.

Dr. Howard spoke briefly on soil fumigants. He stated that EPA is conducting a reregistration review of methyl bromide, metam sodium/potassium, dazomet, iodomethane, chloropicrin, and 1-3dichloroporpene. EPA released a revised human risk assessment on May 2nd, 2007 and introduced risk mitigation options to address bystander and occupational exposures. The risk management goals are to reduce risk, maintain key agricultural benefits, and reduce acute inhalation risks for bystanders near the sites, fumigant handlers, and workers during reentry.

Dr. Brian Hughes asked Dr. Howard if volatilization is considered drift in Florida. Dr. Howard stated that EPA is having discussions about that issue and currently they discriminate drift that is particulate and volatilization. Dale Dubberly stated that volatilization would be considered drift if there was a know problem with that active ingredient.

FDACS, AES, Bureau of Entomology & Pest Control, Mr. Mike Page

Borate Wood Protection Issues

Mr. Mike Page, Chief of the Bureau of entomology & Pest Control, gave a brief update on borate wood protection. This is an emerging issue in today's pest control efforts..

In past presentations to the Council, Mr. Page focused on application problems and efforts to enforce the proper use of the product. These issues were largely differences in how

Nisus (the registrant) and the pest control industry interpret a specific section of the label: the requirement that at least 60% of a structure's base plates to be made of cellulosic material to qualify a home for borate termite protection treatment.

Bora-care is currently the only registered, stand alone, borate termiticide for new construction. Several other brands had applied for registration, but these brands did not meet Florida's required efficacy standard for new construction. Since its registration, Bora-care has gained wide acceptance due to its convenience and economics. According to Nisus' records, approximately 200,000 homes have been treated with Bora-care. In 2006, the Bureau conducted two Special Enforcement Operations focusing on soil treatments. In March of 2006, 75% of the inspections performed were borate treatments. By December 2006, 100% of the inspections involved borate. Many pest control companies had migrated away from soil preventative termiticide treatment services and opted for performing Bora-Care applications.

Borate products are applied inside the structure, directly to wood. This differs from soil treatments as they are applied outside the home in soil as a barrier and to baiting systems around the perimeter. Borates are applied a few feet up the studs and two to six inches away from the base plates on the slab. The product demonstrated efficacy in structures that have wood frames. As the product gained acceptance by the pest control industry and the building industry, its use expanded to include block frame houses with very little wood (resulting in a label violation of the label's 60% cellulosic base plating requirement). In block frame construction there is usually very little or no base plate supporting the vertical load from exterior & interior walls. Therefore, pest control companies would be required to use an alternate form of protection approved by the Department. Recently, FDACS approved an Experimental Use Protocol (EUP) protocol which is designed to determine efficacy in other building materials. A number of structures have been identified as structures that have been treated with Bora-Care as stand alone treatments.

It is believed that the rapid acceptance of Bora-Care use has resulted in a number of application violations mostly due to lack of training by pest control companies and appropriate stewardship from Nisus. Given the 60% requirement, some pest control companies attempted to qualify structures with no wood base plating by placing wood inside the interior steel support trays that are in direct contact with the slab. These structures would not have qualified for a Bora-Care application. Information obtained from a number of our inspections indicates that Nisus encouraged this practice.

In addition, careless application methods are not protecting structures. Debris often associated with construction activities can accumulate and prevent the installation of a proper protective barrier in a structure. Bureau inspections have documented this and taken administrative actions against applicators, certified operators and licensees. Given the proper training and supervision, the Bureau believes that these violations can and should be eliminated.

Another Bora-Care issue concerns the application of an appropriate amount or “*protective concentration*” to structural members. DACS has documented cases in a few structures where deficiently treated wood members resulted in termites breaching the protective barrier. The infestation in these structures occurred in areas where termites typically obtain access into a structure; through plumbing penetrations. In these cases, wood cores were taken and analyzed by DACS and Nisus laboratories and found to be deficient in a protective concentration on the wood. (A protective range recommended by Nisus is between 0.25% - 2.27% applied directly to wood.) One of the most likely factors contributing to deficient applications involves the improper mixing of Bora-Care. It is also the easiest to remedy, but requires that applicators ensure that the product is properly mixed. Another common problem occurs when wood is applied to a structure after treatment, with including the necessary repeat application for the new wood.

Foam insulation has become an issue. A recent case involving an infestation to a block structure less than one year old was from an application performed subsequent to the installation of insulating foam. Because the foam insulation was already installed the technician could not apply the product to the concrete as required by the label. This resulted in a termite infestation from a leaky window sill in the home.

Considering the issues surrounding the use of Bora-Care, that 200,000 homes have been treated in the state and we have seen a very low incidence of termite problems, we do not believe that there is an issue with the product’s efficacy. Rather it is an application problem that can be solved with improved training and supervision. This, however, does illustrate the need for a more rigorous stewardship program by the registrant.

Inspection technology is lacking in this area. Our current tests are qualitative only. They do not provide any quantitative measurement. An indicator solution is sprayed onto wood members and turns a certain color if application has occurred. The indicator solution is also very sensitive to heat and can become unusable, requiring additional expense to the Department. We

are currently developing specific gravity testing that will allow us to find the concentration level of a mixed product tank. The specific gravity test is constant over a wide temperature range and readily detects mixtures of other borate products in a quantitative measurement. If a product is not within specifications, we will know on site. Wood coring is also a method used; however, it leaves a hole in the stud. The two inch core is taken to the lab and a test is run to determine the quality of application.

A question was posed to Mr. Page by Dr. Mel Kyle as to lumber being produced and sold in big box stores and the pressure treated wood that contains borate: Is any regulation as to its use? Mr. Page responded that there are no special regulations, except that the wood used by contractors purchased at these stores still must adhere to the borate termiticide rules applicable to new structures.

UF, IFAS, Dr. Jamie Ellis

Honeybee Colony Collapse Disorder

Dr. Jamie Ellis, of the Department of Entomology & Nematology with UF/IFAS, provided a presentation on Colony Collapse Disorder (CCD) in honey bees. CCD is a condition from a yet undetermined source. Several theories are circulating on its origin or cause. CCD is an additional obstacle to an already troubled industry that loses 10-20% of its colonies each year. To fully understand its impact, we must start with a base knowledge of the honey bee.

Honey bees are very important to man. They produce within the hive wax, propolis, royal jelly and pollen. Most importantly they produce honey and pollinate plants. In 2006, 170,000 honey bee colonies produced 13.8 million pounds of honey with a net worth of \$13.9 million in the state of Florida. Collectively, 50 states produced 155 million pounds by 2.4 million colonies with a net worth of 161 million dollars. Florida's share was 9% of honey production, 7% of the colonies and 9% of its value. While those may be staggering numbers, honey bees provide so much more for humans.

Aside from the 15 billion dollars added to agriculture in the United States, one third of the world's food supply is dependant on honey bees. However, since the 1940s honey bee populations have been on a steady decline. During a normal winter, loses of 10-20% are typical. In 2006, beekeepers in 35 states began reporting losses greater than 50%. Keep in mind that

these numbers may not be representative of actual CCD, but, rather a need to place the loss in some category. Further, the sheer number of states reporting could be caused by migratory beekeepers who reported the loss while in that particular state.

CCD has a few symptoms; first, there is a complete absence of adult bees in colonies with few, or no dead bees in or around the colony. There is a presence of capped brood, (pupa bees in the cell after wax has been placed over it). Also, there are food stores that are not robbed by other bees or typical colony pests; however, if robbed, it is delayed a number of days.

A collapsing colony also has some signs of impending CCD. There are an insufficient number of bees to maintain the amount of brood in a colony. The workforce is composed largely of younger adult bees. The queen is still present; however, the remaining bees are reluctant to consume food provided to them by the beekeeper.

Possible causes for CCD have been a hot topic in the media. Dr. Ellis presented some that the media promotes. With all that we know about CCD, there is much we do not. We do have several probable causes for the disorder. First, we have the traditional bee pests and diseases. A mite that gets into the bee trachea, or the bacteria that can kill brood, perhaps it is the small hive beetle that was introduced to Florida from sub-Saharan Africa. This beetle promotes fermentation of honey and can make it leak out of the hive. When CCD occurs, we find colonies that are vacant and the pests simply stay away; but, another observation is that CCD happens in the winter when these pests are not a problem.

A few other problems include the style of feeding bee and the type of bee food. Honey is more valuable than sugar, so sugar water or corn syrup is used after every drop of honey is extracted. If the corn syrup is used, it can break down into a chemical that can hurt bees. Bee management may also be a factor. Honey bee colonies managed for honey production have an easy life. Bees meant for pollination are different. They are trucked around the country and may one day be in Florida and the next day in Maine for blueberry season or California for the almond season. Because of this, stress may be a factor.

What about queen source? Each hive has only one queen and there are 2.4 million colonies and therefore 2.4 million queens. Beekeepers rarely produce queen bees themselves; usually they are bought from queen bee producers and there are only about 400-500 breeder queens used by the producers. This has led to genetic bottlenecks as being a potential factor in CCD.

Genetically modified crops have been touted as a cause for CCD; however, these are usually grain crops that bees do not visit, thus limiting exposure to them.

Varroa mites are the biggest problem bees have in today's hive. If you were to put your arms around a basketball, that is how big the mite would look on a bee. This mite is tiny; but, in relation to its host it is one of the largest parasites in the world. It will attach itself to the abdomen of the bee and sometimes transmit viruses to the bee. One of the most common is the Deformed Wing Virus that will wrinkle the wing and not allow the bee to fly. A third way that the mite can be a cause of CCD is that the bees are subjected to many pesticides to combat the mite.

Bee nutrition is also a possible cause. Bees are like people, they need a well rounded diet. Some weeks they are out getting only almond pollen and nectar. That's like humans eating the same food everyday. Just now, we are realizing bee diet diversity is needed. Perhaps it is a new pest or an increase in the virulence of existing bee pathogens. One that is on the radar is nosema, a microsporidian that gets into the bee gut and causes swelling. As bees overwinter, nosema can accumulate in their guts because they are unable to exit the colony to defecate (its too cold). One symptom of this disease is the presence of fecal material on the outside of the hives on warm days when the bees are able to fly and defecate.

There are two ways chemicals may be affecting bees. The first is high use. If a presentation was made to you today about what we have to do to prevent bee kills, you would see that bees have a hard time staying alive. When the varroa mite began its siege on bees, there was a quick response with two insecticides. The first that came out was apistan, its active ingredient is fluvalinate. The second product was checkmite+; its active ingredient is coumaphos, an organophosphate. The mites have become resistant to both of these chemicals. This has made beekeepers put more product than labeled into the colonies. Further, if an active ingredient is in one insecticide at 10%, some will use another product with a 40 or 50% concentration of that active ingredient. We know that these products leave traceable levels in the wax. Even at an allowable limit, it still contributes to reduced queen bee longevity and sperm load in drones. We are just now becoming aware of what the sub-lethal effects are altering the bees in other ways.

Chemical toxins in the environment may also play into CCD. Honey bees visit flowers of all kinds in a 3 mile radius of the colony encompassing many square miles. This means the bees

can come into contact with many toxins and bring them back to the hive. Bees visit bird feeders, animal feed bins, bird baths, streams, and rivers. They have even been known to bring back paint, glue or any sticky substance. This brings them into contact with many types of toxins. Beekeepers find all types of chemicals and bacteria in the colonies and any number may have a link to CCD. Because of this, we are pushing with EPA for bees to become a terrestrial bio indicator.

The focus now is on chemical issues outside of the colonies. Perhaps the biggest classes of pesticide that are getting blamed are the neonicotinoids. Bayer has even produced a list of fifty reasons why neonicotinoids are not causing CCD. It is a major issue with chemical producers in eliminating their products as a CCD contributor.

The CCD working group's research is in its infancy. A statement from them about samples currently in the laboratory said, "There is a need to verify results that they received from the lab. We are analyzing pollen samples from CCD and non-CCD colonies from Florida that were in groves at the time of pesticide sprays. The analysis is a broad screen for over one hundred chemical pesticides and we can only say that we have found pesticides in all of the samples from Florida."

The press answer to what is causing CCD is that it is a combination of things. Any of the pest and chemicals mentioned is enough to kill colonies. Even the sub-lethal chemicals we find, are they enough to make bees more susceptible to fall to known pests? We are now looking at all these possibilities as additive effects.

Some claims are still out there that many unlikely causes of CCD are out there. Some of the more bizarre include cell phone transmissions, locating bees too close to power lines, solar activity, and a shift in Earth's magnetic field, a Russian plot and even Osama Bin Laden.

If this trend continues, and bee populations decline, there will be an affect on food. As availability goes down, the price of food will go up. There are things we are doing to prevent CCD. Among these is pre and post screening of collapsing colonies for whatever chemical or pest is out there. We are getting surveys by beekeepers on how big their group is. The CCD working group was created to find causes. We are looking at ongoing studies into controlling disease and pests with chemicals. The formation of multi-state collaborations studying CCD is available. We are trying to educating keepers on CCD and how to recognize it.

Dr. Ellis provided web links to provide further information on CCD.

http://solutionsforyourlife.ufl.edu/hot_topics/agriculture/colony_collaps_disorder.html

The Mid-Atlantic Research and Extension Consortium also provide information.

<http://www.ento.psu.edu/MAAREC/ColonyCollapseDisorder.html>

In addition, the Bee Alert Technologies, Inc. has an info link.

<http://www.beealert.info>

Dr. Howard asked if Florida has a big share of CCD. Dr. Ellis responded with statistics. Currently we have 1000 registered beekeepers in Florida; however, there may be up to 2000. When CCD first came out, only 11 beekeepers reported CCD. Depending on what figures you use that is half to one percent of our beekeepers. That being said, no one wants to attach numbers to this issue. Nationally, there are estimates that 20-30% is losing bees to CCD and this may be true in Florida as well.

Ed Irby asked how the Africanized honey bee will play into the CCD problem. Dr. Ellis responded by saying he likes the Africanized bee minus their defensiveness. They are remarkably resilient to pests and that could point us into the right direction if they are resistant to CCD causes.

Florida Department of Environmental Protection (DEP), Mr. David Whiting

Emerging Contaminants of Concern

Mr. Davis Whiting, with the Department Environmental Protection, gave a presentation on emerging contaminants of concern. This issue has received recent media coverage. Mr. Whiting is an expert in this field and has been participating on a DEP internal committee working on this issue. The committee is gathering information and briefing DEP upper management. What the Council is hearing today is a third generation report.

This issue covers a broad spectrum of sub categories and goes by many general names, such as emerging pollutants, contaminants or substances of concern. “Substances” seems to be the term of choice.

The currently, 31,322,549 organic and inorganic substances (excluding proteins and nucleotides) are registered by the American Chemical Society Chemical Abstracts Service (CAS). Of these substances, 13,780,301 are commercially available and 245,316 are inventoried or regulated substances. In the past two years, more than 5 million new chemicals have been

registered, but only 5,316 additional substances have been added to regulated lists. That is equivalent to 0.1% of new or commercially available chemicals.

Mr. Whiting feels that there are many new chemicals coming onto the market, while only a few of them are adequately assessed for potential environmental impacts. Rather than properly addressing these chemicals before they enter the market, we are assessing them after they enter the environment where there is a potential for them to do harm.

Today, there are many groups of chemicals of concern for environmental impacts. These include global organic contaminants, pharmaceuticals and personal care products, endocrine modulating chemicals, nanoparticles, industrial chemicals and biological metabolites and toxins.

Global organic contaminants consist of flame retardants and their impurities; polybrominated diphenyl ethers (PBDEs) and impurities [polybrominated biphenyls (PBBs), polybrominated dibenzo-p-dioxins (PBDDFs) and polybrominated dibenzofurans (PBDFs)]; perfluorinated compounds consisting of perfluorooctane sulfonates (PFOS) and perfluorooctanoic Acid (PFOA), and siloxanes, which are deodorants and shampoos.

PBDEs are flame retardants added to a wide variety of household and consumer products. These are not covalently bound to a substrate which they are applied, so they are easily liberated. The impurities can be found in PBDE formulations and are created during incineration. PBDEs are of low solubility and are persistent. PBDE, tissue burdens in animal and human are doubling every 2-5 years. The PBDEs have a bioaccumulation factor of >5,000:1. The US and Canada had very high levels of these compared to other parts of the world, including Europe and Asian countries, where they have been banned.

PBDE's are released into the atmosphere where they can bio accumulate into the food chain. There have been elevated concentrations in polar bears and approaching potential effect concentrations in wild osprey (reduced hatching success) Crustaceans are very sensitive to PBDEs and the compounds have been known to promote carcinogenesis in the mammalian liver. They can act as an endocrine modulator including the thyroid and act as an estrogen or anti-androgen. There are developmental and reproductive effects of delayed puberty, sex organ changes and decreased sperm counts. Neurotoxicity can also be an issue, with deficits in sensory, motor, and cognitive function.

Pharmaceuticals and personal care products (PPCP) is a huge category including items you can pick up at any drug store and chemicals in prescription/over the counter drugs including

nicotine and caffeine. This category also includes diagnostic chemicals used in hospitals, fragrances, soaps, conditioners, sunscreens and cosmetics.

Many PPCPs are water soluble. The most common route into the environment is through wastewater, both municipal and septic, and land application of sewage sludge and manure, and landfill leachate. The obvious route into humans is through ingestion and topical application. Wastewater treatment may not be effective at removing the compounds from the effluent depending on the treatment and chemical.

PPCPs in water concentrations are typically in the ng/l to low ug/l range. The common pain relievers are typically found in the highest concentrations. Some PPCPs can cause estrogenic effects in biological receptors; however, most research suggests that such effects are not likely at current environmental concentrations. This research was done on single compounds and usually occurs as mixtures when in the environment. The USGS conducted a study on the fate and effects of PPCPs in a wastewater treatment plant discharging water into Boulder Creek, Colorado. They found that there was a skewed sex ratio in the white sucker population in the creek downstream from the discharge point. Venlafaxine, an anti-depressant, was found in abundance.

Endocrine modulating chemicals (EMCs) are typically categorized as natural or synthetic hormones, industrial chemicals and pesticides. Modulating is a good term here because once the chemical is removed; a return to normal is possible. They appear in surfactants, PCBs and dioxins. EMCs can affect three aspects of endocrine function: neural input to the endocrine system, hormonal modulation of the nervous system, and regulation of hormone and receptor biosynthesis, secretion and metabolism.

Natural and synthetic hormones, phytoestrogens, are produced by many plants. Those hormones that are produced by organisms and the synthetic forms used in birth controls are found in wastewater. These are degraded readily in aerobic conditions but are more persistent in anaerobic conditions. Industrial EMCs include phthalates in plasticizers, nonylphenol and alkylphenol ethoxylates used in surfactants, anti-foaming agents, plasticizers and UV stabilizers in plastics. The linings in tin cans for food contribute bisphenol A to wastewater. Flame retardants containing PBDEs, parabens or preservatives in cosmetics and toothpastes are also present.

Nonylphenols are commonly used in the U.S. (e.g., we use nonylphenol ethoxylate, a product that is banned in Europe). They are persistent in the environment, bioaccumulate, and occur in relatively high concentrations in dry sediments. The Environmental Protection Agency has proposed draft water quality criteria ranging from 65.9ug/l for fresh water and 1.4 ug/l for salt water. Mr. Whiting provided a comprehensive list of potential Pesticide EMCs in his slide presentation.

Environmental effects of EMCs are difficult to quantify due to low concentrations and chemical mixtures. They can be confounded in field and laboratory experiments by parasites in the test subjects that can alter endocrine pathways. There are also widely varying sensitivities amongst wildlife receptors and the effects can be reversible. The feminization of fish, birds and reptiles has been reported at environmentally relevant concentrations. EMCs have caused intersex males with ova present in testes in amphibians and fish. They can also cause gynandromorphism in daphnia and abnormal development in fish and birds. The biomarkers for exposure do not translate into quantifiable adverse effects. Human health effects of EMCs are sparsely documented for food or drinking water. Studies showing reduced sperm counts and increased cancer rates have been reported, but, these results are do not separate lifestyle choices like smoking and eating habits.

Within the field of substances of concern, nanotechnologies have really taken off. Nanoparticles are natural or man made structures in the 1 to 100 nm size range. Examples of nanoparticles are fullerenes (or buckyballs, composed of carbon spheres), nanotubes (long, hollow carbon straws), nanoparticles for coating metals, and natural particles such as soot. They are used in nanotherapeutic pharmaceuticals, drug delivery, cosmetics, energy storage products, and lubricants. There is even the potential for use in site clean-up where there has been contamination; however, no one knows how they will interact in the environment. At the nano scale, there can be very large changes in the chemical and physical properties in chemicals. Properties such as magnetization, charge, melting points, and hardness can change due to the wavelengths inside matter. The toxicity of most nanotechnologies has not been determined due to the differences in toxicological properties from parent compounds or how they cross biological membranes and the blood-brain barrier.

Nanotechnologies and pesticides are an emerging field. Recently, members of the pesticide industry have engaged the EPA Office of Pesticide Programs (OPP) regarding

licensing/registration requirements for pesticide products that make use of nanotechnology. In response to the rapid emergence of these products, OPP is forming a largely intra-office workgroup to consider potential exposure and risks to human health and the ecological environment that might be associated with the use of nano-pesticides. Specifically, the workgroup will consider whether or not existing data are sufficient to support additional yet undefined testing. The workgroup will consider the exposure and hazard profiles associated with these new nano-pesticides on a case-by-case basis and ensure consistent review and regulation across the program.

The high use of endocrine disruptors is of greatest concern among emerging substances. Some of these are found in PPCPs and in use on humans. Also of concern are persistent bioaccumulative compounds in the environment. EPA's stated strategy includes the following: literature forensics to assess usage, environmental exposure and prevalence, persistence, bioaccumulation and toxicity; ranking substances by risk; evaluating measurement methodologies; engaging in research to fill in gaps; monitoring highest ranked candidates for occurrence and ecological effects, and; developing regulation and treatment technologies as necessary.

What is being done on the front end? Current chemical regulation and policy in the U.S. is based on either pre- or post-release assessments. Pre-release assessments are the responsibility of the USEPA under the Toxic Substances Control Act and the Federal Insecticide, Fungicide and Rodenticide Act. The Federal Drug Administration pre-release assessment falls under the Federal Food, Drug, and Cosmetic Act and Food Quality Protection Act. Finally all federal agencies must abide by the National Environmental Policy Act.

On the back end, post-release assessments are the responsibility of the United States Environmental Protection Agency's Clean water Act), the Safe Drinking Water Act, the Resource Conservation and Recovery Act and the Superfund.

The European Union adopted new chemical regulation in December, 2006 entitled, Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH). The regulation takes effect on June 1, 2007. Companies that manufacture or import more than 1,000 kilograms of a chemical substance per year will be required to register the chemical with the new EU Chemicals Agency. REACH will require the registry of 30,000 existing chemicals over the next eleven years. It shifts the burden of proof for no adverse effect to human health or the

environment from the government to the manufacturer. REACH will require an analysis of alternative to the chemical use and will require companies to move to safer alternatives where they exist.

In summary, millions of new chemicals are entering the environment every year, most without adequate review for potential human health or environmental effects. The categories of emerging substances of concern can only be loosely applied. The treatment of such substances by drinking water and wastewater treatment plants varies among chemicals and treatments. Emerging substances of concern are entering the environment at environmentally relevant concentrations. The full extent of the environmental and human health effects is currently unknown. Special attention should be placed on those substances that are known to bio-accumulate, cause endocrine modulation, or are acutely toxic. Finally, additional product reviews are necessary prior to environmental releases if we are to get a handle on this issue.

Comments from Audience

None

Adjournment:

The Council determined that the next meeting of the PRC would be in September 2007 at a venue to be determined by polling the members for availability. An agenda would be forthcoming when the next date is set. Upon agreement, the meeting adjourned at 12:45pm.