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Chemically Speaking

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"Mega-Suit" Dismissed

On April 22, Magistrate Judge Joseph Spero of the U.S. District Court Northern District of California dismissed the *Center for Biological Diversity and Pesticide Action Network North America v. Environmental Protection Agency* (EPA), Endangered Species Act Suit. The court's decision has significant implications for the pest control industry, as this litigation involves more than 380 registered pesticides in the United States - including almost all rodenticides and termiticides.

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The “Mega-Suit” was filed in 2011 by the Center for Biological Diversity and Pesticide Action Network, which alleged that EPA had failed to take steps required by the Endangered Species Act (ESA) to protect more than 200 endangered species located in every state and territory in the United States, excepting Alaska, American Samoa, Guam and the Northern Marianas Islands.

In dismissing the suit, Judge Spero noted that the plaintiff failed to provide the minimum required information to support its claim that EPA did not meet its statutory obligations to consult with the U.S. Fish and Wildlife Service on certain pesticide decisions. The court stated, “Plaintiffs have not even pled the ‘general factual allegations’ giving rise to each individual ESA claim, nor have they asserted individual ESA claims.” The judge’s ruling affirms the National Pest Management Association’s belief that, “EPA has for a very long time done a good job conducting ecological risk assessment and determining whether the products and their use have the potential to impact even non-target species that aren’t endangered - and certainly endangered species. At worse, what was happening was EPA maybe wasn’t talking as much as they ought to with the U.S. Fish and Wildlife Services and National Marine Fisheries. But that’s not to say they weren’t taking into account their impact on endangered species.” Additional grounds for Spero’s dismissal of the lawsuit included that the plaintiffs lacked standing; were too vague; and that appellate courts are the appropriate venue for many of the counts. Judge Spero has allowed 30 day for the plaintiffs to file an amended lawsuit. (*Pest Control Technology*, 4/30/13).

EU to Ban Nicotinoids for 2 Years

The European Union will ban three of the world's most widely-used pesticides for two years because of fears they are linked to a plunge in the population of bees critical to the production of crops. The executive European Commission said on Monday it would press ahead with the ban on a class of pesticides known as neonicotinoids, produced mainly by Germany's Bayer and Switzerland's Syngenta, despite the EU's 27-member states failing to reach an agreement on the matter.

The Commission proposed the ban in January after EU scientists said the chemicals posed an acute risk to honeybees, which pollinate many of the crops grown commercially in Europe. However, pesticide manufacturers and some scientists say no link has been proven between the use of neonicotinoids and a sharp decline in bee numbers in Europe in recent years - a phenomenon known as "colony collapse disorder.” Syngenta criticized the Commission's decision, blaming declining bee numbers on habitat loss and diseases carried by parasites such as the Varroa mite. “The proposal is based on poor science and ignores a wealth of evidence from the field that these pesticides do not damage the health of bees,” the company said in a statement.

The ban will hit sales of Syngenta's popular Cruiser® seed treatments, widely used to protect crops such as rapeseed and maize from aphids and other pests. But it could boost sales of chemical alternatives to neonicotinoids produced by rival firms such as Dow, leading some scientists to point out that little is known about the effects of such older compounds on bee health. Syngenta and Bayer say research shows a neonicotinoid ban could cost Europe billions of euros in lost crop yields. A 2011 United Nations report estimated that bees and other pollinators such as butterflies, beetles and birds facilitate worldwide pollination that leads to $203 billion a year in agricultural production.

In total, 15 EU countries voted in favor of the ban - two more than the last time governments voted on the issue in March - but they failed to reach the weighted majority needed to adopt the ban outright, meaning the decision passed to the Commission. The ban will apply to the use of neonicotinoids on all crops except winter cereals and plants not attractive to bees, such as sugar beet. It will apply from December 1, 2013 - five months later than originally proposed by the Commission. (*Reuters*, 4/29/13).

Optimizing Pesticide Use

Pests such as thrips, whiteflies, aphids, beet armyworm and hornworms can devastate vegetable crops. Potentially just as harmful, though, is the over-use of pesticides, which can lead to pest resurgence, resistance and risk to the environment. Applying the proper amount of each chemical is key to sustaining vegetable productivity in Georgia, according to University of Georgia College of Agricultural and Environmental Sciences entomologist David Riley. "Everybody is concerned about insecticide use but for different reasons," said Riley, a researcher on the Tifton campus. "On the growers' side, they're looking at the price of the product. It's expensive. They want to maximize the use of their product and get the most efficient use out of it."

On the other hand, the insecticide companies don't want farmers to over-use their products because they are concerned that insects will become resistant. When that happens they'll have to go back to the drawing board and spend money engineering new chemicals. These concerns led to Riley's research into insecticide resistance in pests like whiteflies. Insecticides are an expensive tool that farmers are forced to use. Riley estimated insecticide applications cost $27 million a year which is close to three percent of the value of Georgia's vegetable production value in 2009. However, the treatments applied protected one-third of the vegetable crop's value, amounting to $302 million in state vegetable revenue.

Riley studies insecticide use as part of the UGA Vegetable Entomology Project. The goal is to help farmers reap the maximum benefit from investment into pesticides. In collaboration with various

chemical companies, the project's researchers conduct pest control studies annually. The experiments test the efficiency of pesticides on cabbage, collard, cantaloupe, cucumber, tomato, pepper, onions, squash and watermelon. He is working to find a middle ground that appeases the concerns of chemical companies and farmers. "We're just basically trying to find a happy medium where you alleviate a lot of your environmental concerns, you alleviate a lot of your concerns about, 'Am I affecting my bees (and) pollinators? Am I keeping my productivity to a level I can live with?'" Riley said.

There is no simple answer to this dilemma, Riley said. Using as much pesticide as a farmer can afford is bound to diminish the chemical's effectiveness, put pollinators in danger and diminish the farmer's future yields. Abandoning all pesticide use may slash farmers' productivity to below a break-even point. "I think what we're looking at is that hard place in the middle where you try to figure out, 'How do I use the things I need to use, the minimum use to get the maximum benefit?'" Riley said. As part of the vegetable entomology project, an effort is under way to find corrective measures in controlling cowpea curculio in southern peas. No products currently exist that can control the pest's devastating impact which led to the collapse of pea production a couple of years ago. (*Southeast Farm Press*, 4/18/13).

Bio-Control Simplicity

Simplicity is a good concept when designing biocontrol programs to combat weeds and invasive plants, according to an analysis of studies by University of British Columbia biodiversity experts. Biocontrol programs use an invasive species' natural enemies (insects and pathogens) to reduce its population. Most biocontrol programs combine many different enemies - typically about three different species, but sometimes as many as 25 - with the hope that at least one will prove effective.

However, some combinations of enemy species can actually end up competing or interfering with each other, instead of attacking the target organism. "It's important to get the right combination of biocontrol agents, as testing species is costly and time-consuming, and no amount of testing can eliminate the risk that something unexpected will occur with the introduction of a new species," says Andrea Stephens, lead author on the paper. Until now, biocontrol managers have chosen weed enemies to release based on the individual effect of each species in isolation, with little thought to overall combinations. "Our study suggests that this approach can lead to ineffective biocontrol, because the interactions between the released enemies can reduce the overall effectiveness of biocontrol," says Diane Srivastava, author on the paper and professor at UBC's Biodiversity Research Centre.

Of the 75 combinations the researchers investigated, about a quarter appeared to have a smaller combined impact than expected. The researchers suggest simple species combination rules could improve the effectiveness of biocontrol programs. The study recommends avoiding combinations of species that attack the same part of the plant at the same time, as well as assessing the impact of species attacking reproductive structures. "In most cases damage from different species of insects was independent," says Judith Myers, Professor Emerita and author on the paper. "But insect species feeding on the seeds of plants tend to compete and so multiple introductions can be detrimental."

One of the studies researchers analyzed focused on three agents (two species of weevils and a fly) that have been released in western North America to control two species of invasive plants, diffuse and spotted knapweed. The weevils consume the fly larvae, nullifying the effectiveness of the fly. (University of British Columbia, 4/18/13).

Pesticide Registrations and Actions

Food Related Actions

- On April 4, the Florida Department of Agriculture and Consumer Services (FDACS) granted a special local needs (SLN) registration for the insecticide Malathion 8 Flowable for control of spotted-wing drosophila on blueberry in Florida. The EPA registration number for the Gowan product is 10163-21 and the SLN is FL-130001. (FDACS PREC Agenda, 5/2/13).

- On April 16, the FDACS registered the bioherbicide Streptomyces acidiscabies strain RL-110 (Opportune Bio-Pesticide®) to manage annual grasses, broadleaf and sedge weeds on bulb vegetables, cereal grains, citrus, cole crops, cotton, cucurbits, fruiting vegetables, grape, legumes, root, tuber, and corm crops, stone fruit, strawberry, tree nuts, and tropical fruit. The EPA registration number for the Marrone Bio Innovations product is 84059-12. (FDACS PREC Agenda, 5/2/13).

- Based on a request by IR-4, the EPA has approved tolerances for the herbicide flumioxazin (Chateau®). Tolerances of importance to the region include cabbage, Chinese napa cabbage, and prickly pear fruit and pads. (*Federal Register*, 4/5/13).

Other Actions

- The EPA has granted unconditional registrations for the new insecticide sulfoxaflor (Transform®/Closer®). The EPA is granting the use of sulfoxaflor on barley, bulb vegetables, canola, citrus, cotton, cucurbit vegetables, fruiting vegetables, leafy vegetables, low-growing berries, okra, ornamentals (herbaceous and woody), pistachio, pome fruits, root and tuber vegetables, small vine climbing fruit (except fuzzy kiwifruit), soybean, stone fruit, succulent, edible podded and dry beans, tree nuts, triticale, turfgrass, watercress and wheat. Occupational worker and food safety data confirm these uses are safe when sulfoxaflor is used in accordance with the labeling terms and restrictions. The ecological effects profile for sulfoxaflor also supports the registration finding. One area of focus in the review involved pollinator health, and the final label includes significant instructions for protecting pollinators. The EPA performed its data evaluation and assessments in collaboration with counterpart agencies in Canada and Australia. Scientists from the three authorities reviewed over 400 studies and peer reviewed each other's work. The registration will provide growers with a new pest management tool for use on piercing/sucking insects. Sulfoxaflor has been used under an emergency clearance on

cotton in Arkansas, Mississippi, Tennessee and Louisiana to control the tarnished plant bug, an insect that has developed resistance to alternative registered pesticides. Sulfoxaflor belongs to its own new insecticide subclass in terms of its mode of action, so it is expected to be used by producers faced with pests that have developed resistance to other alternatives. (EPA release, 5/6/13).

Pesticide Potpourri

- New U.S. Geological survey maps show the national distribution and trends of pesticide use in the nearly two decades from 1992 to 2009. The maps can be found at: http://water.usgs.gov/nawqa/pnsp/usage/maps and show the distribution of the agricultural use of 459 pesticides for each year during 1992-2009 for the entire conterminous U.S. The maps and supporting national database of county-level use estimates for each pesticide were developed by the U.S. Geological Survey for use in national and regional water-quality assessments. (USGS, 5/20/13).

- On April 10, the White House released its fiscal year 2014 budget requesting $686 million for the Environmental Protection Agency's (EPA) chemical safety and pollution prevention activities. The budget would provide $62.7 million in funding for chemical risk review and reduction activities, an increase of $6.2 million compared with fiscal 2012. Programs intended to protect human health from pesticide risk would receive $61.8 million in fiscal 2014 under the president's request, an increase of $300,000 from fiscal 2012, while EPA would receive $6.9 million to continue work on the Endocrine Disruptor Screening Program. Overall, the fiscal 2014 budget includes $8.2 billion in total funding for EPA, a decrease of $296 million, or 3.5 percent, from fiscal 2012. The budget would cut funding for state water infrastructure grants and the superfund program, while boosting funding for state air grants, water pollution control programs, and watershed restoration projects. The budget proposal would actually represent an even larger increase for chemical safety and pollution prevention when compared with current 2013 funding because the total request contains sufficient deficit reduction over the next 10 years to avoid the automatic sequestration cuts that took effect for fiscal 2013. The Office of Chemical Safety and Pollution Prevention will continue to implement a chemicals risk management program targeting high-risk “legacy” chemicals and will continue work on the Endocrine Disruptor Screening Program. The agency expects to finalize validation of the Tier 2 tests for endocrine disruptors, which aim to identify chemicals that interfere with the estrogen, androgen, or thyroid hormone systems, and to review data from the initial list of pesticides that underwent preliminary screening to determine if the substances warrant further testing for endocrine effects. The EPA also plans to continue its transition away from traditional testing through efforts to validate computational toxicology and high throughput screening methods to allow for a faster, more efficient, more cost-effective program. The EPA budget proposal also includes a total of $60 million, spread across

different programs, to support a new E-Enterprise initiative. The agency would use the funding to develop a web-based portal that would allow regulated entities to apply for permits, check their compliance status, report air emissions, and learn of new regulations. The initiative could reduce the paperwork and regulatory reporting burden while giving industry, the government, and the public better information on environmental issues. (*Bloomberg BNA*, 4/15/13).

- According to Transparency Market Research "Crop Protection Chemicals Market - Global Industry Size, Market Share, Trends, Analysis and Forecast, 2011 - 2018," the global crop protection market was worth $48 billion in the year 2011 and is expected to reach $71 billion by 2018, growing at an annual growth rate of 5.4 percent from 2011 to 2018. Herbicides formed the largest category in the overall crop protection market, contributing about $20 billion for the year 2011. The herbicides market will experience both the highest growth rate as well as highest volume traded in the next six years. The major influencing factors in the crop protection market are shrinking arable land, the paradigm shift in farming practices, increased purchasing power and the resultant improvement in the standard of living. Asia Pacific accounted for majority of the global crop protection market in 2011 and is expected to do so till 2018; however Latin America and North America markets are expected to grow at a higher rate. (*SBWire*, 4/19/13).

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