Pesticide/Herbicide Residues in Compost

Background

Some pesticides, including carboxylic acid herbicides (aminocyclopyrachlor, aminopyralid, and clopyralid) and pyrethroids (e.g., bifenthrin) present challenges to the compost-and-mulch-producing industry, organic farming, and organic diversion goals of the Department of Resources Recycling and Recovery's (CalRecycle). During the last several years, farmers and home gardeners in several states have reported damage to vegetable and flower crops after applying compost and mulch that contained persistent pesticide residues. Damage to non-target species has also resulted from application of manure, hay, and grass clippings that contained persistent carboxylic acid herbicides. In addition, in 2009, bifenthrin residues in compost caused problems for organic farmers and compost producers. To address pesticide/herbicide residues in compost and mulch, CalRecycle regularly collaborates with the California Department of Pesticide Regulations (DPR), California Department of Food Agriculture (CDFA), U.S. Department of Agriculture's (USDA) National Organic Program (NOP), farmers, composters, and other stakeholders.

Aminocyclopyrachlor – Imprelis

Aminocyclopyrachlor is a pyrimidine carboxylic acid, a recently discovered synthetic auxinic herbicide that controls broadleaf weeds. DuPont was in the process of registering Imprelis, a product containing aminocyclopyrachlor, with the DPR. However, on Aug. 4, 2011, DuPont announced a voluntary suspension of sale and product recall for Imprelis. This action was taken in response to DuPont's ongoing discussions with the U.S. Environmental Protection Agency (U.S. EPA). Imprelis came to the attention of CalRecycle earlier this year as a product that had the potential to negatively impact the compost-and-mulch-producing infrastructure. Compost produced from turf clippings can contain aminocyclopyrachlor residue at levels that are phytotoxic to non-target plants. In addition, sensitive trees such as Norway spruce and white pine can be damaged by Imprelis.

Aminopyralid

Aminopyralid is a pyridine carboxylic acid, an auxinic herbicide that provides systemic post-emergence broad-spectrum control of broadleaf weeds. In California, aminopyralid products are not allowed on residential lawns. Although this restriction appears to be effective, composters that use hay, manure, and bedding as feedstock should verify that it does not contain aminopyralid residue at levels that, when composted, could harm non-target plants.

Clopyralid

Clopyralid is an herbicide used to control broadleaf weeds, especially thistles and clover. Clopyralid used on lawns in past years was found to persist when the grass clippings were composted, threatening the use of compost in certain applications. Clopyralid is no longer registered for residential lawn use in the United States and professional applicators are required to notify property owners/managers that clippings are not to be composted.

Education and Outreach

Education and outreach are important in our collective efforts to mitigate the impact of pesticide residues on the composting industry and statewide recycling efforts. As part of this effort, the California Integrated Waste Management Board (now CalRecycle), DPR, and stakeholders in 2005 developed a fact sheet about clopyralid and compost:

- Clopyralid Residues in Compost

Compost Testing

The workgroup collaborated with stakeholders to develop the following information as a guide for compost operators and others who may test compost for pesticide residues.

- Survey of Compost Samples for Presence of Clopyralid Herbicide–Final Report
  The CIWMB (now CalRecycle), funded a study conducted by San Diego State University to test compost from facilities located throughout California for clopyralid residues. Sampling occurred in 2003-2004.

- Sampling protocol. Provides a uniform approach to collecting and analyzing compost samples and includes the following forms:
  - Chain of custody form. U.S. Composting Council
  - Compost sampling site information. Washington Department of Agriculture
  - Compost feedstocks summary. Washington Department of Agriculture
- Bioassays. Reviews three bioassays for detecting clopyralid residues in compost.
- Study outline. Provides a format and guidelines for submitting data to DPR.

Bifenthrin

Bifenthrin is a pyrethroid insecticide used commercially and residentially for the control of pests (i.e. ants, spiders, etc.). In fall 2009, the California Department of Pesticide Regulation (CDFA) conducted tests and determined that three of California's largest compost producers had product which tested positive for bifenthrin. CDFA directed the affected composters to immediately discontinue their organic operations.

CDFA's actions are bound by regulations (sections 205.203[c] & 205.203[e][1]) set forth by the NOP, which require CDFA to test when complaints are received.

On Oct. 15, 2009, the CIWMB (now CalRecycle), facilitated a meeting with the affected composters, representatives of the NOP, CDFA, and DPR. At the meeting, NOP representatives informed the group that they were in the process of drafting a guidance document that would set an unavoidable residual environmental contamination (UREC) level for bifenthrin in compost. A DPR representative announced that they are in the process of reevaluating bifenthrin and all similarly classed synthetic pyrethroids. The current evaluation of bifenthrin is for water pathways, but DPR is willing to include an evaluation for urban pathways of greenwaste to compost if information can be submitted by stakeholders to support such an evaluation.

On Jan. 21, 2010, CalRecycle staff moderated a roundtable discussion at the EcoFarm Conference in Pacific Grove, Calif. At the roundtable Miles McEvoy, deputy administrator of the NOP, unveiled a draft of the UREC guidelines. The draft guidelines proposed a UREC level of 0.05 ppm, which corresponds with the lowest US EPA bifenthrin tolerance level for any food product. McEvoy committed to take requests from stakeholders back to Washington D.C. for consideration.

The National Organic Standards Board's meeting was April 26-29, 2010, at the Heidrick Ag History Center in Woodland, Calif. The meeting's agenda included a report from McEvoy as well as opportunity for public comment on guidance documents.

CalRecycle staff will continue to work with NOP, CDFA, DPR, composters, and farmers to address the issue of pesticide residuals in compost. More information can be found on the USDA's NOP web page.

Resource Links

- California Assembly Bill 2356 (Regulating sale and use of the herbicide clopyralid)
- California Department of Pesticide Regulation
- Local Enforcement Agency Correspondence-Discussion of Issues Concerning Use of the Herbicide Clopyralid and its Impact on Composting in California
- Oregon Department of Environmental Quality: Clopyralid Study
- The Global Invasive Species Team: The Nature Conservancy
- U.S. Composting Council

CalRecycle and the composting industry recognize that pesticide residues in compost pose a potential threat to the successful municipal waste recycling programs that have been implemented throughout California. The CIWMB (now CalRecycle), DPR, and other stakeholders formed a workgroup in 2002 to assess the scope of the issue and to propose mitigation measures.

Pest/Threats Which Affect Green Material Movement in California