

Cause for Concern Over Organic Fertilizer Made from Food Waste?

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In December 2016, the National Organic Program (NOP) issued guidance 5034-1 that can be interpreted as approving of food waste for use in organic crop production (for example, as an input in fertilizer) without regard to whether such waste contains prohibited synthetics, posing potential risks to investments relying on this guidance as well as to the organic brand itself. Combine this with the absence of guidance, regulation, uniform definition, or oversight by the NOP of the rapidly expanding use of anaerobic digesters to process food waste, and the risks are further exacerbated.

The idea that organic crops may be produced with inputs containing synthetics recently made news for a different reason. In June 2016, in a decision that generated much interest in the organic industry, a court vacated NOP guidance that approved of green waste compost containing the synthetic Bifenthrin, a residential insecticide, for use in organic crop production.

In light of the NOP's more recent guidance that affirmed the use of numerous substances, including food waste, the scrutiny of the inputs that are used to create organic crops deserves renewed attention. Several companies are investing significantly based on the assumption, or the hope, that fertilizer produced with food waste is or will be approved for use in organic crop production. In fact, several companies are already selling organic fertilizer made from food waste for use in organic crop production.

To the extent the NOP 5034-1 is interpreted as a blanket approval of food waste that fails to distinguish among the substances within the food waste, one could argue that it is inconsistent with the Organic Foods Production Act of 1990 (the "OFPA"), which generally prohibits the use of synthetics in the production of organic crops. More clarity is needed regarding the use of food waste as an input in fertilizer used in organic crop production. In the interim, organic food producers should be cautious about using fertilizer created from food waste.

NOP's Subsequently Vacated Guidance Regarding Green Waste

On June 20, 2016, a federal district court invalidated NOP Guidance 5016: *The Allowance of Green Waste in Organic Production*

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Systems. In that case, the court granted Western Growers amicus status in the lawsuit.

NOP 5016 was issued to address the problem that composters cannot always control their green waste feedstock and that synthetics can find their way into the composting. The pesticide Bifenthrin (a prohibited synthetic) was increasingly found in green waste compost sold for organic crop production, and a complete ban of synthetics was not seen by some as practical.

NOP 5016 was a compromise. It allowed pesticide residue so long as the green waste was not subject to direct application of prohibited substances during the composting process and that any residual pesticide levels do not contribute to the contamination of crops, soil or water. NOP 5016 defined “green waste” to include “domestic and commercial food waste.”

The federal court held that NOP 5016 violated the Administrative Procedures Act, and the court issued an order of vacatur effective August 22, 2016. This essentially put the composting industry in the same position that it was in prior to NOP 5016. The vacatur of NOP 5016 demonstrates the inherent risk in relying on NOP guidance that may be inconsistent with statutes.

The Food Waste Problem

“Food waste” is a general term for the unused portion of our food supply, including food from retailers and consumers. An estimated 40 percent of the U.S. food supply, or 133 billion pounds annually, is wasted. This discarded food waste constitutes the largest part of our landfills and its decomposition is the third largest source of methane emissions. Not surprisingly, converting food waste to energy in the form of methane and subsequently a fertilizer rather than letting it rot in landfills has generated considerable interest as a solution to the environmental food waste problem.

Anaerobic Digestion

Anaerobic digestion is one method of transforming food waste into fertilizer products. Anaerobic digestion is a collection of processes by which bacteria break down biodegradable material in the absence of oxygen. The process can be used to manage waste and produce fuels. Feedstocks can include biodegradable waste materials such as waste paper, grass clippings, leftover food, sewage and animal waste. The primary products of anaerobic digestion are biogas, digestate and water.

Although the process of anaerobic digestion is not new, its use on an industrial scale has increased exponentially since 2000. The Organic Materials Review Institute (OMRI) recently noted that the rapid growth of the anaerobic digestion industry has resulted in a “sharp increase in [organic] applications submitted to OMRI for [anaerobic digestion] derived products.” OMRI also noted that most products derived from anaerobic digestion do not meet NOP’s criteria “for compost or processed manure, even if they are pathogen free.”

For industrial production, food waste is dumped into large, sealed tanks that look like silos. The digestion of food waste produces a biogas consisting of methane, carbon dioxide and traces of other gases that can be used as a fuel. For example, in Oakland, the East Bay Municipal Utility District uses anaerobic digestion to turn food waste into energy.

The anaerobic digestion of food waste also results in nutrient-rich liquid that can be used to make fertilizer. The remaining solids can be dried and used as a soil amendment but also has other applications such as bedding. This begs the question whether fertilizer created in this manner is suitable for use in organic crop production.

The Controversy Over Creating Organic Fertilizer From Food Waste

The organic industry is flourishing. The industry's annual double-digit growth can be attributed, at least in part, to the public's belief that chemicals and synthetics can be harmful to human health and the environment, and the public's perception that organic foods are free of such substances.

Marketing fertilizer created from food waste for use in organic crop production can be very lucrative, as well as environmentally beneficial. Companies have therefore started using anaerobic digestion to generate organic fertilizer from food waste while enthusiastically claiming that they can earn a healthy profit doing so while helping the environment.

A February 2017 New York Times article focused on American Organic Energy (AOE), which boasts plans for the largest anaerobic digester east of the Mississippi, capable of processing over 180,000 tons of food waste annually. The article quoted AOE's self-described process of breaking down the food waste using machinery that *"would crush the cans and bottles that would inevitably ride in with the food; metals would be extracted and packages shredded, and with the addition of water, random plastic would float to the top of the tanks while glass and grit settled to the bottom. 'We know we're gonna get loads from supermarkets with unopened tuna cans and expired bacon packages...while residential food is going to be in a plastic bag with a soup can or broken glass in it—that's the way Americans throw out their garbage.'"* The article continued that AOE's philosophy *"was diametrically opposed to that of community composters, who insist that participants honor and defend the integrity of their organics, down to the removal of tiny stickers from lemons and limes."*

Anaerobic digestion is not the only way to convert food waste into fertilizer. Other companies are finding novel ways to convert food waste into fertilizer for use in organic crop production. California Safe Soil (CSS) recently opened a production facility in McClellan, California to recycle 32,000 tons of food waste per year and change that waste into fertilizer for 128,000 agricultural acres using its patented technology. CSS has also partnered with the Sacramento Kings to collect food waste (such as lettuce or pizza dough) from the restaurant and food operations after Kings games and other events at the Golden 1 Center, for use as a fertilizer input.

Other companies are following suit and using food waste to create fertilizer. WISErg Corporation (WISErg), located in the Seattle area, already sells an organic fertilizer made from food waste. Both OMRI and the California Department of Food & Agriculture (CDFA) have approved several of WISErg's fertilizer products made from food waste for use in organic crop production.

Organic Products Are Generally Presumed Free Of Synthetics

Organic agriculture is governed by the general rule that natural substances are allowed while synthetics are prohibited. However, organic products are not, and have never been, completely free of synthetic and artificial ingredients. To be labeled "organic," a product need only comply with the legal framework, which allows synthetic and artificial products to be used in organic farming under certain, limited circumstances.

The OFPA required the establishment of an organic certification program, the NOP, for products that have been produced using organic methods. The OFPA also established standards an agricultural product must satisfy to be sold or labeled as organic. Among other things, the agricultural product must *"have been produced and handled without the use of synthetic chemicals, except as otherwise provided in"* the OFPA.

The OFPA defines "synthetic" as *"a substance that is formulated or manufactured by a chemical process or by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources, except that such term shall not apply to substances created by naturally occurring biological processes."*

The OFPA also directed the establishment of a National List of approved and prohibited substances for use in organic production ("National List"). The National List includes a small number of synthetic chemicals that are approved for some limited applications in organic production. In order to be included within the exceptions on the

National List, a synthetic substance must go through a comprehensive and open review process and receive approval.

Consistent with the OFPA, USDA organic regulations specifically prohibit the use of any “[s]ynthetic substances and ingredients” in organic crop production unless the synthetic substance is on the National List.

The distinction between synthetic and nonsynthetic (natural) substances is important. In contrast to synthetic substances, natural substances are generally approved for use in organic crop production unless specifically prohibited by the National List.

This basic framework also applies specifically to fertilizers allowed for use in organic crop production. NOP regulations governing fertilizers provide that the “*producer must manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.*” Some have interpreted “plant and animal materials” as used in this regulation to include food waste. Importantly, however, this NOP regulation governing fertilizer also provides that a producer of organic crops must not use “[a]ny fertilizer or composted plant and animal material **that contains a synthetic substance not included on the National List.**”

The only practical exception to the no synthetics rule as applied to fertilizers are the few items listed on the National List at 7 C.F.R. § 205.601(j). The National List does not include either “food waste” or the various prohibited synthetics that are commonly found in food waste. Some would therefore argue that before it issued its December 2016 guidance, the NOP regulations contemplated the use of food waste in fertilizer for organic crop production so long as the food waste did not contain prohibited synthetics.

In short, at least historically, to label their product as organic, fertilizer producers must have documented that all of their inputs are free from prohibited synthetic materials.

The NOP’s 2016 Guidance Generally Approving of Food Waste

On December 2, 2016, the NOP issued guidance document 5034-1 which lists “*materials which are considered nonsynthetic (natural), and are not required to be included on the National List.*” The list includes “*Food Processing By-Products*” and “*food waste*” as nonsynthetic materials. The relevant portion of the guidance states that “*Food Processing By-Products includes food waste, cannery waste, and pomaces. **Plant and animal materials chemically altered by a manufacturing process are not permitted unless resulting material is provided for under § 205.601***” (i.e., the National List).

Some, relying in particular on the last sentence, may view this guidance as simply restating the existing law described above and providing that natural food waste (pure animal and plant materials) may be used in organic crop production but only if such waste were completely free of prohibited synthetics. This interpretation would appear to be consistent with the OFPA.

Others, however, may view this guidance as authorizing the use of food waste as an ingredient in fertilizer used in organic crop production without having to scrutinize the contents of the food waste for prohibited synthetics. Under this interpretation, the last sentence of the quoted guidance means that food waste is considered natural unless it is chemically altered by the fertilizer producer after the food waste is collected.

It is more difficult to reconcile this latter interpretation with the OFPA’s prohibition of all synthetics that are not on the National List. Based on a strict reading of the OFPA and regulations, it is relatively clear that all inputs in fertilizer approved for use in organic crop production should be scrutinized and found to be free of prohibited synthetics.

To obtain approval from OMRI for fertilizer used in organic crop production, an applicant must provide a complete written description of the manufacturing process. In addition, an applicant must submit a Total Ingredient List, which must provide the name, function, supplier, manufacturer and a detailed written description of how the ingredient is made, and the percentage of each ingredient, based on weight, in the product. A product must also be reviewed periodically to confirm that it continues to comply with OMRI Standards and Policies, which are based on the NOP regulations.

The OMRI Policy Manual states that in “*order to conduct accurate and thorough reviews, OMRI must access all pertinent information regarding each product. This includes the identity and source of every ingredient and the manufacturing process for all ingredients and the final product.*” In addition, the OMRI Policy Manual provides that “*OMRI requires applicants to fully disclose all ingredients and their sources to OMRI in order for products to be reviewed for listing.*”

In the wake of this guidance, it appears there are at least two views of the current regulatory landscape related to food waste. Organic certifying agencies as well as those who are in the organic fertilizer business, deserve more clarity.

The NOP Should Clarify Its Stance on Food Waste

It is generally understood that the NOP’s current position is that unaltered food waste is considered a nonsynthetic and therefore permissible, but food waste that has additional prohibited synthetics added during the post-harvest production process (for example, the fertilizer producer’s addition of a chemical to control odor) is not allowed. As long as additional synthetics are not added to the food waste during processing, food waste is therefore ostensibly permitted for use in organic crop production since NOP has deemed it a natural substance and it is not prohibited by the National List.

The problem with the NOP’s current position is that not all food waste is created equal. One need only look at the waste bins in kitchens, restaurants and grocery stores to understand that food waste, almost by definition, is not pure but instead consists of many different substances, some nonsynthetic and others synthetic, which are prohibited for use in organic crop production.

The NOP’s recent guidance, which could be construed by some as labeling all food waste as a nonsynthetic, does not alter the reality that some of the components of food waste likely meet the OFPA’s definition of a “synthetic.” For example, if a producer were to include plastic bags with food waste as an input for fertilizer presumably most people in the industry would agree that the product should not, and currently would not, be approved for use in organic crop production.

It is generally understood that food waste derived from processed foods contains synthetic materials that normally would not be allowed in organic products. Preservatives such as butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT) are found in food products such as butter, cereals, snack foods and beer. BHA and BHT are not naturally occurring substances and meet the OFPA’s definition of a synthetic. They therefore should be prohibited for use in organic crop production. Yet food waste that contains BHA or BHT can now possibly be accepted by Material Review Organizations (MRO) as a “nonsynthetic” and an authorized input for organic fertilizer by the NOP.

The *New York Times*’ account of potential food waste collection includes the glass, plastic bags and other synthetics that contain such waste, which includes preservatives, strongly suggests that any number of things that would otherwise be prohibited in organic crop production could arguably now be included based on this guidance, as long as they are characterized as “food waste.” This is a slippery slope, and it is not difficult to imagine how it could eventually damage the organic brand.

More Clarity Is Also Needed On Anaerobic Digestion

It may be argued that as long as food waste is processed using anaerobic digestion the resulting fertilizer should be approved for use in organic crop production. But the OFPA and the regulations do not recognize such a distinction.

A 2012 OMRI publication noted that some argued that “allowance of AD [anaerobic digestion]-derived products in organic production would boost the industry by providing an abundant source of low-cost fertilizers.” The OMRI publication also acknowledged, however, that the anaerobic digestion process “doesn’t really fit the current criteria for compost.”

The differences between anaerobic digestion and traditional composting may be material. The case has yet to be made that the process of anaerobic digestion mineralizes synthetics to the level of simple compounds that are usable by the plant. The scientific literature to date indicates that whether or not this level of decomposition occurs depends on the type of synthetic. For example, according to one article, “*complete anaerobic mineralization has been demonstrated for phthalate, dimethyl phthalate, diethyl phthalate, dibutyl phthalate and butyl benzyl phthalate*” whereas “*no anaerobic degradation, or only partial conversion was established for dioctyl phthalate and bis(2-ethylhexyl) phthalate.*”

There may be other significant differences between aerobic (traditional composting) versus anaerobic digestion. For example, another analysis has concluded that *E. coli* “*survived significantly longer under anaerobic than under aerobic conditions. Survival ranged from approximately 2 weeks for aerobic manure and slurry to more than six months for anaerobic manure.*”

The process of using anaerobic digestion to convert food waste into organic fertilizer remains in legal limbo. A petition was submitted to the NOP to include “anaerobic digestate—food waste” on the National List of approved synthetic substances. The petition is currently under submission and the requested Technical Review (TR) was just released. The Crops Subcommittee of the National Organic Standards Board (NOSB) is scheduled to review this TR and the petition and make a recommendation for a formal vote at the October 2017 NOSB meeting. It is therefore also important that the NOP clarify its position on food waste prior to that vote.

Perhaps there is a way to use food waste as an input for fertilizers allowed in organic crop production without running afoul of the clear intent and meaning of the OFPA. For example, producers could ensure that they only use food waste that is free of prohibited synthetics as an input in fertilizer used in organic crop production.

The NOP should clarify its stance for the industry and confirm that food waste that contains any prohibited synthetics may not be used in organic crop production. After all, the OFPA represents a Congressional determination to prohibit all synthetics in organic crop production other than those contained on the National List. And federal agencies such as NOP, lack authority to issue rules or guidance that conflict with the intent of Congress.

Food Producers Should Use Caution Before Buying Organic Fertilizers Made From Food Waste

At least until further guidance is received from Congress, the NOP, or the courts, care must be taken in construing the NOP’s recent guidance as authorizing all food waste, regardless of its contents, for use in organic crop production. Producers—as well as growers, certifiers, and MROs—should be cautious as they navigate the uncertain regulatory landscape of organic fertilizer made from food waste. In sum, food producers should use considerable caution and await NOP clarification before buying organic fertilizers made from food waste that may contain prohibited synthetics.

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