michigan water environment association mwea the water quality people

Biosolid Facts – Supplement 3

Protecting Fruit and Vegetable Production

This document is to provide recommendations for land applying biosolids when raw agricultural commodities are grown on or near the application site, and to assist raw agricultural commodity growers with finding resources to help them comply with public health and safety standards.

This document is not intended to replace or supersede regulations for permitting or land application of biosolids in Michigan. Biosolids generators and appliers who land apply biosolids should contact the Michigan Department of Environmental Quality (DEQ) for more information on specific practices needed under each permit.

Compliance Challenges

Biosolids land application is an environmentally beneficial use of the nutrients from wastewater treatment plants. In Michigan, biosolids are regulated by the Department of Environmental Quality (DEQ) for pathogen reduction, stringent metal limits, vector attraction standards, and phosphorus and nitrogen limits (see https://www.mi-wea.org/biosolids_-_land_application.php for more information).

One consideration for biosolids land appliers and generators, is how to address concerns from neighbors growing fresh fruits and vegetables. The recommended practices in https://www.mi-wea.org/docs/MWEA_Biosolids_Management_Guidelines_FINAL.pdf can help address many potential issues. Land appliers should also be aware that growers producing these "raw agricultural commodities" must also follow federal requirements and other standards to protect public health and safety.

Food Safety Regulations

Food safety standards for farmers who grow raw agricultural commodities have recently been updated in the Food Safety Modernization Act, or FSMA (see www.michigan.gov/producesafety and https://www.fda.gov/Food/GuidanceRegulation/FSMA/default.htm for more information). That Act sets out the requirements for many aspects of food production, harvest, handling and processing, but the regulation most directly affecting biosolids states:

> "§ 112.53. You may not use human waste for growing covered produce, except sewage sludge biosolids used in accordance with the requirements of 40 CFR part 503, subpart D, or equivalent regulatory requirements." (See https://www.federalregister.gov/d/2015-28159 for the full text of the final rule.)

This provision allows the use of biosolids on and adjacent to farms producing fresh fruits and vegetables under certain conditions, so long as the biosolids are treated in accordance with federal law. However, just like the practice of biosolids land application is not always as simple as the regulations provide, production and marketing of fresh fruits and vegetables is rarely as simple as federal food safety laws.

Food Safety Audit Guidelines

Farmers who grow fresh fruits and vegetables must have a market to sell them. Many wholesale buyers of fruits and vegetables require farmers to adhere to one or more standards for agricultural practices in order to accept their harvested products. Some of the most commonly used standards are the U.S. Department of Agriculture's (USDA) Good Agricultural Practices (GAP) and GAP+ guidelines which address the U.S. Food

and Drug Administration's *Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables* (see https://www.ams.usda.gov/services/auditing/gap-ghp), Azzule Systems' PrimusGFS Global Food Safety Initiative (see http://www.primusgfs.com/), and the Euro-Retailer Produce Working Group's GLOBALG.A.P. (formerly known as EUREPGAP) standards (see https://www.globalgap.org/uk_en/).

Each of these systems use checklists and audits conducted on farms and in food processing centers to ensure their food safety guidelines are being met. If a farmer fails the audit, they lose their ability to sell their produce to that buyer. Further, some companies that purchase fresh fruits and vegetables for processing and sale develop their own separate standards for agricultural production and handling, which farmers must adhere to in order to comply with their purchase contracts. Contamination or risk of contamination can not only prevent farmers from selling their produce, it can create insurance or legal liability for farmers and land appliers. If both farmers and land appliers use good planning and practices, this can help reduce the risk of liability for everyone.

Each agricultural practice and food safety standards system has its own guidelines and recordkeeping requirements for how farmers address biosolids.

USDA GAP guidelines follow the FSMA rule that allows biosolids application if it has been treated according to federal and state standards. The audit checklist requires performance and documentation of:

- Water testing for microbial contamination, including both irrigation and washing/processing water by accredited laboratories
- Soil testing to identify potential contamination from past uses or soil amendment applications
- Records for application dates, composition, and treatment methods of biosolids applied to fields, including letters/certificates of analysis showing compliance with state and federal treatment standards
- Records of storage and application of biosolids in accordance with state and federal regulations and in such a way to minimize the possibility of runoff or contamination

PrimusGFS includes performance and documentation of:

- Soil testing to identify potential contamination from past uses or soil amendment applications
- Water testing for microbial contamination, including both irrigation and washing/processing water by accredited laboratories
- Corrective measures taken to address any flooding from uncontrolled sources since the last growing season (which might be a source of contaminants)
- Recordkeeping for any adjacent or nearby fields where biosolids have been stored and/or applied that might affect the growing area, and physical measures implemented to prevent contamination such as: 400 feet of buffer between storage or application areas and growing area, tarping systems, physical barriers, fences, or ditches
- Records for application dates, composition, and treatment methods of biosolids applied to adjacent or nearby fields that might affect the growing area, including letters/certificates of analysis showing compliance with state and federal treatment standards, and timing of application to avoid conflicts with growing area production
- If biosolids are used in the growing area, records for application dates, composition, and treatment methods of biosolids applied to fields, including certificates of analysis showing compliance with state and federal treatment standards, records of incorporation of biosolids, and application only prior to planting or tree bud burst and not during the growing season

- No biosolids use where additional rules apply to biosolids application restriction (such as the Leafy Green Commodity Specific Guidelines in California)

GlobalG.A.P. bars the application of biosolids in the growing area at all, plus requiring performance and documentation of:

- Soil testing to identify potential contamination from past uses or soil amendment applications
- Water testing for microbial contamination, including both irrigation and washing/processing water by accredited laboratories, and identification of water sources, proximity to potential sources of contamination, and timing/method of water application
- Corrective measures taken to address any flooding which might be a source of contaminants downstream, and no acceptance of any fresh produce in which the field has been flooded during the growing season
- No use of human sewage – treated or untreated – in the growing area at all
- Records for application dates, rates, composition, and treatment methods of all organic soil amendments including biosolids applied to adjacent or nearby fields, and physical measures implemented to prevent contamination such as: buffer zones between storage or application areas and the growing area, tarps for stored nutrients, physical barriers, walls, or ditches

Guidance for Land Appliers

MWEA's *Land Application of Biosolids in Michigan: Management Recommendations* (see: https://www.mi-wea.org/docs/MWEA_Biosolids_Management_Guidelines_FINAL.pdf) is a good starting point for land appliers to recognize steps they can take to minimize the risk of conflict with neighboring residences, businesses and farms. Those recommendations include communication between landowners and neighbors regarding planting and application. A key to the success of this communication is for biosolids land appliers to ensure they are aware of any agreements made by the landowner before application, as well as any restrictions in the wastewater treatment plant's Residuals Management Program.

If a landowner receiving biosolids authorized by DEQ instructs the wastewater treatment plant or biosolids applier of conditions they have implemented on their farms or agreed to with neighboring farms to protect fresh fruit and vegetable production, these practices can assist the land applier with assuring both the landowner and neighboring farms of compliance:

- Marking agreed-upon setbacks from property lines with flags or other visible indicators to demonstrate the land applier is not applying biosolids in an unaccepted location
- If landowner or wastewater treatment plant agreements include restrictions on staging or storage of biosolids, following those restrictions to minimize the potential for runoff or contamination
- Using caution not to apply on or over or cause any damage to structures or barriers constructed between fields or along property lines to minimize the potential for runoff or contamination, including ditches, berms, fences, vegetative barriers, etc.
- Ensuring compliance with all setback requirements for waterways, wells, and other water sources that might become a source of contamination on neighboring farms
- Incorporating biosolids when requested
- Communicating with landowners to ensure biosolids are not applied on saturated soils, areas subject to flooding, or areas likely to runoff onto neighboring properties

- Making available copies of permit and testing documents, or providing landowners with links or contact information for the wastewater treatment plant and/or DEQ Biosolids Program staff so landowners and neighbors can acquire needed documentation of treatment, testing, and permit conditions for demonstration of compliance.
- Many farmers use Driftwatch, a free software platform that allows farmers to share crop information, planting and harvest schedules, and spraying plans to prevent accidental contamination or harm to pollinators from herbicide and other pesticide applications. Land appliers can sign up on the site for free to get automated updates on farming plans in their selected application area to know when and where raw agricultural commodities are being planted and harvested, at https://driftwatch.org/.

Landowners receiving biosolids should proactively communicate with wastewater treatment plants and land appliers regarding any agreements they make or protocols they intend to comply with, in order to come to a satisfactory conclusion for everyone involved. If fresh fruits or vegetables are not grown on their property or neighboring properties every year, these agreements and arrangements may be adjusted accordingly.

Guidance for Growers of Fresh Fruits and Vegetables

Complying with food safety standards can be a challenge, particularly when audit checklists require that farms keep information about activities outside their own property. Each system has different questions and requirements for performance and documentation, but the following may assist in providing both protection to minimize the risk of contamination of raw agricultural commodities, and in providing documentation needed to comply with an audit:

- When developing plans to minimize potential contamination risk, consider measures that address multiple sources of potential contamination, such as manure or biosolids application, stormwater runoff, flood events, and nearby activities that may release pollutants into the air or surface water. Many food safety programs have requirements for minimizing risk of contamination from manure, compost and other organic nutrients and soil amendments in addition to biosolids. When developing your farm's food safety plan and reviewing the checklist, look for ways to accomplish multiple goals with a practice. For instance, a berm, ditch, vegetative barrier or other structure may minimize the risk of potential contamination from manure runoff, leachate from nutrient, feed, or other storage areas, and other chemical storage in addition to biosolids. Keep records of those measures including growing area and protective structure maps in your audit checklist book.
- Register your farm activity on Driftwatch at https://driftwatch.org/, which is a free online platform for farmers to share crop information, planting and harvest schedules, and spraying plans to prevent accidental contamination or harm to pollinators from herbicide and pesticide application. This platform can also help land appliers monitor where and when raw agricultural commodities are being grown near biosolids application sites, so they can be sure to use protective practices to minimize the potential for contamination of nearby crops.
- Read and keep copies of Michigan's regulations of biosolids in Michigan in your audit checklist book. These regulations include requirements for treatment, contamination standards, microbial reduction, setbacks from waterways, wells, homes and commercial buildings, application rates, and soil and biosolids testing, and may provide you with much of the information needed to demonstrate preventative measures:
    - MWEA provides helpful fact sheets and links here: https://www.mi-wea.org/biosolids_-_land_application.php
    - DEQ's Biosolids Program page including the statute and rules, permit forms, and sampling and testing guidelines is here: www.mi.gov/biosolids

    - MiWaters, the State of Michigan's permitting and compliance page, where the public can look up information about violations, permit issuance, and compliance records, is here: https://miwaters.deq.state.mi.us
- If you are a recipient of biosolids or if your audit program requires recordkeeping for biosolids applications on neighboring or nearby areas, talk with the land applier, wastewater treatment plant the biosolids originate from, or DEQ Biosolids Program staff to obtain and keep a copy of the site packet for the biosolids application site in your audit checklist book. This inquiry will also help you determine the class of biosolids being applied so you can keep records of which standards the wastewater treatment plant must adhere to for treatment and land application. See the Fact Sheets and other supplements in this series for more information about biosolids regulations and classes here: https://mi-wea.org/biosolids_-_land_application.php.
- Keep records of the dates and rates of application of biosolids on your farm and/or neighboring lands. Wastewater treatment plants are required to keep records of the same, and either they or the DEQ Biosolids Program staff can provide you with copies.
- If your food safety standards require documentation of neighboring or nearby properties, communicate with the landowner/recipient of biosolids. Michigan law does not establish required setbacks from property lines or some of the other measures called for in FSMA and/or other food safety standards, but a neighboring landowner may be willing to agree to follow some practices to help you comply with your FSMA and/or audit requirements. Be sure to make those agreement terms available to the landowner, wastewater treatment plant, and/or the biosolids land applier as appropriate, and keep records of those agreements in your audit checklist book.
- Communicate with neighboring or nearby landowners/recipients of biosolids about your production schedule, including the years you grow FSMA and/or food safety audit and/or FSMA-subject crops, planting and harvest activities, to minimize the possibility of conflict when biosolids land application is timed. Be understanding that the recipient of biosolids has little to no control over the schedule of land application, so conversations may be more beneficial if they involve the land applier and/or the wastewater treatment plant.
- If you are unsure whether biosolids land application is happening near your growing area or which wastewater treatment plant it originates from, contact DEQ Biosolids Program staff for assistance.

With proactive communication, careful recordkeeping, and compliance with state and federal rules and regulations, both production and marketing of safe fresh fruits and vegetables as well as environmentally beneficial application and utilization of biosolids can happen.

Questions or concerns can be directed to the biosolids generator, or to DEQ or MDARD:

Mike Person, Michigan Department of Environmental Quality (DEQ) Biosolids Program, Statewide Program Coordinator: (989) 297-0779, personm@michigan.gov, or www.michigan.gov/biosolids (to reach regional staff in the Biosolids Program, see: https://www.michigan.gov/documents/deq/wrd-biosolids-staff_402800_7.pdf).

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