**Supplement 21**

# Food Processing Waste & Sewage Sludge

**Act 38 Nutrient Management Plan Guidance**

This supplement is intended to provide guidance for operators that utilize food processing waste, otherwise known as food processing residuals (FPRs), and/or sewage sludge as a nutrient source or soil amendment for agronomic purposes. It discusses the statutory and regulatory requirements[1] for the land application of these materials when used alone and when mixed with manure. These requirements include coverage under general permits for municipal and residual waste. Finally, it describes the setback distances from environmentally sensitive areas and property lines.

## I. FOOD PROCESSING AND AGRICULTURAL WASTE

The Solid Waste Management Act, 35 P.S. § § 6018 et seq. and the residual waste regulations, 25 Pa. Code, Chapter 287 set forth the requirements to beneficially use food processing waste and agricultural waste. Food processing waste and agricultural waste are categories of residual waste[2] because they result from industrial[3] or agricultural operations.

"Food processing waste" is defined as:

> Residual materials in liquid and solid form generated in the slaughtering of poultry and livestock, or in processing and converting fish, seafood, milk, meat and eggs to food products. The term includes residual materials generated in the processing, converting or manufacturing of fruits, vegetables, crops and other commodities into marketable food items. The term also includes vegetative residuals from food processing activities that are usually recognizable as part of a plant or vegetable, including cabbage leaves, bean snips, onion skins, apple pomace and grape pomace.

35 P.S. § 6018.103; 25 Pa. Code Section 287.1

"Agricultural waste" is defined as:

> Poultry and livestock manure, or residual materials in liquid or solid form generated in the production and marketing of poultry, livestock, fur bearing animals and their products, if the agricultural waste is not hazardous. The term includes the residual materials generated in producing, harvesting and marketing of agronomic, horticultural, aquacultural and silvicultural crops or commodities grown on what are

[1] For specific questions related to the Solid Waste Management Act, Residual Waste Regulations or Municipal Waste Regulations, the Department of Environmental Protection should be consulted.

[2] Residual waste is defined, in relevant part, as any garbage, refuse, other discarded material or other waste, resulting from industrial and agricultural operations, including sludge from a wastewater treatment facility. 35 P.S. § 6018.103; 25 Pa. Code § 287.1.

[3] Industrial establishment is defined to include an establishment engaged in manufacturing or processing, and includes factories, foundries, mills, processing plants, and slaughterhouses. 35 P.S. § 6018.103; 25 Pa. Code § 287.1.

> usually recognized and accepted as farms, forests or other agricultural lands. The term also includes materials in liquid or solid form generated in the production and marketing of fish or fish hatcheries.

35 P.S. § 6018.103; 25 Pa. Code Section 287.1

A permit under the Solid Waste Management Act and residual waste regulations is not necessary for the use of food processing wastes or agricultural wastes in the course of normal farming operations. 35 P.S. § 6018.501; 25 Pa. Code § 287.101(b)(1) and (2). A normal farming operation is defined as:

> The customary and generally accepted activities, practices and procedures that farms adopt, use or engage in year after year in the production and preparation for market of poultry, livestock and their products; and in the production, harvesting and preparation for market of agricultural, agronomic, horticultural, silvicultural and aquacultural crops and commodities, if the operations are conducted in compliance with applicable laws, and ***if the use or disposal of these materials will not pollute the air, water or other natural resources of this Commonwealth***. The term includes the storage and utilization of agricultural and food processing wastes, screenings and sludges for animal feed, and the agricultural utilization of septic tank cleanings and sewage sludges which are generated offsite. ***The term includes*** the management, collection, storage, transportation, use or disposal of manure, other agricultural waste ***and food processing waste, screenings and sludges on land where the materials will improve the condition of the soil, the growth of crops or in the restoration of the land for the same purposes.***

35 P.S. § 6018.103; 25 Pa. Code Section 287.1 (Emphasis added.)

To aid in ensuring that food processing waste is being properly managed and its use is not polluting the air, water, or other natural resources of the Commonwealth, persons managing this waste shall implement best management practices (BMPs). 25 Pa. Code § 287.101(b)(2). **The Department of Environmental Protection (DEP) has developed a technical guidance document, *The Food Processing Residual Management Manual,* No. 254-5400-100 that describes BMPs for persons managing food processing wastes.** If a person fails to implement BMPs, the DEP may require compliance with the land application, composting and storage operating requirements of Chapters 291, 295 and 299 of the residual waste regulations. 25 Pa. Code, Chapters 291.295 and 299, and 287.101(b)(2).

Additionally, the DEP may require an individual or general permit or take other appropriate action, when the person managing the food processing waste or agricultural waste is conducting an activity that harms or presents a threat of harm to the health, safety or welfare of the people or the environment of this Commonwealth. 25 Pa. Code § 287.101(c).

## II. SEWAGE SLUDGE AND BIOSOLIDS

The Solid Waste Management Act, 35 P.S. § § 6018 et seq. and the municipal waste regulations, 25 Pa. Code, Chapter 271 set forth the requirements to beneficially use sewage sludge, including residential septage, by land application. To determine whether a material qualifies for beneficial use, it must fall within the definition of sewage sludge or residential septage. These terms are defined Title 25 Pa. Code § 287.1 as follows:

"Sewage sludge" is defined as:

> Liquid or solid sludges and other residues from a municipal sewage collection and treatment system; and liquid or solid sludges and other residues from septic and holding tank pumpings from commercial, institutional or residential establishments. The term includes materials derived from sewage sludge. The term does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator, grit and screenings generated during preliminary treatment of sewage sludge at a municipal sewage collection and treatment system, or grit, screenings and nonorganic objects from septic and holding tank pumpings.

"Residential septage" is defined as:

> Liquid or solid material removed from a septic tank, cesspool or similar treatment works that receives only waste or wastewater from humans or household operations. The term includes processed residential septage from a residential septage treatment facility. The term does not include liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

"Land application" is defined as:

> Agricultural utilization or land reclamation of solid waste. The term does not include the disposal of solid waste in a landfill or disposal impoundment.

Certain types of sewage sludge are also known as biosolids to emphasize the beneficial nature of this biological resource. (*See*, "A Plain English Guide to the EPA Part 503 Biosolids Rule," United States Environmental Protection Agency Publication, EPA/832/R-93/003, September 1994). The land application of biosolids is authorized by the DEP through a general permit or an individual permit. DEP has developed three general permits that contain standards to ensure a certain quality of the material and its proper end use through land application. Two of the permits, PAG-07 and PAG-08, authorize the land application of biosolids; while the third permit, PAG-09 authorizes the land application of residential septage. These permits are described as follows:

**A. PAG-07 - Exceptional Quality Biosolids (EQ biosolids).** This permit authorizes the land application of sewage sludge that meets specific treatment standards

related to pollutant concentrations, pathogen reduction, and vector attraction reduction to produce a high-quality material. These materials are typically generated at sewage treatment plants and are processed by commercial operators. Due to the exceptional quality of these materials, the land application is subject to only a few restrictions, and is exempt from isolation distances. The quality of the material is regulated through strict sampling and analysis requirements, and continued monitoring. The general permit also contains limited requirements for distribution; land application, including rates; blending; storage; training; recordkeeping and reporting. The distribution requirements include a label or information sheet that notifies the person receiving the material of any restrictions or limitations on its use, along with a description of its nutrient value. These biosolids may be licensed by the Pennsylvania Department of Agriculture (PDA) as a fertilizer or soil amendment.

**B. PAG-08 - Non-exceptional Quality Biosolids.** This permit authorizes the land application of sewage sludge that meets specific treatment standards related to pollutant concentrations, pathogen reduction, and vector attraction reduction. However, these treatment standards are not as stringent as those required under PAG-07 since this permit includes more use restrictions. Notice requirements include operator notification to adjacent landowners and notice of first land application under the permit to the county conservation district and DEP at least thirty (30) days prior to the first land application. The site is reviewed by DEP for suitability and notice of site suitability is sent to the municipality in which the site is located and published in the *Pennsylvania Bulletin*. Land application may commence at the end of the 30 day-period even if DEP has not made its site suitability determination. This permit also contains requirements for sampling and analysis; continued monitoring; land application, including rates; blending; storage; training; recordkeeping and reporting. Finally, the permit only allows food processing waste to be mixed with biosolids if approved by DEP.

**C. PAG-09- Residential Septage.** This permit authorizes the land application of residential septage that meets specific treatment standards related to pollutant concentrations, pathogen reduction, and vector attraction reduction. Non-organic objects must be removed prior to land application and disposed of a permitted disposal facility. The use restrictions are similar to those included in PAG-08. Finally, food processing waste may be mixed with residential septage only if approved by DEP.

## III. LAND APPLICATION OF FOOD PROCESSING WASTE AND BIOSOLIDS

Food processing waste and biosolids can be applied individually. Additionally, food processing waste can be comingled with manure and used as a soil amendment or a crop nutrient source. The mixture may also be placed in a manure digester to enhance methane gas production, and the digested material can be land applied for agronomic purposes. Digester material (effluent) containing manure should be considered Act 38 manure. However, it is important to note that biosolids may not be comingled with manure, either as a soil amendment or for inclusion in a digester. The following

information provides additional guidance, and also highlights specific regulatory and permitting requirements for the land application of these materials.

**A. Planning Considerations.**

1. Application Setbacks
   a. For FPRs that are comingled with manure from a concentrated animal feeding operation (CAFO) or concentrated animal operation (CAO) ("Act 38 Manure"), the more stringent setbacks for either the FPRs or manure apply when the material(s) is applied as a soil amendment.
   b. Digester material (effluent) containing FPRs and manure should be considered Act 38 manure for the purposes of determining setback requirements.
   c. In some cases, permits for land application of waste may be required by DEP. Applications for DEP permits can be accessed on bureau websites or through DEP regional offices.
   d. The land application of all biosolids must comply with the conditions of General Permits PAG-08 and PAG-09, including the setbacks and 30-day notice of first land application, and/or the individual permit to land apply biosolids or residential septage. (In appendix 10 of the NMP, please provide a copy of the issued biosolids General Permit, 30-day first land application notice and/or the issued individual permit for the land application of biosolids/residential septage).
   e. FPRs applied individually should follow setbacks contained in the FPR manual.
2. Stacking Requirements
   a. FPR comingled with Act 38 manure should be stacked in accordance with the following: (1). The DEP's guidance: *The Food Processing Residual Management Manual,* No. 254-5400-100, (2) Act 38 Nutrient Management Program Technical Manual, (3) Chapter 92 Concentrated Animal Feeding Operation (CAFO) permit, or (4) manure management manual, whichever is more stringent.
   b. Biosolids should be stacked in accordance with the conditions of the DEP PAG-08/09 General Permit or individual permit for the land application of biosolids or residential septage.
   c. If no specific setbacks are required for FPRs, biosolids or residential septage, the applicable Act 38 manure setbacks requirements should be followed.

**B. Applying Food Processing Residuals and/or Biosolids separately, not comingled with manure.**

1. FPRs must be applied in accordance with DEP's guidance: *The Food Processing Residual Management Manual,* No. 254-5400-100, including preparation of a Land Application System Plan.
2. Representative samples of the FPRs (product) and/or biosolids should be taken to determine nutrient content.
3. Representative samples of the FPRs should be taken to assure the material does not contain potentially harmful contaminants.

4. The land application of biosolids under PAG-07 must be in accordance with the User Fact sheet provided by the generator or the general / individual permit and may not exceed agronomic rates for the crop intended.
5. The conditions in PAG-08/09 must be followed, including the 30-day notice of first land application and/or individual permit requirements.

**C. When Food Processing Residual are comingled with manure and will be land applied.**

1. Representative samples of the comingled product must be taken to determine nutrient content.
2. Representative samples of digester material (effluent) must be taken to determine nutrient content.
3. Representative samples of the Food Processing Residuals should be taken to assure the product does not contain potentially harmful contaminants.
4. The conditions in PAG-08/09 must be followed, including the 30-day notice of first land application and/or individual permit requirements.

## IV. ADDITIONAL INFORMATION

A. FPRs may contain metal or glass that may cause injury or damage to equipment.
B. FPRs may contain heavy metals, like cadmium, that may build up in the soil, be picked up by crops, and reach hazardous levels in the plant tissue.
C. FPRs may contain high levels of salt or other compounds, disinfectants, cleaning materials, and/or chlorides that may restrict vegetation growth.
D. Applications of biosolids to crops grown specifically for human consumption (vegetables) may be restricted due to potential bacteria or heavy metal contamination. Application of biosolids must be in accordance with conditions in the PAG-08/09 general permit or individual permit.

## V. ACT 38 NUTRIENT MANAGEMENT PLANNING REQUIREMENTS

A. NMP Plan Summary
   1. Comingled FPRs with manure, excluding digester material (effluent), would be detailed as a separate *manure group* in Appendix 3 and allocated to specific CMUs/Field ID in Appendix 4.
   2. Digester material (effluent) containing FPRs and manure would be detailed as a separate manure group in Appendix 3 and allocated to specific CMUs/Field ID in Appendix 4.
   3. Non-comingled FPR, EQ biosolids and Biosolids would be detailed in Appendix 4 and shown as other nutrient source used.

B. Plan Summary Notes
   1. List the specific setbacks for FPRs comingled with manure, excluding digester material (effluent), following whichever setback requirement is more stringent.
   2. For non-comingled FPR, list the FPR setback requirements.
   3. Biosolids must follow the setbacks in the PAG-08/09 general permit and 30-day farm land application notice or individual permit.

C. Appendix 2

1. The Operation Description should include the source and estimated volume of the FPRs.
2. Manure Application Equipment - Spreader calibration should be performed for the FPRs comingled with manure, excluding digester material (effluent).
3. Manure Application Equipment - Spreader calibration should be performed for the FPRs not comingled with manure.
4. Manure Application Equipment- spreader calibration should be performed for EQ biosolids either being used alone or comingled with manure.
5. Biosolids must be applied by a land applier or DEP certified hauler.

D. Appendix 3
   1. Comingled products, excluding digester material (effluent), will be listed as a separate manure group(s) and analysis required for nutrient content.

E. Appendix 4
   1. FPRs comingled with manure, excluding digester material (effluent), planned for CMU/field specific applications.
   2. FPRs not comingled with manure planned for CMU/field specific applications. These should be shown as other nutrient source used.
   3. Biosolids must be planned for CMU/field specific applications. EQ Biosolids should be shown as other nutrient sources used.

F. Appendix 5
   1. Phosphorous Index utilizing the same criteria as manure including the P Coefficient must be applied for comingled products.

G. Appendix 6
   1. Stacking FPRs comingled with manure should be evaluated utilizing the more restrictive requirements, including property line setbacks.
   2. Stacking FPRs not comingled with manure should be evaluated utilizing the FPRs manual.

H. Appendix 7
   1. Stormwater evaluation must take into account specific regulatory requirements for land application of comingled and non-comingled manure and FPRs, excluding digester material (effluent), including but not limited to, the requirement for incorporation after application, which could potentially increase runoff and erosion.

I. Appendix 8
   1. Importer/Broker Agreements & NBS must be completed for exporting manure comingled with FPRs.

J. Appendix 10
   1. Winter matrix, when applicable, must follow the more stringent requirements for the comingled manure and FPR.
   2. The specific FPR that is utilized must be detailed.

3. The specific FPR, quantity, and frequency the FPR added to the manure digester or manure storage, as applicable, must be detailed.
4. For EQ Biosolids, a copy of the label or user fact sheet must be prepared by the generator.
5. Any permits required by DEP for use of FPRs or biosolids must be issued and effective.
6. A FPR Analysis must be completed.