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Incorporating PFRP (Class A) Sludges into Nutrient Management Plans (10-2021 Update)

Categorization of Sewage Sludges

Based on treatment at the wastewater reclamation plant, sewage sludges (biosolids) are placed in 2 categories.

The following table describes the two main categories of sewage sludges:

Type of treatment	Abbreviation	Permit Required	Status Under Clean Water Act
Process to significantly reduce pathogens	PSRP	Treatment plant and each application site require permits	Class B
Process to further reduce pathogens	PFRP	Only treatment plant requires permit	Class A

Regulation of PFRP Sludges

The Maryland Department of the Environment (MDE) regulates PFRP sludges. Producers of PFRP sludges must submit an acceptable label to MDE. The MDE approves distribution labels containing mineralization rates for each PFRP product based on information provided by the sludge producer.

Permitted PFRP sludges

The following table lists PFRP products (excluding sludge compost) that are permitted for utilization in Maryland and that are typically utilized by land application on farm land (effective May 2018).

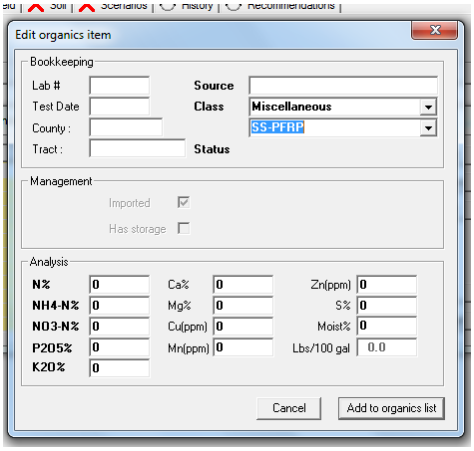
Type of PFRP Treatment	Name of Products (with source)	Mineralization Rate (decimal fraction of original organic N)		
		Year of application	Applied last year	Applied 2yrs ago
Lime stabilized/heat	RDP (Howard County, Little Patuxent Plant RDP (Ocean City) Watershed Resources Center, Inc. (Curtis Bay, Maryland)	0.30	0.10	0.05

Type of PFRP Treatment	Name of Products (with source)	Mineralization Rate (decimal fraction of original organic N)		
		Year of application	Applied last year	Applied 2yrs ago
Heat-dried or pelletized	Granulite (Patapsco, Baltimore City) Granulite (Back River, Baltimore County) Granulite (Hagerstown) NEFCO (Cumberland) Town of Elkton Town of Easton Fort Meade Philadelphia Renewable Bio-Fuels, LLC Milorganite	0.50	0.25	0.15
Thermal hydrolysis followed by anaerobic digestion	BLOOM (DC Water and Sewer Authority)	0.25	0.10	0.05

Addressing PFRP Sludges in a Nutrient Management Plan

The following table describes the process of using PFRP sludge in a nutrient management plan:

When ...	Then ...
PFRP sludge is being used by an agricultural producer	The plan writer must include the product and application rate in the nutrient management plan.
The agricultural producer determines which product they want to use	Plan writer must obtain a copy of the label of the product to use in plan development. Many products' labels are available on the ANMP website at http://extension.umd.edu/anmp/pfrp-biosolids-labels
The label provides "total solids"	While many PFRP products are dried and the nutrient information on the labels can be used directly in a plan, some products contain considerable moisture. In this case the plan writer must first convert the nutrients to an "as-is" or moist basis. % nutrient "as is" = $\frac{\%\text{ nutrient on label (dry weight basis)} \times \%\text{ solids}}{100}$

	For example, if BLOOM (a product of DC Water and Sewer Authority) has a label that indicates 5% N and 30% solids, the percent N on an "as is" basis is 5% "dry" X 30% solids = 1.5 % N "as is" 100
The label is located and conversions have been done	The plan writer enters the data into the organics list of NuMan as the class "miscellaneous", selects "SS-PFRP" from the drop down menu that appears below, and then enters the remaining information from the label. 
The plan writer links the PFRP sludge to a field on the scenarios page in NuMan	⚠ The mineralization rate must be manually entered (as a decimal fraction) based on the table of permitted PFRP sludges in Maryland from the above section.
The plan writer updates the plan in subsequent years after PFRP application	⚠ The application should be documented in the "history" tab of the NuMan program and the mineralization rate must again be manually entered. Inform the agricultural producer of N credits taken due to past PFRP applications.

Example of a PFRP Sludge Label

Note: The nitrogen information on some of the labels may be different than what is seen on typical manure or sludge analysis because some states in which the products are sold require alternate labeling consistent with the Association of American Plant Food Control Officials' regulations.
For example, instead of expressing nitrogen in a product as ammonium nitrogen, it is reported as "water soluble nitrogen".

The following is an excerpt from the Hagerstown *Granulite* label (dried biosolids pellets) label. The full label contains additional critical information about safe use and field storage:

SYNAGRO

GRANULITE

5-3-0

The natural choice fertilizer

GUARANTEED ANALYSIS	
Total Nitrogen (N)	5.0%*
1.0% water soluble nitrogen	
4.0% water insoluble nitrogen	
Available Phosphate (P_2O_5)	3.0%
Soluble Potash (K_2O)	0.0%
Calcium	2.0%
Iron (Fe)	1.0%

Nutrients derived from municipal biosolids (sewage sludge)
* This product contains 4.0% slow release nitrogen

- In this case "water soluble nitrogen" is ammonium-N
- The complete label is on the following page