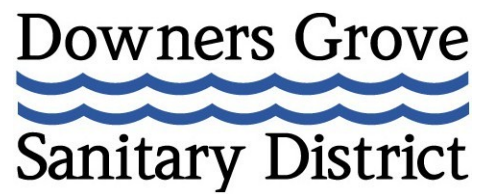


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**DOWNERS GROVE SANITARY DISTRICT
BIOSOLIDS HANDBOOK**



January 2018

DOWNERS GROVE SANITARY DISTRICT
BIOSOLIDS HANDBOOK
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WHAT IS BIOSOLIDS?

Biosolids (formerly called sludge) is a byproduct of the process of wastewater purification at the District's Wastewater Treatment Center. Solids removed from the wastewater are stabilized by anaerobic digestion, air dried and then stockpiled for over a year before the product is made available to the public.

WHAT CAN BIOSOLIDS BE USED FOR?

Aged, digested biosolids is recommended for use in flowerbeds, on lawns, shrubs, hedges and other landscaping areas. The high organic content of the product will enhance the workability and water retention capacity of the soil. The substantial nutrient content will help supply plant needs for nitrogen, phosphorus and potassium, the nutrients necessary for healthy growth.

CAN I USE THE BIOSOLIDS ON MY FRUIT TREES OR IN MY GARDEN?

At this point in time, the District is recommending that biosolids be used for landscaping purposes only. We do not recommend that it be used for growing edible crops.

CAN THE BIOSOLIDS BE USED TO FILL IN OR BUILD UP A LOW AREA?

For best results, the biosolids should be mixed 50/50 with black dirt or a suitable soil mixture. If the area is shallow (6" or less) the biosolids can be worked into the top few inches of soil or rototilled. If the area is deeper (6" or more) it would be best to have a quantity of black dirt or acceptable fill material delivered so that the two could be mixed prior to application to the area. The purpose for this mixing is that the biosolids is a very porous material and if it is not properly mixed, it will tend to retain water in the area. Consequently, the area will begin to pack down and will also remain damper than what you might normally like.

HOW DO I ARRANGE FOR A DELIVERY OF BIOSOLIDS?

Call our administration office at (630) 969-0664 any weekday between 8:00am and 4:30pm to request a delivery. Your name will be placed on our waiting list and deliveries are made on a first come, first served basis as biosolids become available. You will be called ahead of time to arrange a delivery date. There is no charge for delivery.

WHEN ARE THE DELIVERIES MADE?

Weather permitting, deliveries begin in May and end sometime in October. Deliveries are only made on weekdays and usually between 8:30am and 3:00pm.

IS THERE A MINIMUM REQUIREMENT FOR DELIVERY?

We normally deliver truckloads of 6 or 12 cubic yards, but will deliver a minimum of 3 cubic yards to the area bounded by I-55 on the south, Roosevelt Road on the north, Route 83 on the east, and Naper Boulevard on the west.

HOW CAN I VISUALIZE TWELVE CUBIC YARDS OF BIOSOLIDS?

One cubic yard of biosolids would fill approximately seven 30-gallon trash cans; therefore, twelve cubic yards would fill about eighty-four 30-gallon trash cans. See photo on next page for a visual example.



This visual example of biosolids can help you decide how much you will need for your landscape project.

WHAT IF I ONLY NEED A SMALL AMOUNT?

We have a biosolids pick-up station which is located on Curtiss Street, near Katrine Avenue (west of Belmont Road). The pick-up station is open daily until dusk for your convenience. There is no charge for using the pick-up station. You may bring a shovel and container and pick up as much biosolids as you need.

CAN THE BIOSOLIDS BE DELIVERED THE DAY I REQUEST IT?

Unfortunately, no. Your name will be put on a waiting list and deliveries are made on a first come, first served basis.

HOW LONG WILL I HAVE TO WAIT FOR DELIVERY?

Generally, it will be a few weeks, once the delivery program begins in the spring. Occasionally, heavy rains will delay deliveries because the biosolids remain too wet to be pulverized.

WHAT IF I'M NOT HOME WHEN YOU CALL ME?

Each time we make deliveries we begin by calling the earliest dated request, so if we were to miss you one day we would try calling you again for the next delivery date.

DO I HAVE TO BE HOME WHEN THE DELIVERY IS MADE?

Someone, preferably an adult, should be available to show our driver where you want to have the biosolids dumped. If you cannot be home to accept the delivery, you must clearly mark and/or leave a note attached to the front door indicating exactly where you want the biosolids dumped. Please keep in mind that our drivers can only travel on your property and that the biosolids can only be deposited on your property (for example, the load cannot be put on the parkway or on vacant land).

WHAT IF I WON'T BE ABLE TO USE THE BIOSOLIDS RIGHT AWAY WHEN IT IS DELIVERED?

We would recommend distributing the biosolids as soon as possible. The biosolids is pulverized before it is delivered to make it easier for you to work with. The biosolids is very porous and if it were to get wet it would clump together and be more difficult to use. You could cover the pile of biosolids with heavy plastic or an old shower curtain if rain is forecast. You would then want to leave it uncovered in the sun for a day or so to let it dry out before using it. In any event, storage of biosolids must not exceed two months, in accordance with Illinois Environmental Protection Agency regulations.

HOW SHOULD THE BIOSOLIDS BE APPLIED?

For best results, the biosolids should be applied uniformly to the site and incorporated by mixing it into the top six inches of soil as soon as possible after the biosolids is delivered.

The soil pH should be checked before biosolids application, and if the pH is below 6.5, the soil should be limed before any biosolids is applied. This will adjust for the slight acidity of the biosolids. Kits for pH and lime may be purchased at a local hardware store or garden shop.

No biosolids shall be applied within 200 feet of any potable water well. No biosolids shall be applied during wet weather or when the ground is ice or snow covered. There are special conditions regarding application on frozen land without ice or snow present. Please contact the District for further information regarding frozen land application.

WILL THE BIOSOLIDS HAVE AN ODOR?

District biosolids is well digested, dry and very stable but there is some odor associated with it. To minimize any odor problem, apply and incorporate the biosolids into the soil as soon as it is delivered. If the application site is not prepared when the biosolids arrives, leave the biosolids in a stockpile, cover it with plastic and incorporate the biosolids as soon as possible. This will prevent any odor problem and keep the biosolids in a workable condition because it will compact and clump when it becomes wet.

ARE THERE METALS IN THE BIOSOLIDS WHICH WILL BE HARMFUL TO PLANTS?

There are metals in the biosolids which are from both domestic and industrial wastewater sources. The concentrations are listed in Table I on the last page of this handbook. The Illinois Environmental Protection Agency has limits for metals concentrations in biosolids used for land application purposes, and the Downers Grove Sanitary District's biosolids meets these standards.

To minimize the solubility of the metals, and thus limit the amount absorbed by plants, maintain the soil/biosolids pH at 6.5 to 6.8. This will also maintain the proper pH for plants to absorb the nutrients in the biosolids.

WILL THE BIOSOLIDS BE HARMFUL TO CHILDREN OR PETS?

The recommendation for areas where children or pets may play would be to use the same precautions that you would follow with any other fertilizer product, i.e., keeping children and pets away from the area until the biosolids have a chance to begin working their way into the soil. For a general application to your lawn, a good rule of thumb would be to wait for at least one rainfall.

WILL THE BIOSOLIDS CONTAIN ANY OTHER MATERIALS?

The biosolids pulverizing process usually removes any plastic items which may have passed through the treatment process as well as any plants which may have grown in the biosolids during the stockpile period. This process cannot, however, remove seeds of various plants which either pass through the treatment process or are introduced during the period that the biosolids is stockpiled on site to reduce the moisture content. The presence of these seeds is a result of the natural processes which the District uses to treat and dewater biosolids, and there is no practical way to remove these seeds from the biosolids.

HOW DO I DETERMINE THE AMOUNT OF BIOSOLIDS I NEED?

The amount of biosolids to be used can be determined from the recommended biosolids application rate and the size of the application site. The recommended biosolids application rate is listed in Table II on the last page of this handbook. This rate is based on the nitrogen content of the biosolids and is revised periodically. It is important to use this application rate as more is not necessarily better in the case of fertilizer application.

Once you know the application rate, the next step is to measure the area of the application site.

For example: If you have an area 100 ft. by 100 ft. and want to determine the amount of biosolids required, first determine the area:

$$100 \text{ ft} \times 100 \text{ ft} = 10,000 \text{ sq ft}$$

Using the above information and an application rate of 1.02 cu ft/100 sq ft we have:

$$1.02 \text{ (cu ft/100 sq ft)} \times 10,000 \text{ sq ft} = 102 \text{ cubic feet}$$

There are 27 cu. ft. per cu. yd., so 102 cu. ft. is equivalent to 3.8 cu. yd. A full truckload is equivalent to 12 cu. yd. but for this area the minimum load of 3 cu. yd. is sufficient.

If you wish to request a delivery of biosolids, you can use the following table to determine how much biosolids to apply:

<u>Delivery Quantities</u>	<u>Annual Application (sq ft)</u>	<u>Application Every 2 Years (sq ft)</u>
Minimum Load - 3 cu. yd.	8807	7412
Half Load - 6 cu. yd.	17615	14823
Full Load - 12 cu. yd.	35230	29647

- For smaller biosolids application amounts:
- one cubic foot equals 0.8 bushel
 - a 30 gallon garbage can holds approximately 4 cubic feet of biosolids
 - 100 square feet is equivalent to an area 10 feet by 10 feet

The approximate physical, nutritive and metal content of digested District biosolids as of January 2017 is shown in Table I:

TABLE I

Total solids (%)	67.3%		
Plant Available Nitrogen (total PAN)	0.60%	or	11.9 lbs/dry ton
Phosphorus (P₂O₅)	1.01%	or	20.3 lbs/dry ton
Potash (K₂O)	0.13%	or	2.5 lbs/dry ton
Arsenic	3.88 mg/kg	or	0.008 lbs/dry ton
Cadmium	1.48 mg/kg	or	0.003 lbs/dry ton
Chromium	28.1 mg/kg	or	0.06 lbs/dry ton
Copper	471 mg/kg	or	0.94 lbs/dry ton
Lead	39.1 mg/kg	or	0.08 lbs/dry ton
Manganese	395 mg/kg	or	0.79 lbs/dry ton
Mercury	1.53 mg/kg	or	0.003 lbs/dry ton
Molybdenum	7.70 mg/kg	or	0.02 lbs/dry ton
Nickel	21.9 mg/kg	or	0.04 lbs/dry ton
Selenium	3.36 mg/kg	or	0.01 lbs/dry ton
Zinc	435 mg/kg	or	0.87 lbs/dry ton

These values are given on the basis of 100% solids, except for solids content, and are based on the average of the results for the last four quarters.

The recommended biosolids application rate for landscaping purposes is shown in Table II below:

TABLE II
Application Rates

Recommended biosolids application rate for landscaping purposes:	0.92 cubic feet of biosolids per 100 square feet per year
Recommended biosolids application rate applied at two year or greater intervals:	1.09 cubic feet of biosolids per 100 square feet

For more information concerning Downers Grove Sanitary District biosolids, contact the District's Administration Center, 2710 Curtiss Street, Downers Grove, Illinois, 60515. Phone: (630) 969-0664.