

## BIO-SOLIDS FAQ'S

### **1) What are Biosolids?**

They are nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility. When treated and processed, these residuals can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth.

### **2) What is the difference between biosolids and sludge?**

Biosolids are treated sewage sludge. Biosolids are carefully treated and monitored and must be used in accordance with regulatory requirements.

### **3) Why do we have Biosolids?**

We have Biosolids as a result of the wastewater treatment process. Water treatment technology has made our water safer for recreation and seafood harvesting. Thirty years ago, thousands of American cities dumped their raw sewage directly into the nation's rivers, lakes, and bays. Through regulation of these dumping, local governments are now required to treat wastewater and to make the decision whether to recycle Biosolids as fertilizer, incinerate it, or bury it in a landfill.

### **4) How are Biosolids generated and processed?**

Biosolids are created through the treatment of domestic wastewater generated from sewage treatment facilities. The treatment of Biosolids can actually begin before the wastewater reaches the sewage treatment plant. In many larger wastewater treatment systems, pre-treatment regulations require that industrial facilities pre-treat their wastewater to remove many hazardous contaminants before it is sent to a wastewater treatment plant. Wastewater treatment facilities monitor incoming wastewater streams to ensure their recyclability and compatibility with the treatment plant process.

Once the wastewater reaches the plant, the sewage goes through physical, chemical and biological processes which clean the wastewater and remove the solids. If necessary, the solids are then treated with lime to raise the pH level to eliminate objectionable odors. The wastewater treatment processes sanitize wastewater solids to control pathogens (disease-causing organisms, such as certain bacteria, viruses and parasites) and other organisms capable of transporting disease.

### **5) How are Biosolids used?**

After treatment and processing, Biosolids can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth. The controlled land application of Biosolids completes a natural cycle in the environment. By treating sewage sludge, it becomes Biosolids which can be used as valuable fertilizer, instead of taking up space in a landfill or other disposal facility.

### **6) Where are Biosolids used?**

Farmers and gardeners have been recycling Biosolids for ages. Biosolids recycling is the process of beneficially using treated residuals from wastewater treatment to promote the growth of agricultural crops, fertilize gardens and parks and reclaim mining sites. Land application of Biosolids takes place in all 50 states.

### **7) Why are Biosolids used on farms?**

The application of Biosolids reduces the need for chemical fertilizers. As more wastewater plants become capable of producing high quality Biosolids, there is an even greater opportunity to make use of this valuable resource.

### **8) What percentage of Biosolids is recycled and how many farms use Biosolids?**

About 50% of all Biosolids are being recycled to land. These Biosolids are used on less than one percent of the nation's agricultural land.

### **9) Are Biosolids safe?**

The National Academy of Sciences has reviewed current practices, public health concerns and regulator standards, and has concluded that "the use of these materials in the production of crops for human consumption when practiced in accordance with existing federal guidelines and regulations, presents negligible risk to the consumer, to crop production and to the environment."

### **10) Do Biosolids smell?**

Biosolids may have their own distinctive odor depending on the type of treatment it has been through. Some Biosolids may have only a slight musty, ammonia odor. Others have a stronger odor that may be offensive to some people. Much of the odor is caused by compounds containing sulfur and ammonia, both of which are plant nutrients.

### **11) Are there regulations for the land application of Biosolids?**

The federal Biosolids rule is contained in 40 CFR Part 503. Biosolids that are to be land applied must meet these strict regulations and quality standards. The Part 503 rule governing the use and disposal of Biosolids contain numerical limits, for metals in Biosolids, pathogen reduction standards, site restriction, crop harvesting restrictions and monitoring, record keeping and reporting requirements for land applied Biosolids as well as similar requirements for Biosolids that are surface disposed or incinerated. Most recently, standards have been proposed to include requirements in the Part 503 Rule that limit the concentration of dioxin and dioxin like compounds in Biosolids to ensure safe land application.

### **12) Where can I find out more about the regulations?**

The Biosolids rule is described in the EPA publication, A Plain English Guide to the EPA Part 503 Biosolids Rule. This guide states and interprets the Part 503 rule for the general reader. This guide is also available in hard copy. In addition to the Plain

English Guide, EPA has prepared A Guide to the Biosolids Risk Assessment for the EPA Part 503 Rule which shows the many steps followed to develop the scientifically defensible, safe set of rules (also available from EPA in hard copy.)

### **13) How are Biosolids used for agriculture?**

Biosolids are used to fertilize fields for raising crops. Agricultural uses of Biosolids, that meet strict quality criteria and application rates, have been shown to produce significant improvements in crop growth and yield. Nutrients found in Biosolids, such as nitrogen, phosphorus and potassium and trace elements such as calcium, copper, iron, magnesium, manganese, sulfur and zinc, are necessary for crop production and growth. The use of Biosolids reduces the farmer's production costs and replenishes the organic matter that has been depleted over time. The organic matter improves soil structure by increasing the soil's ability to absorb and store moisture.

The organic nitrogen and phosphorous found in Biosolids are used very efficiently by crops because these plant nutrients are released slowly throughout the growing season. This enables the crop to absorb these nutrients as the crop grows. This efficiency lessens the likelihood of groundwater pollution of nitrogen and phosphorous.

### **14) Can Biosolids be used for mine reclamation?**

Biosolids have been used successfully at mine sites to establish sustainable vegetation. Not only does the organic matter, inorganic matrix and nutrients present in the Biosolids reduce the bioavailability of toxic substances often found in highly disturbed mine soils, but also regenerate the soil layer. This regeneration is very important for reclaiming abandoned mine sites with little or no topsoil. The Biosolids application rate for mine reclamation is generally higher than the agronomic rate which cannot be exceeded for use of agricultural soils.

### **15) How are Biosolids used for forestry?**

Biosolids have been found to promote rapid timber growth, allowing quicker and more efficient harvest of an important natural resource.

### **16) Can Biosolids be used for composting?**

Yes, Biosolids may be composted and sold or distributed for use on lawns and home gardens. Most Biosolids composts are highly desirable products that are easy to store, transport and use.

### **17) Are there rules about where Biosolids can be applied?**

To determine whether Biosolids can be applied to a particular farm site, an evaluation of the site's suitability is generally performed by the land applier. The evaluation examines water supplies, soil characteristics, slopes, vegetation, crop needs and the distances to surface and groundwater.

There are different rules for different classes of Biosolids. Class A Biosolids contains no detectible levels of pathogens. Class A Biosolids that meets strict vector attraction reduction requirements and low levels metals contents; only have to apply for permits to ensure that these very tough standards have been met. Class B Biosolids are treated but still contain detectible levels of pathogens. There are buffer requirements, public access, and crop harvesting restrictions for virtually all forms of Class B Biosolids.

Nutrient management planning ensures that the appropriate quantity and quality of Biosolids are land applied to the farmland. The Biosolids application is specifically calculated to match the nutrient uptake requirements of the particular crop. Nutrient management technicians work with the farm community to assure proper land application and nutrient control.

### **18) Are there buffer requirements or restrictions on public access to sites with Biosolids?**

In general, exceptional quality (Class A) Biosolids used in small quantities by general public have no buffer requirements, crop type, crop harvesting or site access restrictions. Exceptional Quality Biosolids is the name given to treated residuals that contain low levels of metals and do not attract vectors. When used in bulk, Class A Biosolids are subject to buffer requirements, but not to crop harvesting restrictions. In general, there are buffer requirements, public access, and crop harvesting restrictions for virtually all forms of Class B Biosolids (treated but still containing detectible levels of pathogens).

### **19) Can anyone apply Biosolids to land?**

Anyone who wants to use Biosolids for land application must comply with all relevant federal and state regulations. In some cases a permit may be required.

### **20) What will it mean for a wastewater treatment plant, Biosolids manager or land applier to agree to follow an Environmental Management System (EMS) for Biosolids?**

A voluntary EMS is now being developed for Biosolids by the National Biosolids Partnership (NBP). The NBP consists of members from the Association of Metropolitan Sewerage Agency, the Water Environment Federation, the U.S. Environmental Protection Agency (EPA) and other stakeholders including the general public. Those facilities who pledge to follow the EMS are agreeing to follow community-friendly practices in addition to being in compliance with applicable state and Federal regulations. Community friendly practices refer to the control of odor, traffic, noise, and dust as well as the management of nutrients. Those who pledge to follow the EMS will be subjected to audit by impartial independent third parties.