

# WATER

## BIOSOLIDS MANAGEMENT IN OKLAHOMA



### What is Land Application of Biosolids?

**Description** - Land application of biosolids is a preferred biosolids management alternative because of its low cost, simplicity, and maximum use of the recycle value of the biosolid. It utilizes the physical, chemical, and biological capabilities of the soil to absorb, and decompose waste constituents in the biosolids. The primary objectives of design and management are to provide an environmentally safe beneficial reuse of biosolids, maintain the land's potential for future use, and gain and maintain public acceptance.

**The quality of the biosolids depends on the characteristics of the original wastewaters and the manner in which the biosolids is subsequently treated (e.g., aerobic and anaerobic digestion, thickening, lime stabilization, conditioning, dewatering, composting, heat drying, etc.)**

● Biosolids characteristics that are important to land application include water content, degree of stabilization and pH. The water content determines transportation costs and the method of application; stabilization influences biodegradability, pathogen destruction and odor potential; and pH determines the potential for leaching metals from the soil/biosolids and subsequent metals uptake by crops. Beneficial biosolids constituents include nitrogen, phosphorus, potassium and certain trace metals that act as fertilizer nutrients, and organic material that serves as a soil conditioner. Careful management is needed to control pathogens, toxic metals and toxic organics.

● Land applied biosolids can be an excellent substitute for commercial fertilizers and soil amendments, and can be cost effective for both the municipality applying the biosolids and the application site which accepts the biosolids. The use of wastewater biosolids as a source or supplement of fertilizer nutrient to enhance crop production is widespread in the United States. Over 60% of Oklahoma municipal wastewater biosolids has been successfully land applied. Biosolids have also been successfully applied to disturbed or marginal lands (e.g., mining or mineral processing operations, sandy and unproductive areas, etc.) to enhance reclamation and revegetation.

**Common Modifications** - Methods vary for transporting and applying biosolids to the land site. The same transport vehicle that hauls biosolids to the application site can also be equipped to apply the biosolids to the land. In other cases, the

transport vehicle hauls biosolids to the site and transfers it to an application vehicle and/or storage facility. Biosolids are also pumped and transported by pipeline to storage facilities at the site, and then transferred to an application vehicle.

The biosolids application method and the schedule for applying biosolids are dependent on the characteristics of the biosolids and soils, and on the type of crop. Three categories of crops are usually grown;

- Agronomic or row crops
- Forage crops and grasses
- Forested systems.

Biosolids can be applied to either the land surface (spreading or spraying) or to the land subsurface by incorporating (injection, disking, or plowing) the biosolids into topsoil. Dewatered biosolids cannot be pumped or sprayed and typically is spread over the surface and then plowed or disked into the soil.

**FOR ADDITIONAL INFORMATION ON THIS SUBJECT YOU MAY CONTACT YOUR LOCAL DEQ REPRESENTATIVE**

**OR THE WATER QUALITY DIVISION OF THE DEPARTMENT OF ENVIRONMENTAL QUALITY AT (405) 702-8100.**

