

FACT SHEET - BIOSOLIDS

WHAT ARE BIOSOLIDS?

Biosolids are the solid by-product of treating the sludge waste that may have come from the mix of household sewage, industrial wastewater or stormwater runoff which ends up at the sewage treatment plant. When sewage (wastewater) is purified, it is separated into a relatively clean water stream (effluent) and a very much smaller volume of sludge, which contains all the solid material that was removed from the sewage, plus (usually) some of the micro-organisms that were used to carry out biological purification.

The solid material that's collected can be food scraps, sand, micro-organisms (some possibly infectious) and faecal matter, in fact, almost all the pollutants that were in the sewage to start with. The sludge itself is normally a soupy, brown mixture which, because it is so rich in food for microbes, rapidly goes septic (all the oxygen is used up) and smells terrible.

The environmental and human health impacts of disposing of untreated sludge can be quite serious, so it is generally stabilised in some way. The treated sludge, which can be beneficially used, is called biosolids.

In 1997 in USA, approximately 54% of all biosolids produced were recycled, 19% incinerated, 19% disposed in landfills and related sites, and 9% to other disposal outlets. In Europe, the volume of biosolids being recycled is around 6.5 million dry tonnes per annum. Approximately 37% of this total is recycled to agriculture, 41% to landfill, 11% incineration and 11% to other options (Source: Sydney Water Report, 2000).

In Australia, the state and territory based Environmental Protection Agencies regulate biosolids disposal by issuing licenses to facilities producing biosolids, a grading system for levels of processing undertaken and the final disposal option for the grade of biosolids achieved.

HOW ARE BIOSOLIDS PREPARED?

Treatment of biosolids can be physical, biological or chemical. Physical treatment normally involves heat; the extreme being incineration, where the material is burned in a furnace, destroying all organic matter and leaving a small residue of reasonably inert ash. Owing to very stringent disposal regulations and a shortage of space, much sludge in Europe is incinerated. Less extreme, but more complex, are high temperature treatments such as pyrolysis, which break down organic matter and destroy germs; but these processes are expensive and hard to control.

The most common chemical treatment for sludge is lime addition; the elevated pH raises the temperature and destroys germs, resulting in a relatively inert biosolids product that can be used as a soil amendment. Biological treatment is the most natural and relies on micro-organisms to break down the organic matter in the sludge.



WHY BIOSOLIDS ARE IMPORTANT TO AUSTRALIA

While Australia is one of the driest continents on earth, it is also one with soils in a very poor state. Because the continent is old, much of the original nutrient and mineral quality of the soil has been lost through time, wind & water erosion and the impact of human settlement.

Biosolids are a rich source of natural wastes which are high in nutrients nitrogen & phosphorus, fibre and other roughage from digestive processes. When applied to the land, they improve its capacity to grow healthy crops for fodder, grazing & other forms of agriculture. Biosolids also improve the capacity of the land to retain water from rainfall & irrigation, thereby improving agricultural yields from lands where they are applied.

SOME PRACTICAL CONSIDERATIONS

Odour: Most people are pleased to learn that sewerage wastes are being usefully recycled. However, many suspect that biosolids will smell because of their origin. Biosolids processed to the highest grade and applied to land do not emit odours. Regulations also do not allow biosolids with less than A grade to be applied to lands near to settlement.

Public Health & Safety Concerns: Because the source of biosolids is human waste, which inevitably will contain good & bad bacteria & viruses, many people suspect that the infectivity of these organisms will be retained in the end product. Biosolids processed to achieve grade A must be "pathogen free": as such the risk of being infected by exposure to biosolids is very low. However this does not mean that normal hygiene should be ignored. When using all garden materials and potting mixes, it is important to wear gloves and to always wash using soap and water after contact.

MORE INFORMATION

Lots of up-to-date information on biosolids can be found on the Australasian Biosolids Partnership website - www.biosolids.com.au

FAQs about Biosolids can be found here:

http://www.biosolids.com.au/index.php?page=questions_and_answers_about_biosolids

Legislative and site-specific obligations associated with biosolids:

- EPA (NSW) Environmental Guidelines : Use and Disposal of Biosolids, Oct 1997
- Water Reclamation and Management Scheme (WRAMS)
- EPA (NSW): Environmental Guidelines: Solid Waste Landfills, 1996
- Local Government Act 1993
- US EPA 1993: Standards for the Use or Disposal of Sewage Sludge, US Code of Federal Regulations, Part 503, Office of the Federal Register National Archives and Records Administration, Washington DC.



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