



The A to Z of Farm Waste

Aeration ~ the forcing of air into a liquid to increase the dissolved oxygen level. The oxygen is normally introduced using free air but compressed air can be used.

Aerobic ~ freely available oxygen.

Aerobic Bacteria ~ bacteria that require free oxygen to be biochemically active. Oxygen tied up in chemical compounds is not sufficient to promote aerobic activity unless the chemical compound is being broken down and the oxygen released.

Aerobic Treatment ~ the treatment of waste by aeration. This can be done by:

- a) spraying the liquid in the air
- b) bubbling air through the liquid
- c) agitation of the liquid to create surface absorption of the air.

The purpose of aerobic treatment is to establish a population of micro-organisms (the require oxygen) to break down the waste. The treatment reduces the BOD and smell. The treatment produces water/sludge, carbon dioxide and heat.

Anaerobic ~ in the absence of oxygen.

Anaerobic Bacteria ~ bacteria that do not require oxygen for their chemical activity. The introduction of air will kill or restrict the growth of certain anaerobic bacteria.

Anaerobic Treatment ~ the treatment of waste using anaerobic bacteria. These bacteria (that do not require oxygen) break down organic matter into simpler more stable compounds. Treatment typically takes place in lagoons and is quite lengthy, but will reduce the BOD and smell. The treatment produces carbon dioxide, water/sludge and methane.

Bacteria ~ are microscopic living organisms. The bacteria which are of interest in the field

of slurry are the ones that can break down the waste. The type of bacteria will vary according to the treatment system and the environmental conditions.

BOD₅ (Biochemical Oxygen Demand) ~ a laboratory measurement of the amount of oxygen that is taken up by a sample of waste under preset conditions. The sample is kept at a temperature of 20°C for 5 days and the total oxygen demand is measured. The units are milligrams of oxygen per litre (mg/l). Some of the micro-organisms in waste require oxygen to support growth. Therefore, if untreated waste gets into a watercourse it is in competition with other life that requires oxygen. A high BOD figure means it requires a lot of oxygen and therefore its effect as a pollutant is great.

Biomass ~ the total quantity or weight of organisms in a given area.

COD (Chemical Oxygen Demand) ~ this laboratory measurement determines the total amount of oxygen required to oxidise all the organic waste in a sample. Therefore a COD reading will be higher than a BOD reading for the same sample. The test consists of boiling the sample for two hours with sulphuric acid and potassium dichromate. The test is quicker than the BOD test and is therefore preferred by some water authorities.

CO₂ (Carbon Dioxide) ~ this is a gas produced by fermenting manures. It is heavier than air and must be ventilated from enclosed spaces. Dramatic increases in carbon dioxide production will take place if silage liquor is allowed to mix with slurry.

Denitrification ~ the breakdown of nitrates within the waste resulting in the production of nitrogen gas. This is not desirable as valuable nitrogen is being lost which could be used on the land.



Dirty Water ~ rainwater from yards and dirty water from washing down.

DM (Dry Matter) ~ often referred to in percentage terms, it is the solids that are left after the liquid has evaporated off, e.g. 10% DM means 90% liquid 10% solids. The laboratory test involves heating the substance in an oven to 105°C over 24 hours.

Digestion ~ the breaking down of compounds or materials by a chemical or biological process resulting in the formation of simpler compounds.

Facultative Bacteria ~ bacteria that can flourish in anaerobic and aerobic conditions.

FYM (Farm Yard Manure) ~ mixture of urine, faeces and straw. In practice it is classed as FYM if it can be stacked.

Lagoon ~ normally a man-made pond like structure for holding liquid waste.

Metabolism ~ all the chemical processes that occur in living organisms.

Micro-Organism ~ an organism of very small size, which can't be seen without a microscope.

Mixed Liquor ~ normally refers to a mixture of water and partially treated waste.

N (Nitrogen) ~ a gaseous element. It is present in farm waste chemically combined with other elements and compounds. Nitrogen can be lost as a gas from farm waste. As nitrogen is the most important fertilizer element of farm waste, systems that lock up the nitrogen have an obvious advantage.

Nitrates ~ salts of nitric acid. Ammonium, sodium and potassium nitrates are common nitrogen-carrying constituents of fertilizer. Nitrates are very soluble and can easily be leached into watercourses.

Nitrification ~ the breakdown of nitrogen-containing organic material by nitrifying bacteria to form oxides of nitrogen.

Organic Matter ~ chemical substances derived from plant or animal material. They all comprise of mostly carbon, hydrogen and oxygen.

Oxidation Ditch ~ slurry is circulated around a ditch in a continuous loop normally oval in shape. An aerator is commonly used to aerate the slurry and keep it moving. The ditch can be sited outside to serve more than one building or inside beneath a livestock house.

Pathogen ~ any disease-producing micro-organism or agent.

pH ~ a measure of acidity or alkalinity of a liquid on a scale of 0 to 14. A pH below 7 is acid, 7 is neutral and above 7 is alkaline.

Separator ~ varying efficiencies of separating liquids from solids can be achieved depending on the method employed. Commercially available equipment include vibrating screens, rotary screens, roller presses and belt presses.

Settling Tank ~ a tank where waste is allowed to settle out into its various fractions so that parts of it can be removed.

Slurry ~ a liquid or semi-liquid containing a mixture of urine, faeces, water, bedding and food residue.

Slurry Cellar ~ an area below a building used to contain slurry for long periods.

Slurry Channel ~ an area below a building used to contain slurry for limited periods.

Surface Aerator ~ an aeration device typically floating on the surface of a tank or lagoon. Oxygen transfer takes place at the liquid/air interface.

Suspended Solids ~ solid matter held in suspension in waste water or effluent. They are the solids that can be taken out by filtration or centrifuging.

Total Solids ~ see dry matter.

Volatile Solids ~ the portion of a sample to total solids that can be evaporated when heated to a temperature of 600°C for one hour.

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