Section 7 Long Term Dosing

In municipal treatment works, bacterial biomass is generated at 500 g of sludge for every kilogram of BOD digested. After this sludge separates in the final clarifier, most of is returned to the aeration basin to seed fresh wastewater. This is the basis of the activated sludge process. In such situations, there is little need for the addition of cultured microbes.

Problems can arise where there are large variations in flow. Where a school closes for a week due to holidays, bacteria that are returned in the form of sludge would be starved and die off. As the school re-opens, levels of wastewater increase, resulting in insufficient numbers of bacteria to digest it. This results in poor settlement, odours and dirty water overflowing the final clarifier. This simple analogy can be applied to industrial wastewater plants that go on shut-downs or even change production runs, leaving incompatible bacteria unable to digest new waste streams. Where such incidences are commonplace, a small reactor unit can produce replacement bacteria within a short lead-time.

Other instances in which dosing could be beneficial are where a wastewater plant cannot naturally produce sufficient micro-organisms to fulfil various objectives:

- Overloaded plants that require cellulose digesting bacteria to control excess sludge production

- Retro-fitted plants require de-nitrification bacteria to be topped up
- Nitrification plants operating in colder conditions where natural reproduction is low

- Enhanced Biological Phosphorous where sludge age is too short

- Reducing conditions where sulphides require continual oxidation
  High fats, oils and grease where continuous dosing is required to alter the indigenous bacteria population continuously