



A COMMERCIAL APPLICATION OF VIROFLOW™ TECHNOLOGY

CASE STUDY: LARGE CONSUMER GOODS MANUFACTURER, QUEENSLAND, AUSTRALIA

“The implementation of ViroFlow™ Technology resulted in dramatically reduced phosphorous, TSS (Total Suspended Solids) and COD (Chemical Oxygen Demand) loads whilst maintaining accurate pH control...”



>>> CASE STUDY: LARGE CONSUMER GOODS MANUFACTURER



The wastewater treatment plant at the production facility of a large consumer goods manufacturer.

PROBLEM

Virotec was contracted by a large, well-known consumer goods manufacturer to implement ViroFlow™ Technology in treating industrial waste water and to overcome the inadequacies of their current waste water treatment system. Their current waste water treatment system was regularly exceeding trade waste limits set by the local water authority. The waste water was characterised by high and variable phosphorous, TSS and COD loads.

ViroFlow™ Technology, using ViroPhos™ reagents, was selected to remove phosphorous and suspended solids from the waste water.

VIROTEC TOTAL SOLUTION

The Virotec total solution proved to be an innovative, efficient, effective and immediately applicable means of treating the phosphorous-rich effluent at the plant.

During the application of ViroFlow™ Technology, all treated effluent from the plant complied with Council discharge limits.

ViroPhos™ reagent that has been used to remove phosphate does not lose its inherent metal binding or acid neutralising capacity and thus, the sediment formed when ViroPhos™ reagent settles and dries could be re-used in other applications where the acid neutralising and metal binding capacity can be used. Additionally, because a proportion of the bound phosphate is plant available, but not water leach-able, the sediment is ideal for re-use as a fertiliser/soil amendment in agricultural soils.

The major advantages of using ViroFlow™ Technology can be summarised as:

- > Substantial reduction in phosphorous concentrations in discharge water.
- > Reductions in COD and suspended solids loads in discharge water.
- > Reduction in sludge volumes generated.
- > High pH buffering capacity.
- > Compliance with trade waste discharge limits.

>>> CASE STUDY: LARGE CONSUMER GOODS MANUFACTURER



The production facility of the company produces well-known consumer products.

- > Increased settling rates resulting in improved water quality.
- > Elimination of the need for major capital upgrades by increasing effluent throughput.

The ViroFlow™ Technology components included design, engineering, trial application and ongoing monitoring. The solution is ideal as an ongoing treatment for the process wastewater.

BACKGROUND

The company is one of the largest manufacturers of household and personal goods in the world. It has annual worldwide sales of over US\$9 billion. In Australia, the company has a turnover of around \$400 million per annum.

The plant consists of two separate manufacturing facilities, producing consumer goods for the South Pacific region.

The effluent treatment plant at the facility consists of a primary clarifier, bioreactor and secondary clarifier. The bioreactor is extremely difficult to control with effect of very poor settling in the secondary clarifier.



The plant's bioreactor and secondary clarifier.

The treated effluent from the original wastewater treatment plant was characterised by high phosphorous, suspended solids and COD loadings and the existing wastewater treatment system did not provide adequate phosphorous and suspended solids removal.

>>> CASE STUDY: LARGE CONSUMER GOODS MANUFACTURER

TREATMENT METHOD

ViroFlow™ Technology incorporates the use of ViroPhos™ reagent, a patented environmentally safe reagent. The properties of ViroPhos™ reagent include high acid neutralising capacity, excellent settling rate characteristics, and high phosphate and metal binding efficiency.

The ViroFlow™ Technology system was initially trialled over a two week period and the successful results obtained subsequently led to full-scale implementation. ViroPhos™ reagents A and B were added in liquid form at pre-determined rates for optimum removal of phosphorous; ViroPhos™ reagent A was dosed into the feed line to the secondary clarifier while ViroPhos™ reagent B was dosed directly into the inlet well of the secondary clarifier.

ViroFlow™ Technology replaced the conventional treatment regime using polymers and produced a dense, stable sediment that was easily recovered and dewatered. ViroFlow™ Technology was complementary to the existing treatment facilities and required minimal capital works and plant modifications.



ViroFlow™ Technology plant holding reagents.



Dosing point for ViroPhos™ reagent A (above) and ViroPhos™ reagent B (below).



>>> CASE STUDY: LARGE CONSUMER GOODS MANUFACTURER

RESULTS

ViroFlow™ Technology is currently used to successfully treat over 480,000L of effluent per week at the plant of this large consumer goods manufacturer. Following treatment with ViroPhos™ reagents, results for total phosphorous concentrations were below the Council discharge limits of 10mg/L when compared to the previous reagents (polymer) used.

| Parameter | Raw Effluent | Before ViroFlow™ Technology Treatment | After ViroFlow™ Technology Treatment | Council Discharge Limit |
|-------------------|--------------|---------------------------------------|--------------------------------------|-------------------------|
| pH | 6.8 | 7.1 | 6.9 | 6 - 10 |
| Phosphorus (mg/L) | 40 | 28 | 0.6 | 10 |
| TSS (mg/L) | 2,647 | 700 | 22 | 400 |
| COD (mg/L) | 1,360 | 1,200 | 76 | 1,000 |

Similarly, all COD and suspended solids readings were below discharge limits and water pH was within the allowable range for discharge. The treated water clarity was noticeably better when using ViroFlow™ Technology.

An important finding was the ease with which ViroFlow™ Technology could be integrated into the existing treatment system.

CONCLUSION

ViroFlow™ Technology has proven to be applicable for the treatment of phosphorous, trace metals and acidity problems encountered in a typical industrial setting.

The implementation of ViroFlow™ Technology at the manufacturer's treatment plant resulted in dramatically reduced phosphorous, TSS (Total Suspended Solids) and COD (Chemical Oxygen Demand) loads whilst maintaining accurate pH control, and meeting all Council trade waste limits.

ViroPhos™ reagent is non-toxic, non-hazardous and environmentally safe. Used ViroPhos™ reagent is not a hazardous or prescribed waste material.

