



TRANSFORM POLLUTED WASTE
WATER INTO CLEAN WATER WITH
VIROFLOW™ TECHNOLOGY



BREAKTHROUGH TECHNOLOGY FROM VIROTEC THAT REVOLUTIONISES WATER TREATMENT



PROTECT BOTH YOUR COMPANY AND THE ENVIRONMENT

As we enter the 21st century, it is increasingly obvious that poor environmental performance by a company can dramatically affect its efficiency, sustainability and prosperity.

A major problem facing many industries is how to deal with waste water – often laden with contaminants dangerous to both human beings and the environment.

Stringent government regulations now prohibit the discharge of untreated effluent and companies can face massive financial penalties and even closure if these regulations are breached.

It is also true that many current forms of water treatment are highly inefficient or expensive – and the reason why ViroFlow's breakthrough technology in water treatment is making news around the world.

REMOVE UP TO 99.9% OF METALS, RAISE PH AND REDUCE SLUDGE VOLUMES

This innovative new technology and its simple application procedures – developed by Virotec International plc – promise to redefine water treatment in many industries world-wide.

ViroFlow™ Technology removes up to 99.9% of metals in process waters and purifies waters to a standard usually far better than most water and environmental authorities demand.

Already ViroFlow™ Technology has produced stunning and proven results in different industry sectors. Industries that can benefit from this new technology include those involved in electroplating, anodising, automotive manufacture, metal fabrication, tanning, pulp and paper, and packaging, to mention a few.

ACT NOW TO SOLVE YOUR WASTE WATER PROBLEMS

To find out how ViroFlow™ Technology could solve your water treatment problems both efficiently and economically contact Virotec or the agent listed on the back of this brochure today.



>>> ELECTROBIND™ REAGENT

ELIMINATING TOXIC SLUDGE IN THE METALS FINISHING INDUSTRY



ElectroBind™ reagent helps the metals finishing industry improve costly operating efficiencies and meet stringent environmental regulations for discharge water without producing a toxic sludge.

THE ELECTROPLATING INDUSTRY

Electroplating is the production of a surface coating of one metal upon another to provide corrosion resistance, hardness, wear resistance, anti-frictional characteristics, electrical or thermal conductivity, or decoration.

Electroplating operations produce heavy metal bearing wastewaters and solids which are classified as a hazardous waste. The magnitude of these wastes is tremendous. Current estimates indicate that about 496,141 tons of hazardous sludge is produced in the US by electroplating annually. The cost of handling this waste in every country is enormous.

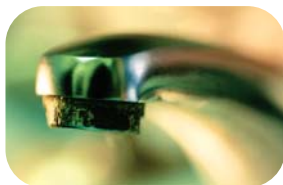


THE BENEFITS OF ELECTROBIND™

ElectroBind™ reagent is a new, high-performance reagent, developed from ViroFlow™ Technology that replaces conventional alkaline treatments. It is mixed with process waste water and binds up to 99.9% of heavy metal contaminants within a fine sediment as insoluble minerals.

> **ElectroBind™ reagent has several key industry advantages:**

1. Conventional treatments create significant scaling or caking problems within the wastewater plant, which often force production to slow or stop. ElectroBind™ reagent prevents scaling in dewatering screens.
2. ElectroBind™ reagent reduces the production of bottlenecks caused by the time taken to treat effluent water in batch effluent treatment process and increases effluent throughput.



3. Conventional treatments produce large volumes of unstable sludge, which is costly to dispose of. ElectroBind™ reagent reduces sludge volumes by up to 50%, and produces an environmentally safe residue which may be disposed of as a non-leachable solid residue.

Current estimates indicate that about 496,141 tons of hazardous sludge is produced in the US alone by electroplating annually.

>>> VIROCHROME™ REAGENT

REMOVING CHROMIUM IN THE TANNING INDUSTRY



ViroChrome™ reagent helps the leather tanning industry produce leather and meet stringent environmental regulations for wastewater by removing the number one pollutant, chromium, without producing a toxic sludge.

THE LEATHER TANNING INDUSTRY

Chrome tanning processes are relatively fast and simple compared to other tanning methods, yielding a leather that is both heat and wear-resistant. However, chromium is now classified as a human carcinogen by the World Health Organisation and ingesting large quantities of chromium can cause stomach upsets and ulcers, convulsions, kidney and liver damage, and even death.



Current water treatment is not only expensive, it requires costly sludge disposal. Over the last five years in the European Union, effluent treatment generated a hazardous sludge containing, on average, 1.5 thousand metric tons of chromium per annum.

The EU tanning industry employs about 54,860 workers and is still the world's largest supplier of leather in the international marketplace, followed by China, South Korea, Mexico, Brazil, India, Pakistan and Thailand.

THE BENEFITS OF VIROCHROME™ REAGENT

ViroChrome™ reagent is a new, high-performance reagent, developed from Bauxsol™ Technology, to remove the number one pollutant, chromium, from tannery wastewater and to reduce solid waste.

> **ViroChrome™ reagent has several key industry advantages:**

1. ViroChrome™ reagent achieves 99.9% chromium removal in a mere 24-hour treatment period and consistently reduces all metal levels in the effluent well below 10 ppm prior to discharge.
2. ViroChrome™ reagent raises effluent pH, significantly lowers biological oxygen demand and total suspended solids, and replaces non-treating batch settling processes.
3. ViroChrome™ reagent immobilises chromium in a non-soluble, non-reactive sediment that is easily recovered and dewatered and meets stringent leaching test requirements.

>>> VIROPHOS™ REAGENT

FOR THE EFFICIENT REMOVAL OF PHOSPHORUS



ViroPhos™ is a new patented reagent, exclusive to Virotec, that provides rapid and efficient removal of dissolved phosphorus from effluent – which untreated can lead to devastating effects when discharged into waterways.

PHOSPHORUS POLLUTION

If phosphorus is allowed to escape in effluent that is discharged to surface waters, it creates favourable conditions for algae and aquatic plants. Excess vegetation can choke a lake; respiring and decaying vegetation also consume oxygen and cause fish kills.

Point sources of phosphorus pollution include sewage treatment facilities, agricultural activity, such as animal feeding operations, vegetable washing and the processing of agricultural products.

In the paper industry, some paper mills face the need to reduce phosphorus effluent levels and strong effluent colour.



THE BENEFITS OF VIROPHOS™ REAGENT

ViroPhos™ reagent is a new, high-performance treatment system developed from ViroFlow™ Technology that:

- > **Significantly reduces the total effluent phosphorus** (organic and inorganic phosphorus) to well below 0.5mg/L and often to concentrations at, or below, the detection limit,
- > **Achieves maximum phosphorus removal** even at very low, initial phosphorus concentrations in both aerobic and anaerobic conditions and within a very broad range of pH.
- > **Produces a faster incremental settling rate** resulting in a phosphate enriched sediment that is only 40%-50% of the volume of traditional treatment sludges and yet is remarkably stable. This sediment will remain stable even in anoxic conditions and can be used to improve soils.



ViroPhos™ reagent is also being tested in the paper industry to see if it simultaneously eliminates strong effluent colour.

The paper industry is one of a number which faces the challenge of managing phosphorus effluent levels.

>>> VIROBOND™ REAGENT

FOR THE REMOVAL OF ARSENIC & HEAVY METALS
IN THE TIMBER TREATMENT INDUSTRY



In a world-first breakthrough, ViroBond™ reagent removes the contaminating copper chrome arsenate from storm water runoff in timber preservation plants.

THE BENEFITS OF VIROBOND™ REAGENT

Copper Chrome Arsenate (CCA) is one of the most commonly used timber preservatives in the world. Unfortunately, storm water runoff from timber preserving facilities is sometimes contaminated with varying concentrations of CCA, either by fugitive discharge from the process or from surface leaching off freshly treated logs stored in the open atmosphere during rain periods.



The CCA-contaminated water must be treated prior to discharge to the environment and as the discharge limits imposed by Environment Authorities are generally very low, the removal of the CCA has presented a serious challenge for the industry.

Through a simply applied treatment, newly developed ViroBond™ reagent removes the contaminating copper chrome arsenate to or below detection limits. Furthermore, organic contaminants from the raw timber which often leach into water storage ponds and result in dark coloured water with much suspended solid matter can also be sedimented, resulting in clear water.

For further information about ViroFlow™ Technology please contact:

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