



– a unique combination of analytical equipment, techniques, and investigative experience

Environmental Monitoring of Industrial Waste Waters and Effluent Discharges

Environmental Regulation Compliance

In light of strict regulations governing the discharge of industrial effluents to controlled water supplies. Companies have a mandatory responsibility to control their waste output, this is usually administered in the form of a “**consent to discharge**”. Failure to conform can result in prosecution and/or financial penalties being incurred.

Pollutants Monitoring Services

A number of analytical techniques are available for monitoring potential environmental pollutants. Of particular interest are the techniques applied to determining the quantitative concentrations of toxic, heavy metals, potentially present in industrial waste waters. Along with this is the analysis of any associated sludge material generated as a by-product of industrial processing.

Sampling Methods and Frequency

Sampling of waste waters and effluent discharges can be carried out in a number of ways:-

- Collected as one-off spot samples.
- Monitored continuously from an auto-sampler.

The frequency of sampling is dependent upon type of processing involved, and can vary from hourly collection to daily or weekly sampling.



Fig. 1. Sampling equipment used in XRF analysis



Fig. 2. Typical Effluent / Sludge Samples in Bottles



Fig. 3. X-Ray Fluorescence (XRF) Instrument

(* denotes UKAS accredited test)



2766

LPD Lab Services Limited

– a unique combination of analytical equipment, techniques, and investigative experience

Analytical Techniques Used

X-Ray Fluorescence (XRF) is a well established analytical technique, known for its speed, reliability and accuracy. Detection capabilities range from trace ppm levels to % concentrations. This instrument is able to work with both solid and liquid samples and is therefore useful in providing a full assay of metallic pollutants present in waste water.

XRF can offer a comprehensive, quick response to your effluent disposal issues.

Typical Pollutant Analysis Examples

A typical example of the type of pollutant analysis that has been carried out by XRF is outlined below:

“Analysis of sludge material produced from CRT screen glass manufacturing”

Sludge material is collected from a settling tank, prior to waste disposal. General analysis involved separation of the liquid from the solid component. Soluble metal ions are determined, which include, barium, calcium, iron, aluminium, strontium and antimony.

pH is also measured and analysis of the dried solids is performed for chemical composition.

The company’s reasoning behind this type of analysis is, in this case two-fold:-

- The company did not have any effluent treatment facilities available to them.
- They were able to monitor their end-of-process waste material to ensure appropriate disposal i.e.; **classifying waste type** as toxic or non-toxic to support their **Duty of Care** responsibilities.

Other Monitoring Examples:

- Measurement of residual nickel concentrations in industrial effluent from nickel plating processes.
- Measurement of nickel and tungsten concentrations in rinse waters from plating processes

pH	10.31
Solids	17.49 % w/w

Soluble Metals:

	ppm
Iron	9
Barium	14.3
Calcium	8
Antimony	0.09
Strontium	0.07
Aluminium	61.3

Solids Analysis:

	%
Silica	60.1
Alumina	13.3
Iron Oxide	3.7
Strontia	4
Baria	4.5
Potassium oxide	4.8
Sodium Oxide	4.4
Ceria	1
Zirconia	1.9
Antimony oxide	<0.1
Calcium oxide	0.8
Magnesia	0.3
Lanthanum oxide	0.4
Phosphorous	0.6

Fig. 4. A Typical Pollutant / Sludge Analysis

Contact us today

Find out how we can help solve your problems in process improvement, process control and materials analysis

LPD Lab Services
Phone: +44 (0)1254 676074
E-mail: enquiries@lpdlabservices.co.uk
Web: www.lpdlabservices.co.uk