

## **CASE STUDY - UTILIZING THE TOXSCREEN KIT IN A SEWAGE TREATMENT PLANT**

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### **The Situation**

A regional public sewage treatment plant suffered from regular cases of toxic loading in the influent streams which caused severe disruption of normal operation in its activated sludge process. These unplanned occurrences adversely affected the treatment process by decreasing BOD removal, reducing solids separation efficiency, and changing sludge compacting properties.

### **The Problem**

Some of the influent was sourced directly from a nearby industrial complex and it was obvious that at least one of the eleven separate influent lines into the plant was very toxic. The situation got so extreme that there was a real danger that the plant would be forced to shut down because of the inhibitory effect of the toxins on the activated sludge microorganisms. The plant operators realized that the only way the situation could be remedied was if they had an easy method to monitor the influent wastewater so as to pinpoint the source of toxicity. This information would enable them to take timely protective measures to prevent feeding of the toxic material into the activated sludge process.

### **The Solution**

**CheckLight** was able to demonstrate that its **ToxScreen-Water Toxicity Test Kit** could provide vital real-time measurement of inlet water toxicity. Not only that, but having this information would enable the plant operators to take timely preventative action to neutralize the threat by diluting the dangerous toxic inflows before they reached the activation stage.

Figure 1, shows the resultant measurements of typical samples that were taken from each of the influent lines feeding the plant. Data analysis is straightforward:

**the higher the luminescence inhibition, the greater the toxicity.**

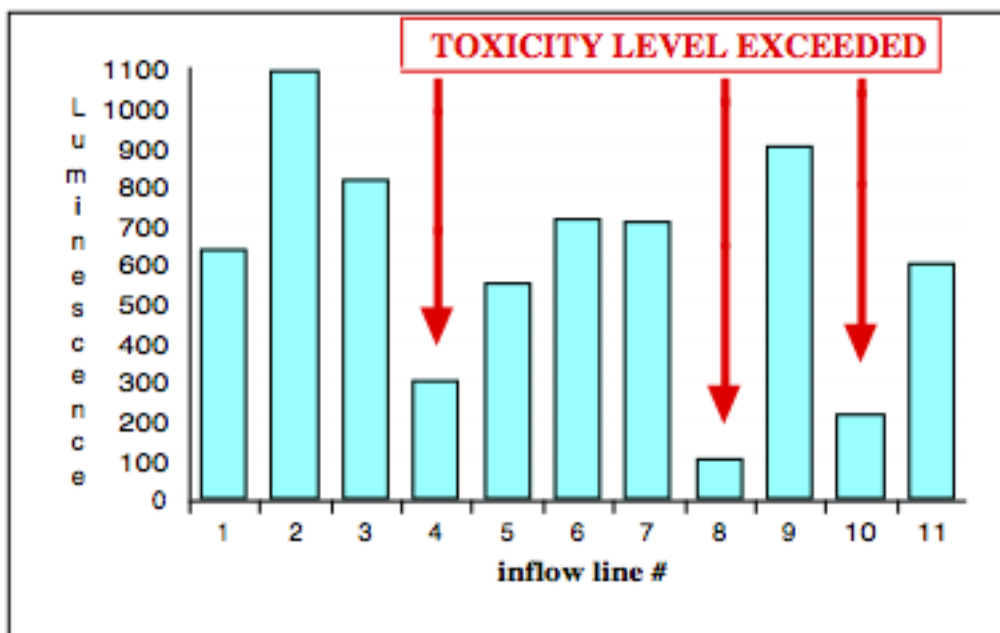
### **CheckLight Ltd.**

P.O. Box 72 Qiryat-Tiv'on 36000, Israel.  
Tel: (972)-4-9930530, Fax: (972)-4-9533176  
[www.checklight.biz](http://www.checklight.biz), [info@checklight.biz](mailto:info@checklight.biz)

## The Method

Due to the high sensitivity of the **ToxScreen** test, each sample needs to be diluted before testing. The toxicity limit of each sample is predetermined (once) under normal operating conditions. In this case, the influent water samples were diluted to 2.5% before analysis. Toxicity readings were recorded from the samples after 10 minutes incubation period at ambient temperature. Influent lines #8, 10, and to a lesser degree line #4, were suspected to be abnormally toxic when compared relative to the measurements of the remaining lines.

**Figure 1-**



## The Results

Based on these findings, a thorough down-the-line investigation was carried out and indeed it was found that highly toxic effluents were being discharged into these lines by several industrial plants. The offending polluters are now working in cooperation with the

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sewage plant to solve the problem in the long term, but in the meantime they are regularly monitoring the influent water to make sure that they are not jeopardized again in the future.

The plant personnel were pleased with the kit for the following reasons:

- **Fast response** – readings within 15 minutes.
- **Easy to use** – no special laboratory skills required to operate.
- **Portable** – water samples can be tested on site.
- **Cost Effective**- enabling frequent monitoring for rapid detection of dangerous changes in water quality.

**CheckLight's Toxscreen Test Kit** is a simple, reliable bioassay for rapid, low-cost determination of the presence of toxic pollutants not only in wastewater effluents but also in **process water samples**, or **landfill leachates**.

For the wastewater treatment plant manager, **real time toxicity data translates into money saved**. Remedial action of the treatment process can be made on the spot as soon as a toxicity problem is detected so that chronic treatment slowdowns due to unregulated toxic events can be avoided.



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