

# Port of Portland: BioTector and Airport De-Icing

## Problem

The Port of Portland, Oregon, was spending nearly \$300,000 USD a year maintaining their old BIOX BOD analyzers, using an outside service company to provide technical and operational support. The BIOX units broke down frequently, and many of the replacement parts were difficult to obtain quickly. Thus, cost and unplanned downtime were issues to be resolved, in order to maintain compliance with EPA regulations.

## Solution

Management recognized that more reliable and robust TOC analyzers were needed. Twelve Hach® BioTector B7000i TOC Analyzers were purchased to replace the 16 BIOX units being used. The Port was able to cancel its service contract and bring operational support in-house, allowing the facility to maintain compliance and minimize unplanned downtime, for a lower total cost of operation.

## Benefits

The Port of Portland now enjoys a reliable and consistent TOC monitoring system. A follow-up study validates that the TOC reading from the BioTector correlate with BOD and COD measurements in the lab, confirming the measurements can be used for permit reporting.

## Airport challenges and regulatory requirements

Like airport facilities all over the world, the Port of Portland was required to comply with regulatory permit limits for surface water contamination stemming from deicing activities, runway, and other runoff. And like other facilities, cost and operational stability were key concerns.

But the existing system, utilizing BIOX units and an outside service contract, was prone to breakdown, time-consuming to repair, and costly to maintain. The Port would often refer to the "Wall of Shame" in their facility, as the BIOX units installed on this wall rarely worked at the same time.

Clearly, the Port of Portland needed a new solution for continuous monitoring of TOC, and a robust system that would provide maximum uptime and process stability.

The solution was provided by Hach's BioTector B7000i technology, which is designed specifically for the airport environment - operating continuously, even in challenging environments, with minimal maintenance and maximum uptime.



*Portland International Airport is a sizeable hub on the West Coast of the US, serving upwards of 19 million travellers per year.*



*The so-called "Wall of Shame" in a facilities building at Port of Portland featuring the under-performing BIOX units, which have been replaced with Hach BioTector B7000i TOC Analyzers for continuous monitoring of key parameters.*

## CASE STUDY: Port of Portland Biotector and Airport De-Icing

### The BioTector solution

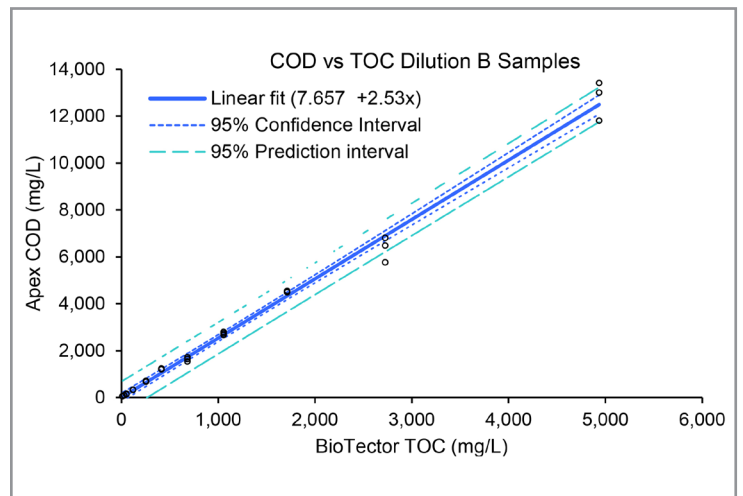
BioTector's patented Two-Stage Advanced Oxidation (TSAO) technology was developed specifically to meet the challenges presented in an airport environment. Glycol concentrations in airports can change from 10ppm to 20,000ppm very quickly. Most TOC analyzers cannot handle that wide range of TOC and TOC analyzers with traditional technologies are prone to clogging with high concentration samples. TSAO is a powerful and aggressive oxidation process using hydroxyl radicals that self cleans between sample cycles, lowering the maintenance needs and overall cost of ownership of the analyzer.

### Lab correlation and permit reporting

The Port commissioned a correlation study which showed the TOC reading from the BioTector matched the BOD and COD measurements in the lab. The study concluded that the Port could use the TOC reading from the BioTector to report for their permit.

### Conclusion

Hach BioTector B7000i TOC Analyzers were the perfect fit for the customer's needs: high reliability in challenging conditions; durability and low maintenance; and accuracy in measurement of key parameters for permit compliance.



Regression scatter plots of COD and TOC data.

***“Based on the review of data reliability and regression analysis, using the Hach BioTector TOC analyzer is an accurate method to measure TOC, BOD, or COD concentrations in the Port of Portland’s storm water discharges to demonstrate compliance with (their regulatory) permit”***

***- Geosyntec, in the conclusion of their correlation study***

### HACH World Headquarters: Loveland, Colorado USA

United States: 800-227-4224 tel 970-669-2932 fax orders@hach.com  
Outside United States: 970-669-3050 tel 970-461-3939 fax int@hach.com

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