nyex™
An Arvia Solution

Saving Wastewater Incineration Costs with Nicotine Removal (Nicotine Gum)

Equipment Capacity/Flow Rate	Compounds of Concern	Influent Concentration	Treatment Targets	Unit Energy Consumption
Low Flow	Nicotine	33 mg/L	<1 mg/L	10.4 kWh/m^3

Background

Nicotine Removal

The tobacco industry has had to reinvent itself in recent years, producing a range of nicotine replacement therapy products like nicotine gum, patches, lozenges and snus as well as IQOS and vaping products.

These new products have different manufacturing processes to traditional tobacco manufacturing. Indeed most of the new products are produced by pharmaceutical and specialty chemical companies.

As with most production processes, water is used in the production of the nicotine replacement therapy products. As a result, the wastewater contains nicotine, which needs to be removed for compliant discharge to sewer.

A common solution to nicotine removal from water has been incineration, which is extremely expensive not just financially, but also to the environment. But now there is a much more cost effective and ecofriendly solution, Nyex™.

The Objectives

Nicotine Removal for Nicotine Gum Manufacturer

We have been working with one of the largest producers of nicotine gum. You can see from the table the characteristics of the wastewater.

The goal was to remove the nicotine from the waste stream to a concentration lower than 1 mg/L in order to allow discharging of the effluent into the municipal sewage system.

Parameter	Level before treatment
pH	10.24 AU
Conductivity	0.69 mS/cm
COD	894 mg/L
TOC	347 mg/L
Nicotine	33 mg/L

The Solution

The solution was to use our Nyex Rosalox system which combines adsorption with electrochemical oxidation in a single, scalable unit.

The Nyex™ process can remove nicotine to a very low concentration. It offers no sludge production, small footprint and a scalable design that can accommodate any flow rate.

Nicotine is adsorbed onto the media and then completely mineralised. This leaves the media regenerated and ready for further adorption without interruption or incineration.

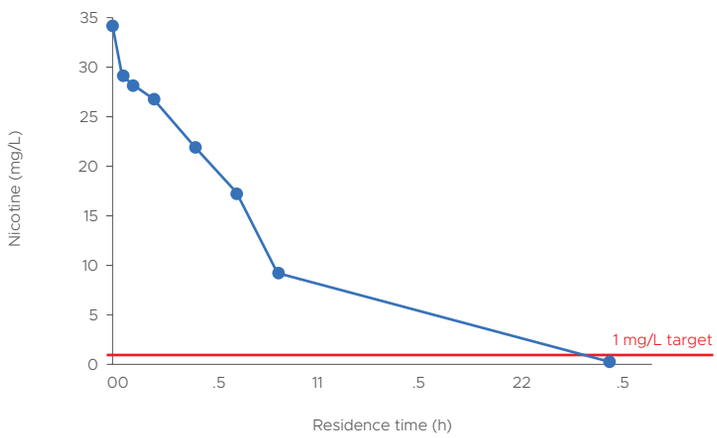
Results are achieved without chemical dosing or the generation of sludge, reducing both financial and environmental costs.

The Results

The Nyex Rosalox system easily achieved the 99% removal, consuming 10.4 kWh/m^3, which saved our client large incineration costs.

Nyex™ provides an on-site treatment which requires no regular maintenance and uses electricity to oxidise contaminants at room temperature and pressure, which is a considerably more efficient method of removing organic contaminants, contributing less carbon emissions as part of the broader sustainability targets for companies.

The Nyex™ process can remove nicotine to a very low concentration. There is no chemical dosing and no sludge produced because all pollutants are oxidised to water and gas which is safely vented.



arvia

7 Christleton Court, Manor Park,
Runcorn, Cheshire WA7 1ST
United Kingdom
Telephone: +44 1928 378 983

arviatechnology.com

Get in touch to discuss your company's treatment challenges and arrange a treatability trial on your wastewater today.