

# Application Article 208

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## TVOC monitors soil vapour extraction (SVE) process emissions

**Product:** TVOC

**Application:** Soil Vapour Extraction (SVE)

**Customer:** Geo Environmental Management

### Introduction

Following an initial clean up of gas oil spillage, TVOC was used to effectively monitor Soil Vapour Extractions (SVE) process emissions during the remediation of a residual vapour phase plume by Geo Environmental Management.

Soil Vapour Extraction (SVE), also known as soil venting or vacuum extraction, is an 'in situ' remedial technology that reduces concentrations of volatile constituents in hydrocarbon products adsorbed to soils in the unsaturated (vadose) zone. This technology utilises a vacuum applied to the soil matrix to create a negative pressure gradient causing movement of vapours toward extraction wells. Volatile constituents are readily removed from the subsurface through the extraction wells. The extracted vapours are then treated in carbon filter beds prior to discharge of treated air to the atmosphere.

### How TVOC Was Used

TVOC Total Volatile Organic Compound monitor was attached to the exhaust system and linked to a control unit with an industry standard 4-20mA output (pictured above).

Due to strict controls on emissions to air, a recorded reading above 1.0ppm will trigger the TVOC control unit alarm subsequently shutting down the system by closing the exhaust fan. Whilst the carbon filter is functioning efficiently, emissions from the system should be 0.0ppm.

TVOC was supplied to Geo Environmental Management by Shawcity, UK Distributors & Service Centre to Ion Science Ltd.

### The Process

During the procedure, a network of nine soil vapour extraction points were connected to a single manifold, but with isolation valves on each point to allow for control over the areas targeted for extraction. The pipe network was then connected to the extraction unit through a flexible 2" pipe with sealed clamp type couplings. The SVE system was set up within sound proof housing, connecting the associated pipework to the extraction well network.

The exhaust pipework from the unit is via a 2" flexible pipe connecting to a 205l drum of activated carbon with sealed clamp type couplings.

TVOC is the first Intrinsically Safe, fixed photoionisation detector (PID) of its kind for continuous detection and measurement of total volatile organic compounds (VOCs). With extended detection range for low-level monitoring, TVOC is now capable of detecting and measuring total VOCs with an additional range of 0-10 ppm.



**Features:**

- Patented Fence Electrode Technology for high sensitivity, humidity and contamination resistant operation
- Intrinsically Safe for use in hazardous areas - no need for explosion proof enclosure
- Selectable detection range of 0 – 10 ppm, 0 – 100 ppm or 0 – 1000 ppm
- Diffusive monitoring - no pump required
- Scaled 4-20 mA analogue output • Operates at 5 to 28V
- -20 to 50 °C operating temperature
- LED and 4-20 mA output fault indication
- Includes a 10.6 eV lamp
- Digital numerical display
- Easy access PID sensor allows simple servicing • Simple calibration procedure

**Applications include:**

- Manufacturing
- Processing
- Refineries and petrochemical • Offshore
- Chemical
- Waste water treatment
- Pharmaceutical
- Indoor air quality
- Pulp and paper
- Solvent recovery systems
- Industrial painting and coating

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