



## Gas Detection in Wastewater

To ensure the safety of both personnel working at wastewater treatment plants and the environment in which treated wastewater is discharged, gas detection is an essential part of any safety program

Water and wastewater treatment plants are designed to treat all municipal waste. The process of water purification results in the by-product of harmful combustible and toxic gases. Toxic gases used on site can build up in confined spaces or working environments, depleting Oxygen and making those locations highly dangerous. These must be monitored on a continuous basis to protect both plant and personnel. Hazardous gases found in wastewater treatment facilities include:

**Combustible Gases**

- Methane (CH<sub>4</sub>)
- Pentane (C<sub>5</sub>H<sub>12</sub>)
- Hydrogen (H<sub>2</sub>)

**Toxic Gases**

- Hydrogen Sulphide (H<sub>2</sub>S)
- Carbon Monoxide (CO)
- Chlorine (Cl<sub>2</sub>)
- Sulphur Dioxide (SO<sub>2</sub>)
- Ozone (O<sub>3</sub>)
- Mercaptans
- Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>)
- Ammonia (NH<sub>3</sub>)

**Oxygen (O<sub>2</sub>) Deficiency**

**Pumping Stations**

Wastewater from local communities arrives at the wastewater plant through underground pipework. Water is temporarily stored in wet-wells in the pumping station. High-powered pumps move wastewater into the treatment facility. Pumping stations are often enclosed areas and are considered to be confined spaces. This can lead to a build-up of toxic Hydrogen Sulphide emanating from the stagnant waste water.



Fixed Gas Detection Systems (Facility Protection)



Portable Multi-Gas Detector (Personal Safety & Confined Space Entry)



Odour Logger (Datalogging)

**Primary Treatment**

Some primary treatment facilities use Hydrogen Peroxide as a pre-treatment additive, so oxygen levels should be monitored closely. Also, if primary treatment is done in an indoor facility, Methane, Hydrogen Sulphide, and Oxygen levels must all be monitored closely to ensure safety for anyone entering the process facility.



Fixed Gas Detection Systems (Facility Protection)



Portable Multi-Gas Detector (Personal Safety)

**Secondary Treatment**

Secondary treatment removes non-settleable solids through biological and gravity treatment and it's here where the treatment produce "off-gases" that include Hydrogen Sulphide, Methane, and Oxygen.



Fixed Gas Detection Systems (Facility Protection)



Portable Multi-Gas Detector (Personal Safety)



## Sludge Digestion

Micro-organisms are used in the sludge digestion process to break down sludge and scum into Methane gas, Carbon Dioxide, solid organic by-products, and water. The by-product of the digestion process is 70% methane gas, which can be captured to generate heat to warm site buildings, as well as for the heat-dependent treatment processes.



Fixed Gas  
Detection Systems  
(Facility Protection)



Portable Multi-Gas  
Detector  
(Personal Safety)

## Disinfection & Drinking Water Facilities

After passing through primary and secondary treatment, wastewater is disinfected with Chlorine and Ozone to kill bacteria. In subsequent steps, Sodium Bisulphite is occasionally added to de-chlorinate the water, so that Chlorine levels in the ultimate discharge will not threaten marine organisms.

In drinking water facilities gas hazards include Chlorine, Sulphur Dioxide, Ammonia, Ozone and Chlorine Dioxide, deriving from the gas dosing plant, Ozone generators and gas storage areas



Portable Multi-Gas  
Detector  
(Personal Safety)



Odour Logger  
(Datalogging)

## Odour Control

Air scrubbers and carbon absorbers remove odours and volatile organic compounds (VOC's) from treatment process off-gases. Odour control is used in all of the wastewater processes. Odour control performance is constantly monitored and is governed by local regulations. Hydrogen Sulphide is typically the primary Odour concern, however Ammonia also requires monitoring.



Gas Monitor & Mapping  
(Boundary Monitoring)



PID VOC Monitor  
(Survey Monitor)



Odour Logger  
(Datalogging)

a1-cbiss are experts in the supply of various gas detection technologies ideal for the wastewater industry. Our products can offer high IP protection levels such as IP67, stainless steel or polyester casing. They feature RS485 outputs, TCP/IP interfaces, programmable relays, backlit LCD displays and 24/7 data recording.



**Gastec  
Detector Tube  
System**  
(Instant Detection)

### Gastec Gas Detector Tubes

Gas detector tubes are perfect for carrying out instant measurements within wastewater plants. The detection tube system is the most cost-effective method of gas detection.



**Portable  
Gas Detectors**  
(Personnel Protection)

### Portable Gas Detectors

a1-cbiss has a wide range of portable gas detectors in use in the wastewater industry for the protection of personnel. Due to the wet, dark and noisy conditions, the gas detectors offer variable alarms, high protection ratings and ATEX approvals.



**Survey Monitors**  
(Assessment  
Monitoring)

### Survey Monitors

Highly sensitive survey monitors are used to carry out assessments on site for the purpose of datalogging, odour control, sampling and boundary monitoring.



**Fixed Gas  
Detection Systems**  
(Facility Protection)

### Fixed Gas Detection and Alarm Systems

a1-cbiss' strength lies in engineering capabilities and project management with building and integrating fixed gas detection and alarming systems.

Detecting hazardous gases and issuing alarms are important in the protection of the wastewater facility and plant personnel. This can be done through integrating the gas detection & alarm system with Data Acquisition (DAS) and the Building Management System (BMS).

## Why Buy From a1-cbiss?

### Consultative Approach

Product managers available to discuss requirements by phone, product demonstrations or conduct site survey

### In-House Engineering Team

The team of experienced engineers provide design, build & integration, and installation & commissioning

### Service Centres

a1-cbiss has regional service centres offering service, repair and calibration plus a network of service engineers covering the whole of the UK to carry out onsite service.

Tailored service contracts are available offering 24/7 cover

