One of the reactions produced by the action of the micro-organisms on organic + complex inorganic materials, is the production of ammonia in both aerobic and anaerobic reactions.

Because of this, ammonia may be monitored at a number of points around a typical sewage treatment works (as listed opposite).

At each point, the sample is drawn via a pump and ultrafiltration system for presentation to the monitor as shown in the process diagram on the next page.

1. at the works inflow – monitoring gives an indication of plant loading,
2. at the clarifier outflow – for monitoring of levels,
3. in the ditch prior to overflow – for monitoring of levels,
4. at the works discharge – monitoring gives alarm/indication of plant performance and final water quality.
Why use an Ammonia Monitor

- Ammonia is the natural product of decay of organic nitrogen compounds. It reduces dissolved oxygen levels and is toxic to plant and animal life.
- Ammonia is oxidised through nitrate in aerobic conditions by bacterial action. Under normal circumstances the oxidising process is performed efficiently and the ‘balance’ in the hydrological cycle is maintained.
- However, the hydrological cycle becomes ‘unbalanced’ if large volumes of ammonia are added to a river (e.g. due to the failure of an effluent treatment plant or from industrial discharge).
- An ammonia monitor monitors the performance of the waste water treatment processes/plant and ensures compliance with local discharge consent limits and current legislation.

Why use ABB Instrumentation?

- ABB monitors have proven reliability and low maintenance requirements.
- Low ongoing reagent cost.
- Manual intervention is reduced to a four-weekly reagent replenishment and a twelve-monthly service, guaranteed through the use of specially developed long life pump tubing.
- Single consumable spares kit included with monitor contains all spares and peripherals necessary for two years operation – no hidden extras!
- Full installation, commissioning and routine servicing available.
What ABB Products are Suitable?

Model 8232 Ammonia Monitor
- Two high or low concentration alarms can be generated and sent back to main control unit.
- Diagnostics are displayed locally and are also available as master alarms for transmission back to main control unit.
- Current output (one as standard, second optional) can be expanded to show an expanded window of the overall range of the monitor and can be output to a local recorder or DCS system.
- An optional serial communications link is provided, allowing the monitor to be linked to a remote computer.

Model 9381 Ultrafilter
- This is optional and only required if the suspended solids concentration in the sample >10mg/l⁻¹ and/or <60microns.
- Sample requirements:
  - minimum pressure 1.5 bar, minimum sample flowrate 70 litre/minute,
  - the sample delivery pump must be capable of this duty.

Associated ABB Products for use on Effluent Treatment Plant
- Dissolved oxygen monitors for plant process control.
- *pH transmitters for pH control.
- *Phosphate monitors.
- *Nitrate monitors.
- *Turbidity monitors.
- Associated recorders and controllers.
  * to ensure compliance with discharge consent limits
Installation

- In this application, the sample is at ambient temperature and therefore requires no conditioning.
- Sample must be extracted from the sampling point and pumped to the ultrafilter and monitor.
- It is particularly important to note the sample requirements for the ultrafilter and to ensure that the pump is capable of this duty.
- A valve for providing suitable back pressure for the ultrafilter is also necessary.