

# Nitrifiers

## Naturally effective wastewater treatment

Ammonia build-up can cause significant issues in terms of plant performance and result in heavy fines if consent levels are not met. Nitrifying bacteria remove ammonia, but nitrification is more easily interrupted compared to other biological wastewater treatment processes because these microbes are slow growing and highly susceptible to chemical and physical challenges. This can lead to plant failure and slow recovery.

**Reduce  
waste water  
costs**

**Achieve  
consent  
levels**

**Improve  
plant  
efficiency**

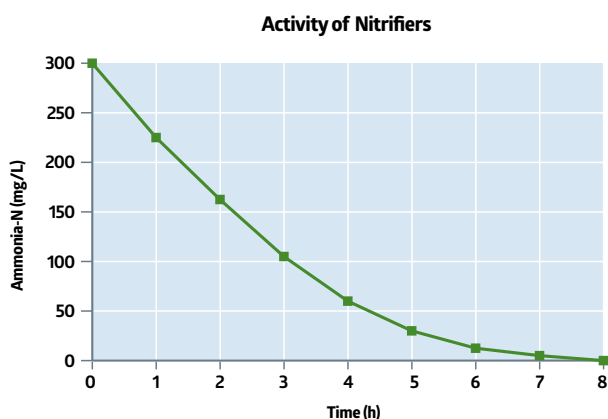


**Ammonia is highly toxic to fish and other wildlife and causes considerable oxygen depletion in receiving waters. As such, wastewater treatment plants (WWTP) with such contamination are given exceptionally low consent limits and can face costly fines if breached.**

Ammonia is removed by nitrification, a process carried out by nitrifying bacteria and is one of the most important and difficult processes to maintain in a WWTP. This process relies on the ability of the nitrifying bacteria to ensure this process is optimised.

Nitrifying bacteria are extremely sensitive to environmental factors, toxicity, shock loading and solids loss. They cannot be converted into powders and die rapidly unless refrigerated. They are extremely slow growing (7–20hr doubling time) and have exacting growth requirements in terms of dissolved oxygen, temperature, pH and levels of organic matter. Biocides and other inhibitory substances can also affect performance.

Advetec Nitrifiers consist of tailored nitrifying bacteria designed to thrive in a wide range of wastewater types and respond extremely quickly to restore nitrification as shown below.



Advetec uses a bespoke fermentation process to produce the products in concentrated liquid form. Each batch is activity-tested and shipped in refrigerated containers for immediate use or fridge storage with an activity of up to 5000mg ammonia or nitrite oxidised per kg of product per hour.

The bacteria are normally added to the nitrifying zone of the WWTP and ammonia and/or nitrite removal begins immediately. They may be used to establish activity in newly constructed or seasonally operated plants, to reseed a plant after toxic shock or to improve the ability of the existing biomass to meet ammonia consent levels.

### The nitrification process takes place in two stages:

- 1 The oxidation of ammonia to hydroxylamine, then conversion to nitrite, carried out by species such as *Nitrosomonas*.
- 2 The oxidation of nitrite to nitrate by species such as *Nitrobacter*.

