# NITROGENOUS MATTER CONTENT IN WATER COURSES

WATER 6

*Excessive inputs of nitrogenous matter in surface waters, in the form of nitrate ($NO_3^-$), ammonium ($NH_4^+$) or nitrogen in organic compounds, contributes to eutrophication of marine waters and disrupts aquatic ecosystems and the services they provide (fishing, bathing, etc.).*

## Nitrate: moderate to high quality water

Nitrate comes mainly from diffuse agricultural pollution generated by the excessive use of mineral or organic nitrogen fertilisers and, to a lesser degree, from discharges of urban waste water. In 2015, 97.5% of all monitoring sites[1] had moderate to high water quality in terms of $NO_3^-$ standards[2]. Considering only the sites for which data are available each year, almost 87% of the sites in the Meuse, Rhine and Seine basins had good to high quality water; in the Scheldt basin, more than half of the common sites (54.6%) had moderate quality water.

## Ammonium: the water in the Scheldt basin is of poorer quality

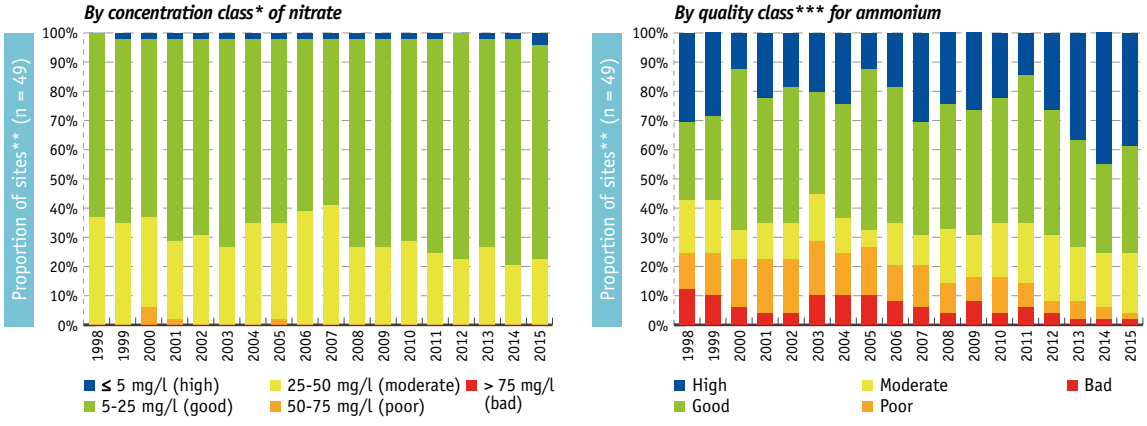
Other nitrogenous matter, particularly ammonium[3] or nitrite ($NO_2^-$), come from the breaking down, by bacteria, of organic nitrogen from waste water treatment plant discharges or manure. In 2015, 72.1% of all monitoring sites had moderate to high water quality for $NH_4^+$. The situation is more contrasting than for $NO_3^-$, with some water courses showing bad or poor quality. These are located exclusively in the Scheldt basin (Haine, Rhosnes, etc.)[1], a densely populated basin where there is intense industrial and agricultural activity, and where relatively low flow rates[4] do not dilute pollution. However, by 2015, most of the common sites in the Scheldt Basin (64%) had moderate quality water. Nearly 92% of the common sites in the Meuse, Rhine and Seine basins had good to high water quality.

## Improving trend

Despite year-to-year variations in nitrogen pollution, mainly due to weather conditions, there is an improving trend. This is due to a reduction in the flow of agricultural nitrogen into water courses (-37% between 1991-1995 and 2011-2015)[5] as a result of better management of nitrogen fertilisers imposed by the Sustainable Management Programme for Nitrogen in Agriculture (*Programme de gestion durable de l'azote en agriculture - PGDA*)[6], whose action programme was revised in June 2014 by introducing more stringent measures and increased control mechanisms. It is also the result of an increase in the equipment rate in urban waste water treatment plants (90.9% in 2015)[7] and a reduction in nitrogenous discharges from industrial sources (-25% between 1998 and 2013)[8]. The observed improvement is expected to continue with the implementation of the measures listed in the second River Basin Management Plans (RBMPs)[9] and some measures of PGDA III.

[1] → Map 28 | [2] Walloon Government Decree of 13/09/2012 | [3] Beyond certain thresholds, $NH_4^+$ may cause symptoms of acute toxicity in various aquatic organisms, in particular fish. | [4] → WATER 2 | [5] → SOILS 4 | [6] PGDA III applicable since 15/06/2014 (Walloon Government Decree of 13/06/2014); → AGRI 9 | [7] → WATER 19 | [8] → WATER 4 | [9] RBMPs 2016-2021 adopted by the Walloon Government on 28/04/2016; → WATER 21

**Fig. WATER 6-1** Status of water courses according to nitrogenous matter concentrations in Wallonia




** 90th percentile of annual concentrations. When the concentration corresponds to the standard, the class considered is the lower class (Walloon Government Decree of 13/09/2012).*
*** Monitoring sites for which data are available annually between 1998 and 2015*
**** The limits of the status classes differ according to the typology of water bodies (Walloon Government Decree of 13/09/2012).*

*SOERW 2017 – Source: SPW - DGO3 - DEE (AQUAPHYC database)*