

Nitrates in water

What causes pollution & how much is our water polluted

About nitrates pollution

The expansion of intensive agriculture has **disrupted the natural balance of the nitrogen cycle**. Human activity now produces more reactive nitrogen – including ammonia, nitrates, and nitrous oxide – than natural ecosystems can safely absorb.

The overabundance of ammonia and nitrous oxide contributes to numerous environmental harms – including rising emissions from nitrous oxide and air pollution through fine particulate matter from ammonia.

According to EU data, farmers across the EU used 9.3 million tonnes of mineral fertilisers in 2023. On top of this, European and UK livestock produce an estimated 1.4 billion tonnes of manure annually, much of which is also used as fertilizer.

Nitrate pollution first affects soils, but its impacts extend far beyond them. **Much of the environmental and health damage caused by nitrates occurs when they enter water systems.**



Surface water pollution

Nitrates can run directly off agricultural land into rivers, lakes, and seas. This damages aquatic ecosystems and contributes to eutrophication – the excessive growth of algae and aquatic plants caused by nutrient pollution.

Groundwater pollution

Nitrates can also dissolve in water and move down through soils into underground aquifers in a process known as leaching. While groundwaters can also enter surface waters – causing pollution over a longer period as these slowly release into rivers and lakes – groundwater contamination is particularly notable for public health because groundwater supplies around 65% of the EU's drinking water.

Water pollution in numbers

Europe-wide statistics paint a stark picture of nitrates pollution in Europe. The World Health Organisation recommends to keep nitrates below **50mg/L**, a limit that the EU included its legislation. Yet **that limit is persistently exceeded** and governments are failing to protect surface waters and their ecosystems from pollution.

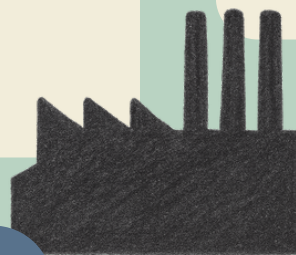
Groundwater

- **14.1% of groundwater monitoring stations** across the EU recorded nitrate concentrations above the legal limit of 50 mg NO₃/L
- **20 out of 27 EU countries** have groundwater nitrates limits above the 6mg/L limit that Denmark is now considering as the safe limit.
- **Highest average** of nitrate concentrations in groundwater:
 - Spain (32 mg/L)
 - Belgium (30 mg/L)
 - Bulgaria (29 mg/L)
 - Denmark (24 mg/L)
 - Germany (22 mg/L)

Drinking water

If nitrate compliance in Large Water Supply Zones reached 99.7% in 2019 (under the Drinking Water Directive), the picture is different for Small Water Supply Zones.

Around 1 in 20 small systems exceed the nitrate limit (meaning that 95% comply), against 1 in 300 for large systems.



Surface water

- EU data suggests **eutrophication affects 38% of EU coastal waters**. Meanwhile 30% of surface waters monitored under the Nitrates Directive are eutrophic.
- About **18% of assessed European seas now suffer from hypoxia**, the related state of being oxygen starved.

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Explainer

From factory farming to pollution

