

Surface and Groundwater Pollution

**Extract from France's 2021 Environmental Performance
Review**



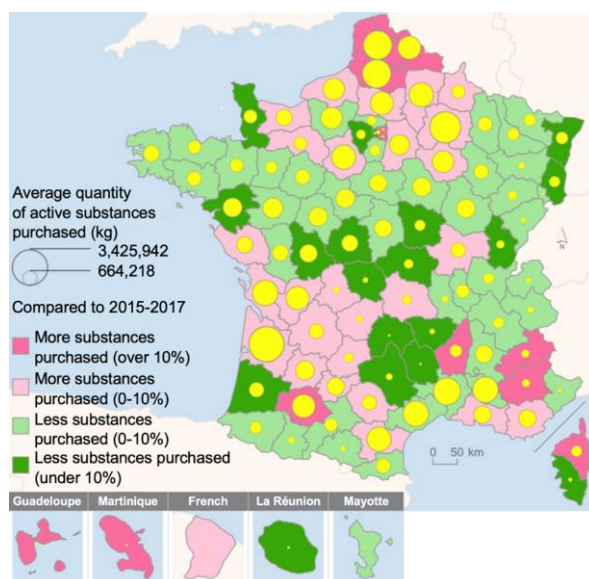
Surface and Groundwater Pollution

Aquatic ecosystems suffer from a range of pressures caused by human, agricultural, industrial and domestic activities. In the latest report on French aquatic ecosystems in 2015, only 44% of surface water had good environmental status and 69% of groundwater had good chemical status. To ensure sustainable use - and most importantly - the production of water for human consumption, prevention, protection and restoration come at a high cost.

PESTICIDES AND THE QUALITY OF SURFACE AND GROUNDWATER

In 2019, sales of products for plant protection reached 55,000 tonnes of active substances. Approximately 97% is for agricultural use, making France the second largest user of plant protection products in Europe and eighth per hectare. Twenty departments used over half of the quantity of active substances purchased between 2017 and 2019 led by La Gironde, followed by La Marne, La Somme, Le Gard and Le Hérault (*Map 1*). Monitoring of surface and groundwater quality reveals the presence of pesticides in most sub-basins. The highest contents are in arable, fruit growing and vineyard areas. Only mountainous areas or less treated agricultural areas, such as permanent grassland, are spared from contamination.

Map 1: Average purchases of active substances for three years by department between 2017 and 2019

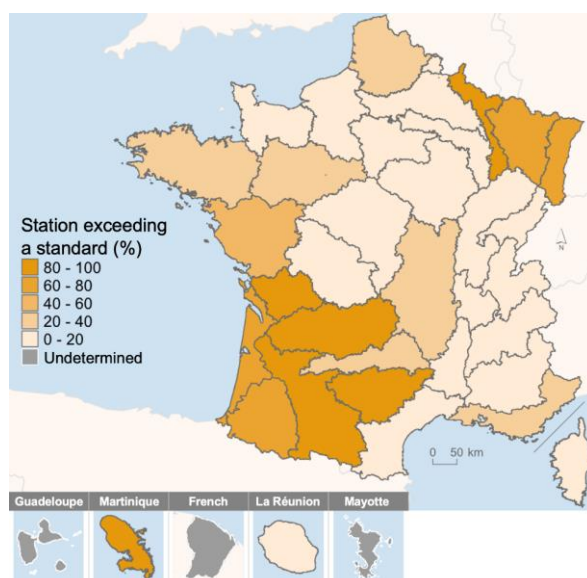


Scope: France.

Source: BNV-D, 2015 to 2019 data with buyer post code extracted on 1 March 2021. Treatment: OFB; SDES, 2021

To protect the quality of water bodies, the water framework directive sets out standard environmental quality limits. These standards cover over 100 substances including 66 pesticides. For surface waters, almost 20% of monitoring stations reported concentrations in excess of maximum or annual average permissible concentrations for at least one pesticide between 2017 and 2019 (*Map 2*).

Map 2: Stations exceeding the environmental quality standards of the water framework directive between 2017 and 2019



Note: a station exceeds an environmental quality standard if one of the listed 66 pesticides exceeds a maximum permissible concentration or annual average permissible concentration. These standards are established by the water framework directive.

Scope: watercourses and bodies of water

Sources: Eaufrance; Ineris. *Treatment:* SDES, 2021

TRENDS IN THE AMOUNT OF NITRATES AND PHOSPHATES IN WATERCOURSES

Aquatic environments accumulate surpluses from mineral and organic crop fertilisation. Significant increases were observed between the 1970s and 1990s. Since the early 1990s, the total quantity of nitrogen sold has fluctuated around 85kg per hectare of land susceptible to being fertilised: 83kg in the 2018-2019 season compared with 57kg in the 1972-1973 season. Aid schemes for farmers, measures for vulnerable areas, and actions to improve exploitation of livestock manure (building renovations, spreading plans) are gradually reducing nitrate leaching. As a result, nitrate contents were stable in surface waters between 2000 and 2019 (*Figure 1*).

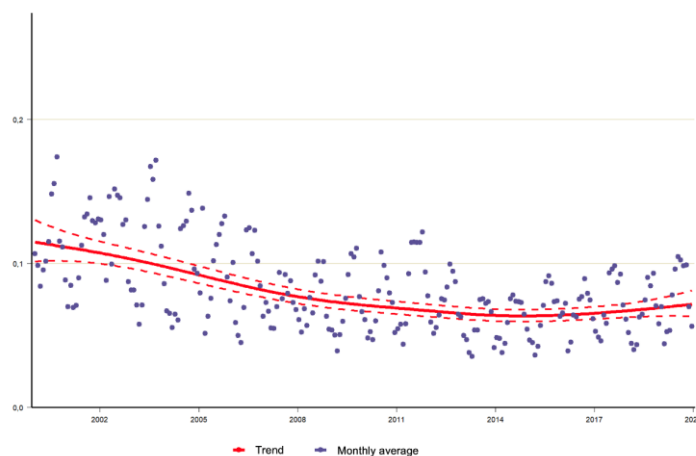
Figure 1: Trend in nitrate levels in watercourses in metropolitan France from 2000 to 2019
In mg/L



Note: the average concentration in mg nitrogen/litre was stable between 2000 and 2019. The points represent the monthly average concentration throughout the country. The red lines represent the long-term trend with a 95% confidence interval.
Scope: watercourses and bodies of water
Source: EauFrance. *Treatment: SDES, 2021*

The use of phosphate fertilisers was reduced by four between the 1972-1973 and 2018-2019 seasons, reaching 7.4kg/ha in 2018. Significant investments have also been made in the renovation of urban sewage treatment plants. Quick results followed these upgrades and the ban on phosphates in laundry detergents with phosphate levels halved in rivers in 15 years. The decrease in phosphate levels in surface waters is more pronounced than for levels of nitrates. The average concentration decreased by 37% between 2000 and 2019 (Figure 2).

Figure 2: Trend in nitrate levels in watercourses in metropolitan France from 2000 to 2019
In mg/L



Note: the average concentration in mg nitrogen/litre dropped by 37% between 2000 and 2019. The points represent the monthly average concentration throughout the country. The red lines represent the long-term trend with a 95% confidence interval.
Scope: watercourses and bodies of water
Source: EauFrance. *Treatment: SDES, 2021*

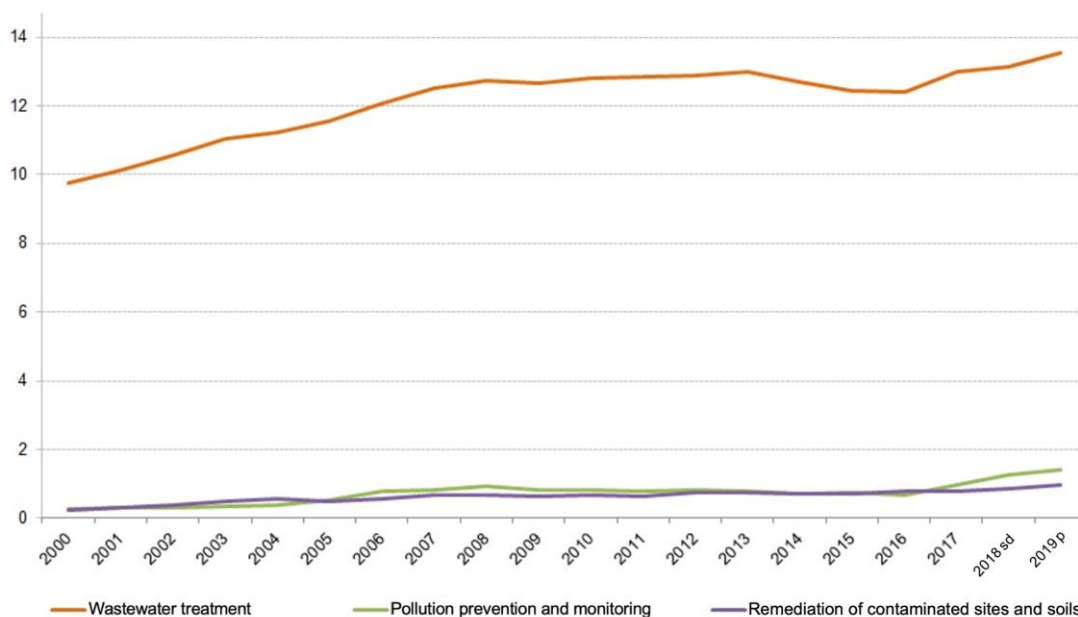
OTHER POLLUTANTS DETERIORATING SURFACE AND GROUNDWATER QUALITY

Other substances deteriorate water quality. Volatile organic compounds, such as trichloroethylene, perchloroethylene and tetrachloroethylene, all powerful solvents used in the chemical and mechanical industries and for dry cleaning textiles, are the third cause of groundwater deterioration after nitrates and pesticides. Polycyclic aromatic hydrocarbons (PAHs, benzene and its derivatives) are also among the substances with the worst impact on surface waters. These products are mainly from combustion engine exhausts, road-surface leaching and wooden railway sleepers.

WASTEWATER TREATMENT: HIGH COST FOR ENVIRONMENTAL PROTECTION EXPENDITURE

Households, businesses and public bodies are spending in different ways including wastewater treatment, pollution prevention and monitoring, and remediation of contamination sites and soils to combat these environmental risks (Figure 3). At a total cost of €13.5 billion, wastewater treatment alone represents one of the main items of France's total environmental protection expenditure of €54.3 billion in 2019.

Figure 3: Wastewater treatment, remediation of contaminated sites and soils, and pollution prevention and monitoring expenditure in 2019
In current billion euros



sd = semi-definitive; p = provisional data.

Scope: France.

Source: Environmental protection expenditure Treatment: SDES, 2021

FOR MORE INFORMATION

- *Eau et milieux aquatiques, les chiffres clés – Édition 2020*, SDES, *Datalab*, December 2020, 128pp.
- *Plan de réduction des produits phytopharmaceutiques et de sortie du glyphosate: état de l'état des ventes et des achats en France en 2019*, SDES, *Datalab Essentiel*, May 2021, 4pp.