

## Summary

Implementation of the Water Framework Directive (WFD) has led to development of networks for monitoring of water quality and to the introduction of new criteria. 2007 was the first year of implementation of the monitoring programme. Overall, this provides better territorial coverage and strengthens the monitoring of priority and hazardous substances already carried out. However, annual periodicity and territorial coverage can be reduced for certain pesticides. For instance, a reduction in monitoring was observed locally in 2007 for some substances that are very present in surface waters but are not classed as priority and hazardous.

Pesticides were found at 91 per cent of the river water quality monitoring points and at 59 per cent of groundwater monitoring points, confirming figures for previous years. Although concentrations measured are sometimes very low, this nonetheless indicates wide dispersal of pesticides as well as their general presence in aquatic environments and in a majority of groundwater bodies; basement aquifers are not affected.

Levels of contamination are higher in rivers than in groundwater. The total concentration of pesticides is over 0.5 µg/l at 18 per cent of points measured on rivers and 3.8 per cent of groundwater points. The areas most affected are still the major cereal growing and wine producing regions. The substances most frequently found in both rivers and groundwater are, in almost all cases, herbicides.

Quality standards have been set by European and national authorities to include pesticides in the assessment of the status of water as understood by the WFD.

**For rivers**, standards currently cover 18 substances or groups of substances. 11 per cent of measurement points do not meet these standards for at least one substance. Two substances, diuron and isoproturon, are responsible for three-quarters of cases where standards are exceeded. Furthermore, exceeding standards occurs in regions with high total pesticide concentrations.

Impacts can be severe locally: 40 per cent of the measurement points in the Île-de-France region fail to meet standards because of diuron.

The picture is, however, incomplete since, for some stations and some pesticides, the analytical performance of laboratories is not compatible with current standards. It is therefore impossible to qualify the status of the water.

The quality standards cover only a limited number of substances, mainly those referred to as 'priority or hazardous' and do not give a full picture of contamination by pesticides. In this way, two-thirds of the 15 substances most often observed in rivers—all herbicides—are not currently covered by a standard. This is the case, notably, for glyphosate and its metabolite AMPA, respectively the third and first most frequently quantified substances in rivers. For these two substances, a complete view of the situation is prevented by the absence of data for some regions, especially the Centre, as a result of reorganisation of monitoring programmes.

**For groundwater**, the quality standards cover all of the substances sought as well as the total concentration of pesticides. Results for around 18 per cent of measuring points are out of compliance with the quality standards, of which around 4 per cent are also out of compliance regarding total pesticide concentration. The whole of metropolitan France is concerned, with only the basement regions (Brittany, Massif central, Pyrenees, Alps and Corsica) not being affected. Most cases of exceeding of standards are due to the main metabolite of atrazine, desethyl atrazine, and to a lesser extent to atrazine itself, banned from use since October 2003. Glyphosate and its metabolite AMPA are the third cause of failure to comply, after atrazine and its metabolite. More generally, the main difference between groundwater and rivers is a predominance of the products of breakdown of original molecules and persistence of banned substances. Out of the 15 most quantified pesticides in 2007, seven are metabolites and five are substances banned from use in 2007.

As for surface waters, the limits of quantification of laboratories for certain substances are higher than the quality standards. More than 80 per cent of the groundwater stations monitored have at least one substance for which an opinion regarding compliance with the standard cannot be given. However, this figure is less than 1 per cent for the molecules that are most closely monitored at the national level.

In the 1997–2007, the efforts on detection fluctuated depending on the year and on the pesticides, it is therefore difficult to indicate trends. Nonetheless, a significant drop in the presence of banned molecules (lindane, triazine family of pesticides) in rivers can be observed, even if, like atrazine, they have not entirely disappeared. This phenomenon is not, or is rarely, observed for groundwater, where, at least in certain cases, an increase in substances from the breakdown of banned molecules is found. This can be explained by long retention times in many groundwater where the water is renewed only after a number of years or even decades.

A reflection of changing practices in line with bans, glyphosate and its metabolite AMPA have been very present in rivers since the start of the 2000s, thus replacing atrazine amongst the pesticides with the highest concentrations.