Unlike *local pollution*, which originates from a specific source and can be extensive in some cases, *diffuse pollution* is more widespread and affects soil more or less to a lower extent. It originates from many sources, which are difficult to identify: primarily, atmospheric fallout of pollutants from road traffic, industry or residential heating, as well as certain agricultural and horticultural practices, such as spreading fertilisers or pesticides in fields, parks or private gardens.

These diffuse inputs (or excess enrichment of soil in the case of nitrogen or phosphorus) can cause soil to deteriorate and jeopardise its effective functioning, ultimately posing the potential threat of pollution of water resources.

Dispersion of air pollutants does not stop at national borders. This issue therefore requires concerted action at a regional, national and international level. Considerable progress has been achieved since the 1990s, in particular for phosphorus from agricultural sources and acidifying pollutants.

Farmers are becoming increasingly aware of the need for careful management of fertilisers and pesticides. Certain very harmful products have even been banned. Standards have been implemented for the industrial sector. However, efforts must be continued. Individuals can also make a contribution to combatting diffuse pollution.
Pollutants can accumulate in soil (accumulation).

Pollutants can be “leached” (lixiviation or leaching). This means that they are carried down through soil, potentially reaching groundwater bodies.

Pollutants can be swept away over sealed surfaces by soil erosion or water runoff until they reach surface water bodies.

Air-borne pollutants can travel and be deposited in a new location (suspension/deposit).

Main pollutants and sources of diffuse pollution

Trace metal elements (TMEs)
Pesticides
Nitrogen (N) and nitrates
Phosphorus
Acidifying substances
NOx
SO2
NH3

Sources of diffuse pollution, pollutants emitted and dispersion modes
Nitrogen (N) and nitrates

Nitrogen is present in either organic form (in decomposing plants) or mineral form, including nitrate (NO₃⁻) and ammonium (NH₄⁺), which are created by the mineralisation of organic nitrogen by soil micro-organisms.

Nitrogen is essential for plants’ growth. It is therefore spread over crop-growing soil in either organic (manure, slurry, etc.) or mineral form (nitrogen fertilisers). However, soil can become saturated in nitrogen if inputs exceed plants’ absorption threshold. The excess nitrate is then quickly carried away (“leached”) to deeper levels of soil until it reaches groundwater bodies. It can also migrate to surface water.

When nitrogen fertilisers are applied, losses of nitrogen in gaseous form (ammonia or NH₃) can result in acid atmospheric fallout.

Since the early 1990s, spreading of nitrogen has been declining in Wallonia.

Phosphorus

Phosphorus (P) is a mineral element that is essential for life and it also plays a major role in plants’ growth. Phosphate fertilisers are therefore used widely to improve crop yields. As with nitrogen, excessive spreading of phosphorus can saturate soil if quantities exceed plants’ ability to absorb. However, very little phosphorus is leached to groundwater bodies due to Walloon soil’s effectiveness in trapping phosphorus. On the other hand, phosphorus can contaminate surface water as it is swept away with earth eroded by rain.

Inputs of phosphorus have been falling since the middle of the 1990s in Wallonia.

Pesticides

are substances used to combat crop pests and plant diseases (fungicides, insecticides, etc.) or to remove unwanted plants (herbicides). Unlike nitrogen or TMEs, pesticides do not occur naturally in the environment and inputs can be attributed solely to human activities. They can be carried by rain water to deeper levels of soil (leaching). They can also be transported to watercourses, attached to particles of eroded earth (erosion), or swept by rain water over sealed soil (concrete, pavements, compacted earth, etc.).
Diffuse soil pollution is not “less serious” than local pollution. Although the concentrations of pollutants are lower, this situation nevertheless raises long-term environmental and health problems.

One of the most concerning issues at the moment is pollution of surface water and groundwater (and therefore water collection) by nitrates or pesticides spread over fields, public spaces or private gardens.
Public and private spaces: banning pesticides can be achieved!

In Wallonia, pesticides are used mainly by farmers. Followed by individuals, such as gardening enthusiasts, professionals in maintenance of green spaces and public spaces and rail network managers.

In recent years, we have seen a fall in the volumes of pesticides spread in agriculture as a result of greater awareness among farmers and more careful use of products. However, efforts must continue.

A downward trend can also be observed among individuals. However, the average quantities spread per unit of area are higher in comparison with farmers. In many cases, lack of knowledge is resulting in overly frequent applications, errors in the time and extent of spreading, rinsing of spraying equipment down drains, etc. These practices make a significant contribution to diffuse pollution of soil and water.

The 37 measures introduced under the Programme Wallon de Réduction des Pesticides (PWRP) (Walloon Pesticide Reduction Programme) are designed to allow Wallonia to progressively meet the targets set by the federal plan, which transposes the European Directive on the sustainable use of pesticides at a national level.

One of these measures is “zero phyto”: on 1 June 2019, a complete ban will come into force on the use of pesticides in public spaces managed by municipalities, authorities and similar bodies. These products will need to be replaced by gentle and environmentally friendly methods.

Choose environmentally friendly methods
Wherever possible, we need to replace chemical pesticides, which kill soil life, with alternative methods: manual weeding or mulching, selection of suitable and more pest-resistant plants, development of welcoming environments for wild fauna targeted by predators, use of environmentally friendly products, etc.

Reconsider our idea of “clean” or “tidy”
Are weeds unwanted in all situations and everywhere?

Dispose of old pesticides and packaging with care
Incorrect storage of old pesticides or their packaging represents a potential source of diffuse pollution: packaging must be taken to container parks where it can then be processed through the appropriate channels.
General publications by the SPW – online information

http://etat.environnement.wallonie.be

“La contamination diffuse des sols”, pp. 486 ssq. - Scientific report (available for download)
http://etat.environnement.wallonie.be

Environmental review of companies in Wallonia
Acidifying atmospheric emissions from the chemicals industry
http://environnement.wallonie.be (companies)

Walloon legislation and good practices
Programme Wallon de Réduction des Pesticides (PWRP - Walloon Pesticide Reduction Programme)
www.wallonie-reductionpesticides.be
www.adalia.be

http://environnement.wallonie.be

Comité régional PHYTO
www.crphyto.be

Teachers
- Le sol - Qu’est-ce que le sol? Comment se forme un sol? Quelles fonctions remplit le sol? Quelles sont les menaces qui pèsent sur les sols?, educational report, Prosensols, s.d. (available for download)
-Les menaces qui pèsent sur les sols, educational report, partenariat Prosensols, s.d.
-Educational folder and sheets on soil (from age 12)
www.prosensols.eu

Creusons le sol, Symbioses, le magazine de l’Éducation relative à l’Environnement, N°98, second half of the year 2013
www.reseau-idee.be (available for download)

Farmers
GISER unit – SPW – DGO3
www.giser.be
GREENOTEC asbl
www.greenotec.be

About agro-environmental measures
http://agriculture.wallonie.be
About the Programme Wallon de Réduction des Pesticides (PWRP -

Walloon Pesticide Reduction Programme)
http://agriculture.wallonie.be

Comité régional PHYTO
www.crphyto.be
DAFOR - SPW - DGO3
www.agriculture.wallonie.be
NITRAWAL
www.nitrawal.be

Local authorities, managers of public spaces
Comité Régional PHYTO
www.crphyto.be

Pôle de Gestion différenciée
www.gestiondifferenciee.be

Union des Villes et Communes de Wallonie
www.uvcw.be

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