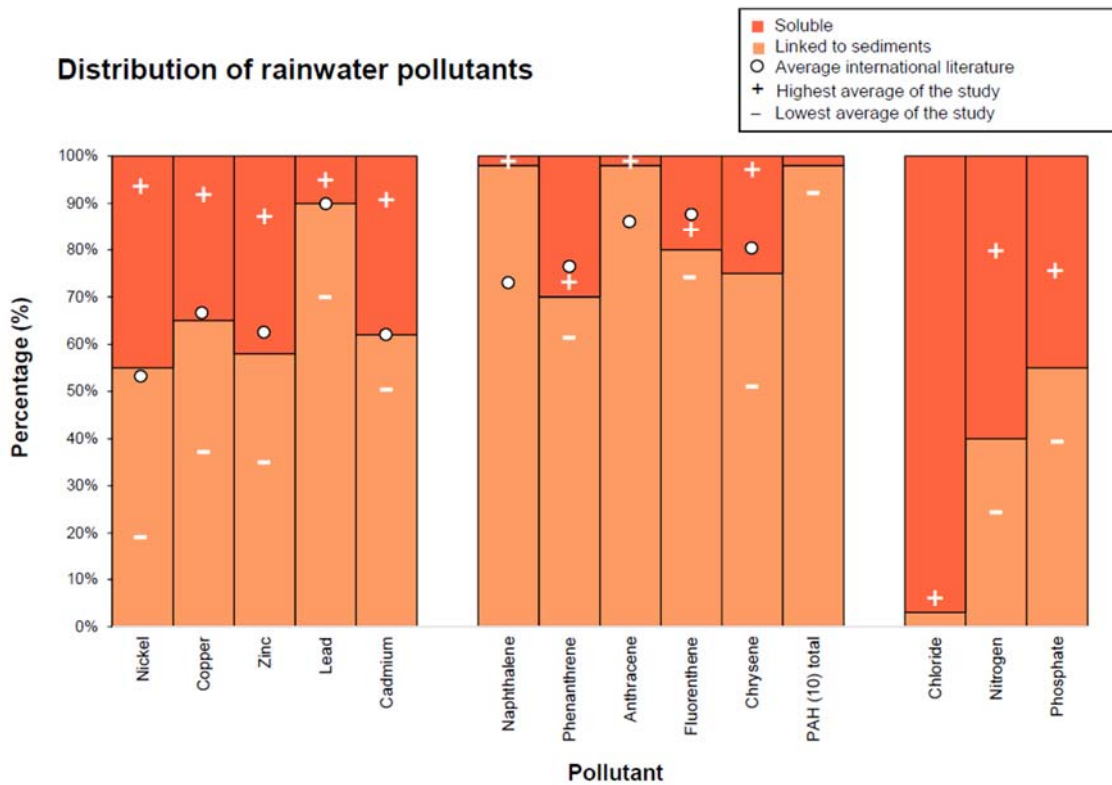


# Rainwater pollution

## Characteristic of pollutants

In urban areas, the level of pollution is dependent on many factors (traffic intensity, type of pavement, etc.). The pollutants present can be classified into two categories: pollutants in particulate form and pollutants in dissolved form. Pollutants in particulate form including Suspended Solids (SS) are an important part of stormwater pollution. In fact, at the scale of a watershed, the pollutants transported during rainy weather (hydrocarbons, PAHs, heavy metals, COD, and to a lesser extent BOD5, nitrogen, etc.) are partly fixed on the SS. In addition, much of this pollution is associated with fine particles less than 100 microns. As an indication, the table below illustrates the average proportions of pollutants present in runoff in dissolved and undissolved form.



**Figure 1:** Distribution of rainwater pollutants ( *Boogaard F.C 2012, SKINT Sustainable Urban drainage systems research, unpublished*).

Depending on the nature of the watershed (road, industrial, etc.), the concentration of different pollutants can vary significantly and may also lead to a risk of accidental oil pollution, as illustrated by the table below.

Activity / Parameters	MES mg/l	DCO mg/l	Hydrocarbons µg/l	HAP's µg/l	Lead µg/l	Zinc µg/l
Residential area	53 - 190	79 - 142	<200 - 500	2819 - 3718	12 - 56	92 - 170
Ind. Zone access road	540 - 590	156 - 177	200 - 1200	5024 - 13473	79 - 100	700 - 1100
Heavy traffic road	180 - 600	79 - 617	700 - 2000	3409 - 40745	40 - 71	430 - 1150
Office carpark	22 - 500	12 - 175	<100 - 1100	460 - 12429	<5 - 90	<50 - 530
Commercial zone carpark	45 - 242	93 - 395	<20 - 2400	640 - 3890	50 - 280	220 - 1000

**Table 1 :** Pollutant concentration according to the watershed type

Therefore, the use of a treatment system adapted to the case (nature of the watershed, hydraulic pipelines, discharge objectives and treatment flow) must be studied.

This control of discharge in rainy weather is framed by :

- The **European Water Framework** Directive which sets a clear objective: to reach by 2015 the ecological and chemical "good state" of all natural aquatic environments and to preserve those in very good condition.
- The regulatory requirements defined by the discharge agreements (**STORM directive**)

For this purpose we offer different technical options such as :

- **The SediPipe® system** (see later in this chapter)
- **The lamellar settling system** (see chapter 6.)
- **The Stoppol® system** (see chapter 7.)