In this document several Dutch and Belgian drinking water operators, united in Vewin and RIWA, give their opinion on the current review process of the EQS-Directive[1] by the European Commission (PS Review). We insist on the following measures:

1. The use of the EU Directive 98/83/EC standard of 0.1 µg/L for all pesticides and their metabolites in drinking water sources.
2. The use of 0.1 µg/L target value for non-regulated substances in rivers that are used as a source for drinking water based on the TTC-approach and in line with the precautionary principle of the EU Treaty and article 7 of the EU Water Framework Directive.
3. The inclusion of 26 substances in the PS review which breach drinking water standards or the target values for rivers in Europe.

The reasoning behind our three positions is described in the following corresponding paragraphs.

1. When considering drinking water as a route for human exposure the quality standards should be in line with EU Directive 98/83/EC

The human toxicity approach which is used in the PS Review is not in line with current European legislation. Drinking water is a source for human exposure to substances in water under assessment in the PS Review. In this process protection threshold concentrations ($PNEC_{dw,hh}$) have been derived for substances based on human toxicity data. This is however in conflict with the standards in the EU Drinking Water Directive 98/83/EC[2] (DWD) which are based on the scientific knowledge available and prudently takes the precautionary principle into account.

The precautionary principle has to have a place in determining risk for human exposure

The precautionary principle is mentioned in article 191, paragraph 2 of the Treaty on the functioning of the European Union[3]: *"Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay."* On this basis we insist that, for substances which have a standard in the DWD, this standard should be used in the PS Review instead of the $PNEC_{dw,hh}$. The EU Water Framework Directive 2000/60/EC[4] (WFD) aims for avoiding deterioration the quality of sources in order to reduce the level of purification treatment required in the production of drinking water (article 7, paragraph 3). As long as concentrations of substances in sources, such as rivers, are above drinking water standards the level of purification cannot be reduced. This means that for all pesticides and their relevant metabolites the $PNEC_{dw,hh}$ should be pre-set to the drinking water standard of 0.1 µg/L.

[1] Directive 2013/39/EU of the European parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy
[2] Official Journal of the European Communities L 330/32-54, 5-12-1998
[3] Official Journal of the European Union C 326/47-390, 26-10-2012
[4] Official Journal of the European Communities L 327/1-72, 22-12-2000

2. The European River Memorandum sets precautionary target values for non-regulated substances in drinking water sources

A coalition of waterworks along the main European rivers has a common strategy and vision for the sustainable and prevention-oriented provision of drinking water. This strategy and vision is laid down in their *'Memorandum regarding the protection of European rivers and watercourses in order to protect the provision of drinking water'* (ERM). More than 115 million people in 17 European countries depend on rivers for their drinking water provision: Germany, Austria, Belgium, Bosnia-Herzegovina, France, Croatia, Liechtenstein, Luxembourg, the Netherlands, Montenegro, Romania, Serbia, Slovakia, Slovenia, Switzerland, the Czech Republic and Hungary.

If rivers and watercourses do not exceed the target values listed in the ERM, it is possible to use them to produce drinking water solely based on natural treatment steps. The target values refer only to the condition of flowing rivers and watercourses at the intake sites of waterworks and represent maximum permissible levels (i.e. minimum quality targets). The values present quality targets for guaranteeing the provision of drinking water in the future in accordance with the WFD.

The ERM-target values take into account legal requirements regarding drinking water quality, precautionary aspects and general purity requirements as well as the effectiveness of natural treatment steps. Existing regulations regarding drinking water quality must be met also for surface water in cases when natural purification steps are expected to only result in negligible reductions in concentration. This is especially the case for persistent compounds. For many antropogenic organic substances no limits have been set in drinking water regulations. A target value of 0.1 µg/L for substances that affect biological systems is set in the ERM, also in view of non-evaluated degradation products that might be produced during the (natural) treatment process. Similarly, a limit of 0.1 µg/L also applies to non-evaluated anthropogenic artificial substances for precautionary reasons because there is no adequate information regarding their toxicity and, thus, effects on biological systems cannot be excluded. Numerous substances detected in drinking water and their sources lack toxicity data to derive safe levels and have not yet been regulated. For organic micro pollutants the ERM-target values are based on the Threshold of Toxicological Concern (TTC)[5]. If the toxic effects of other artificial organic substances have been studied adequately and they are regarded as being safe, a maximum value of 1 µg/L is justified following current precautionary policies.

Recently a similar approach was used to determine an Ecotoxicological Threshold of Concern[6] (eco-TTC). Based on data of 90 806 substances an eco-TTC was derived 0.396 µg/L which is in the same order of magnitude as the drinking water-TTC values. We insist that the TTC-approach is used for non-regulated substances rather than the current PNEC-approach as it is in line with the current DWD.

[5] Mons MN, Heringa MB, van Genderen J, Puijker LM, Brand W, van Leeuwen CJ, Stoks P, van der Hoek JP, van der Kooij D. Use of the Threshold of Toxicological Concern (TTC) approach for deriving target values for drinking water contaminants. Water Research 47 (2013) 1666-1678

[6] Embry ME, Belanger SE, Coady K, de Zwart D, Farr B, Gutsell S, Halder M, Sanderson H, Sternberg R, Wilson P. Ecotoxicological Threshold of Concern (eco-TTC): Development of an approach to assist in environmental hazard assessment, poster presented at SETAC (9 - 13 November 2014, Vancouver, BC).

3. Specific remarks on substances in the PS Review

De-selected substances in the development of the 1st Watch List

In the development of the 1st Watch List under the Environmental Quality Standards Directive 16 substances have been de-selected based on availability of sufficient monitoring data. They will have to go through to the PS Review. Amongst these 16 substances there are 8 which have been detected in European rivers above either standards in the DWD, national standards for drinking water sources and/or the ERM-target values (i.e. 0.1 µg/L):

1. Aminomethylphosphonic acid (AMPA)
2. Bisphenol A
3. Carbamazepine
4. Glyphosate
5. Ibuprofen
6. Mecoprop
7. Sulfamethoxazole
8. Phenanthrene

These 8 substances are relevant for the production of drinking water from rivers and their $PNEC_{dw,hh}$ should be pre-set to either the drinking water standard (1, 4 and 6) or the ERM-target value (both of which are 0.1 µg/L.).

Pharmaceutical residues found in several European rivers (EurEau inquiry)

The outcome of an inquiry by EurEau on pharmaceutical residues in drinking water resources (European surface waters) shows that several compounds where found in the investigated rivers (Rhine, Ruhr, Main, Lek and Maas/Afgedamde Maas) in concentrations over one hundred nanogram per liter (100 ng/L = 0.1 µg/L). Additionally studies in the Netherlands show that metformin and its degradation product guanylurea account for more than half of the total load of pharmaceuticals in surface waters[7]. We recommend adding the following 7 substances to the PS Review because they have been found in several rivers in concentrations which breach the ERM-target value:

9. Amidotrizoic acid (Diatrizoic acid)
10. Metformin (and its metabolite guanylurea)
11. Metoprolol
12. Iohexol
13. Iomeprol
14. Iopamidol
15. Iopromid

Substances found in at least two European rivers (RIWA inquiry)

The following substances have been found in the rivers Meuse and Rhine in concentrations which breach the ERM-target value:

16. Metolachlor
17. Sotalol
18. Nicosulfuron
19. Chloridazon (and its metabolite desphenyl-chloridazon)
20. Tributyl phosphate

It should be established whether these 5 substances are also found in other rivers in Europe in concentrations which breach the drinking water standard (16, 18 and 19) or the ERM-target value (17 and 20). Also the following substances were found to breach ERM-target values in these two rivers which also have a low $PNEC_{fw}$:

21. Trichloroacetic acid
22. Fluoride
23. Di-(2-methyl-propyl)phthalate
24. Terbuthylazine
25. Chlortoluron
26. Propranolol

It should be established whether these 6 substances are also found in other rivers in Europe in concentrations which breach the drinking water standard (22, 24 and 25) or the ERM-target value (21, 23 and 26).

[7] Thomas ter Laak & Kirsten Baken, The occurrence, fate and ecological and human health risks of metformin and guanylurea in the water cycle - A literature review.