# 2013 Freshwater Eionet Workshop - 19/20 September 2013, Copenhagen

## Session 1: Use of the data, integration and DPSIR assessment

## Document 1b(1): Brief assessments related to EEA s Core set indicators on water quality by Peter Kristensen (EEA)

### Background

In the rivers, lakes and groundwater Waterbases, the EEA holds water quality data, reported voluntarily by EEA member countries each year. These data reflect a representative sub-sample of national monitoring results. Data are transferred on an annual basis from the countries to the EEA, and are stored in the Agency’s ‘Waterbase’. By May 2013, EEA Waterbase contained a vast amount of water quality information covering more than 10 000 river stations in 37 countries, 3 500 lake stations in 35 countries, 5 000 coastal stations in 28 countries, and around 1 500 groundwater bodies.

The data reported in the WISE-SoE databases makes it possible to evaluate trends in water quality and to illustrate water quality levels by different regions, countries and River Basin Districts. The data are the basis for the two EEA core set indicators:

* Oxygen consuming substances in rivers (CSI 019) — <http://www.eea.europa.eu/data-and-maps/indicators/oxygen-consuming-substances-in-rivers/oxygen-consuming-substances-in-rivers-5>.
* Nutrients in freshwater (CSI 020) — <http://www.eea.europa.eu/data-and-maps/indicators/nutrients-in-freshwater/nutrients-in-freshwater-assessment-published-3>

CSI19 illustrates trend in organic matter, measured as biochemical oxygen demand (BOD) and total ammonium. Both determinants are key indicators of pollution by oxygen-consuming substances. Severe organic pollution may lead to rapid deoxygenation of river water, a high concentration of ammonia, and the disappearance of fish and aquatic invertebrates. Mainly due to the implementation of secondary biological wastewater treatment under the UWWTD Directive (91/271/EEC), concentrations of BOD and total ammonium decreased in European rivers in the period from 1992 to 2010.

CSI20 illustrates water quality related to nutrients (nitrate and phosphorus) in groundwater, rivers and lakes. The main results show:

* Average nitrate concentrations in European ground waters increased from 1992 to 1998, but have declined again since 2004.
* The average nitrate concentration in European rivers decreased by approximately 11 % between 1992 and 2010 (from 2.5 mg/l N to 2.2 mg/l N), reflecting the effect of measures to reduce agricultural inputs of nitrate as well as improvement in wastewater treatment.
* Average phosphate concentrations in European rivers have decreased markedly over the last two decades, falling by more than half between 1992 and 2010 (a 54 % decrease). Also, average lake phosphorus concentrations decreased over the same period (by 31 %).

Before the Eionet Freshwater workshop updated versions of CSI19 and CSI20 (including 2011 data) will be made available for Eionet consultation. In addition, draft assessment documents using CSI19 and CSI20 as starting points will be distributed to the National Reference Centres. These assessments will include a.o.:

* evaluation of the observed trends in light of pressures and impacts, based on combined analysis of CSI19 and 20 and other data (WFD pressure data, bathing water etc.)
* suggestions for indicator improvements (new determinants, length of data series, aggregation of time series etc.)

A draft document exploring the biological data is supplied here. An updated version of this document will be distributed prior to the Eionet meeting.

### Items for discussion and questions to NRCs

### The national reference centres are as preparation for the Eionet workshop asked to:

1. Familiarise with the current water quality indicators, and if relevant, make comments and suggestions for improvements of the indicators.
2. As most countries have similar water quality indicators related to organic (oxygen consuming substances) and nutrients a review of the EEA indicators may take the offset by comparing the national indicators with the EEA indicators.
3. NRCs are asked to reflect on the causes of observed trends and spatial differences in water quality; again such reflections could start with the observed national trends and the underlying causes. In particular, relationship between trend in BOD, total ammonium and phosphorus and upgrade of wastewater treatment, and trend in nitrate concentration and agricultural fertilisation should be evaluated.
4. EEA would very much welcome good national examples related to impact of organic pollution and nutrient pollution (eutrophication) such as improved biological quality (macroinvertebrates) of rivers due to less organic pollution; and impacts of eutrophication such as improved Secchi disc transparency, change in chlorophyll a and phytoplankton.