

Phosphorus Analysis Sylt Roads (Johannes Rick)

Dissolved phosphorus species (TDP – total dissolved phosphorus; DIP or SRP – dissolved inorganic phosphorus or soluble reactive phosphorus; DOP – dissolved organic phosphorus) were analyzed as follows:

TDP: Samples were filtered through previously combusted GF/C filters, the filtrate was mixed 10:1 by volume with an oxidation mixture (3,75 g NaOH, 12,5 g potassium peroxodisulfate, 7,5 g boric acid in 250 ml MilliQ water) and subsequently treated in an autoclave at 1 bar and 120°C for 40 min to convert dissolved organic phosphorus components to dissolved inorganic ones. Finally, the sample was measured after Grasshoff et al. (1983). For SRP analysis the untreated filtrate was measured after Grasshoff et al. (1983), too. DOP was calculated as the difference between both measures: $DOP = TDP - SRP$.

Particulate phosphorus species (POP-particulate inorganic phosphorus; PIP – particulate organic phosphorus; TPP – Total particulate phosphorus) were differentiated according to Aspila et al. (1976):

For each sampling date, two identical suspended matter samples were collected on previously combusted CF/C filters and stored at -20°C for subsequent analysis. The first filter was combusted at 520 °C for 2 h and the dissolved inorganic phosphorus components extracted for 16 h using 6 ml 1 N HCl. The analysis for TPP was performed using the neutralized extract (Grasshoff et al., 1983). PIP analysis was done the same way using the non-combusted 2nd filter. POP was calculated as difference $POP = TPP - PIP$. POP and PIP data are given in two units: $\mu\text{mol/L}$ and $\mu\text{mol/g}$ seston. %POP describes the percentage of POP within TPP.

References:

Aspila, K.I., H. Ageman, and A.S.Y. Chau (1976): A semiautomatic method for the determination of inorganic, organic and total phosphate in sediments. *Analyst* 101: 187-197.

Grasshoff, K., M. Ehrhard, and K. Kremling (1983): *Methods of Seawater Analysis*. Verlag Chemie, Weinheim, Germany.