Manual for Marine Monitoring in the

COMBINE

Programme of HELCOM

Part B

General guidelines on quality assurance for monitoring in the Baltic Sea

Annex B-16

Technical note on co-factors analysis

Last updated: 29.10.2012 (Annex number changed from Annex B 17 to Annex B 16)

ANNEX B-16 TECHNICAL NOTE ON CO-FACTORS ANALYSIS

(after revision by the MCWG 2000 meeting)

1. CO-FACTORS, DEFINITION AND USE

A co-factor is a property in an investigated sample, which may vary between different samples of the same kind, and by varying may affect the reported concentration of the determinand. Thus the concentration of the co-factor has to be established in order to compare the determinand concentrations between the different samples (e.g. for the purpose of establishing trends in time or spatial distribution) by normalisation to the co-factor.

By the definition given above it is understood that the correct establishment of the co-factor concentration is just as vital to the final result and the conclusions as is the correct establishment of the determinand concentration. Thus the co-factor determination has to work under the same QA system, with the same QA requirements and the same QC procedures, as any other parts of the analytical chain. It is also vital that QA information supporting the data contains information on the establishment and use of any co-factors.

2. CO-FACTORS IN BIOTA ANALYSIS

DRY WEIGHT

Freeze-drying or heat drying at 105 C can be used. Dry to constant weight in both cases. By constant weight is meant a difference small enough not to significantly add to the measurement uncertainty.

LIPID CONTENT

The method by Smedes (1999), which uses non-chlorinated solvents and has been demonstrated to have high performance, is recommended. This method is a modification of the Bligh and Dyer (1959) method, and can be performed using the same equipment. The two methods have been shown to give comparable results.

PHYSIOLOGICAL FACTORS

Age, sex, gonad maturity, length, weight, liver weight etc. are important co-factors for species of, for example, fish. For more information see Section D5 of the COMBINE manual.

3. CO-FACTORS IN WATER ANALYSIS

PARTICULATE MATERIAL

Determined by filtration through filter according to the ISO 11923:1997 standard.

ORGANIC CARBON

The method recommended is described in Annex C-2 of the COMBINE manual.

SALINITY

Salinity (and temperature) may be defined as a co-factor in investigations where mixing of different water masses is studied or takes place. The same standard oceanographic equipment as described in the technical note on salinity is used, and the performance requirements will also be the same.

4. QA INFORMATION TO SUPPORT DATA

When reporting data that has been normalised to a co-factor, or where the co-factor data is reported along with the results, always supply the following information:

- Type of co-factor (parameter)
- Analytical method for the co-factor
- Uncertainty in the co-factor determination
- How the co-factor has been used (if it has)
- Results from CRMs and intercomparison exercises (of the co-factor)

REFERENCES

F. Smedes, Determination of total lipid using non-chlorinated solvents, The Analyst, 1999, 124, 1711

E.G. Bligh and W.J. Dyer, Can. J. Biochemical Physiol., 1959, 37, 911

ISO 11923:1997 Water quality -- Determination of suspended solids by filtration through glass-fibre filters