

## **DMMP/SMS CLARIFICATION PAPER**

### **CHEMICAL ANALYSIS OF ARCHIVED SEDIMENT SAMPLES**

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#### **INTRODUCTION**

An environmental laboratory in the Puget Sound region recently sought guidance from the Department of Ecology on appropriate handling of archived sediment samples. The main question involved whether or not to decant any overlying water from the sample container prior to chemical analysis. The lab claimed that this is an acceptable option under the current PSEP Protocols and Guidelines.

#### **PROBLEM IDENTIFICATION**

Under the most recent PSEP Protocols and Guidelines, environmental laboratories may elect to decant any overlying water that may accumulate at the top of an archived sample *prior to chemical analysis*. The protocols state, "It is extremely important that the sample be clearly defined prior to starting the analysis. In general, current references recommend that excess or overlying water in a sample be decanted prior to subsampling (EPA, 1987; EPA, 1994; EPA, 1995). For some projects, the concentration of analytes in the interstitial water associated with the solid phase may be of interest (e.g., oiled sediments). **Decanting, centrifugation and discarding this water may bias the results.** If concentrations in the whole sample (i.e., including interstitial water) are of interest, the decanted water should be extracted as a liquid sample and the resulting extract combined with the sediment extract (EPA, 1987).

Alternatively, the overlying water in the sample can be mixed into the sediment prior to subsampling. The desired procedure should be specified in the project planning document to ensure the generation of data appropriate to project goals. If samples are decanted, this should be reported with the final data and the percent solids should be determined on a decanted sample." (*Organics Chapter, 5.3.2 Sediment, 4/97*) As noted in the protocols, this practice clearly leads to an unwarranted loss of contaminants from the original sample and yields inaccurate results. While it is true that most sediment contaminants tend to adsorb to particles, a significant fraction of the total sample contaminants may occur in the interstitial or porewater.

#### **PROPOSED CLARIFICATION**

To accurately represent the chemical concentrations originally present in the sample when collected, prior to being archived, the dissolved fraction must also be analyzed as described above. Samples archived at 4° Celsius must not be decanted prior to chemical analysis.

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## **REFERENCES**

PSEP, 1997 Recommended Guidelines For Measuring Organic Compounds in Puget Sound Water, Sediment and Tissue Samples