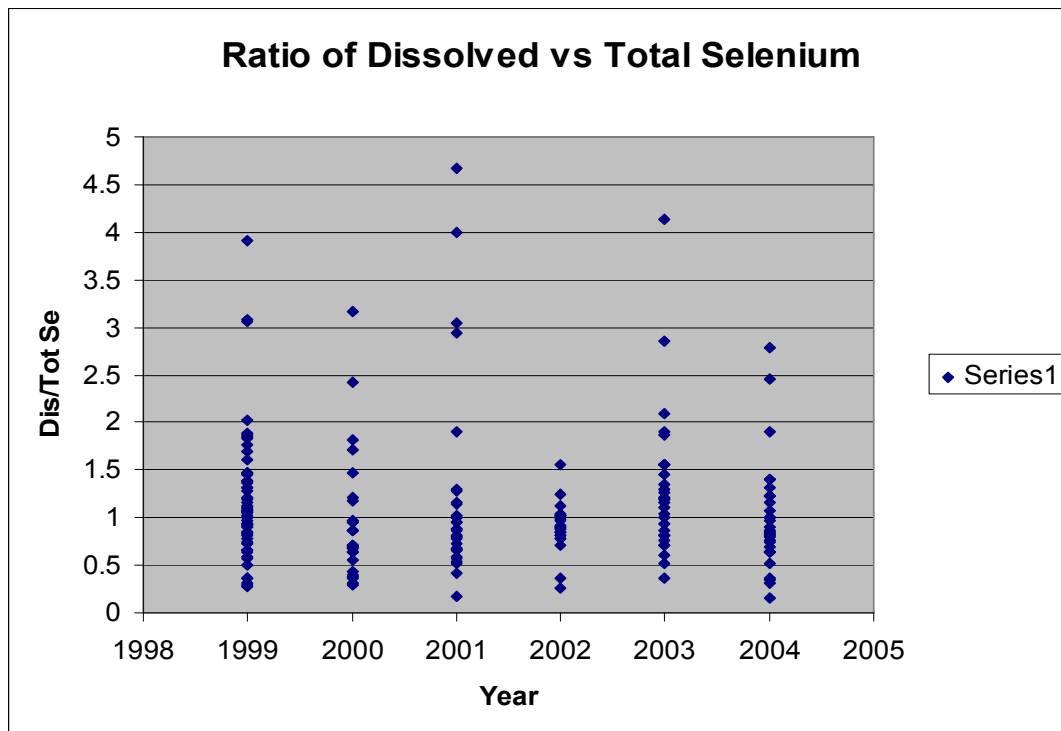


Item No. 8: Information: Dissolved vs. Total Concentrations of Selenium in Water

Issue

In the December TRC, it was noted that dissolved selenium (Se) concentrations frequently exceeds total Se concentrations.



Values of total and dissolve range from detection limit of 0.03 to 0.4 ug/L

Possible causes:

1) Filtration process causes an increase in dissolved concentrations (e.g., introduced contamination from the filters)

- Two filter blanks analyzed and concentrations are below detection limit.

2) Samples are near the method detection limit and therefore, the discrepancy is an artifact.

- Possible but bulk of the samples are three times MDL
- MDL is for DI and not seawater. MDL may be unrealistic given the sample matrix

3) Incomplete recovery of total concentrations

- MS/MSD generally good – suggesting good recovery; however, concentrations are sometimes two orders of magnitude greater than environmental sample (spike 10 ug/L vs sample at 0.1 to 0.3 ug/l)
- Partial digestion -- laboratory notes that during acid digestion process a film/precipitate can form on surfaces if not agitated during the digestion process. Get partial digestion of sample (i.e. incomplete conversion).

Corrective Actions:

- Matrix spikes within environmental sample range
- Work with lab to avoid incomplete digestions.
- New methodologies
- Solicit advice from other laboratories
- Split samples for 2005 RMP S&T