

## **Extraction and Optical Fluorescence Method for the Measurement of Trace Beryllium in Soils<sup>#</sup>**

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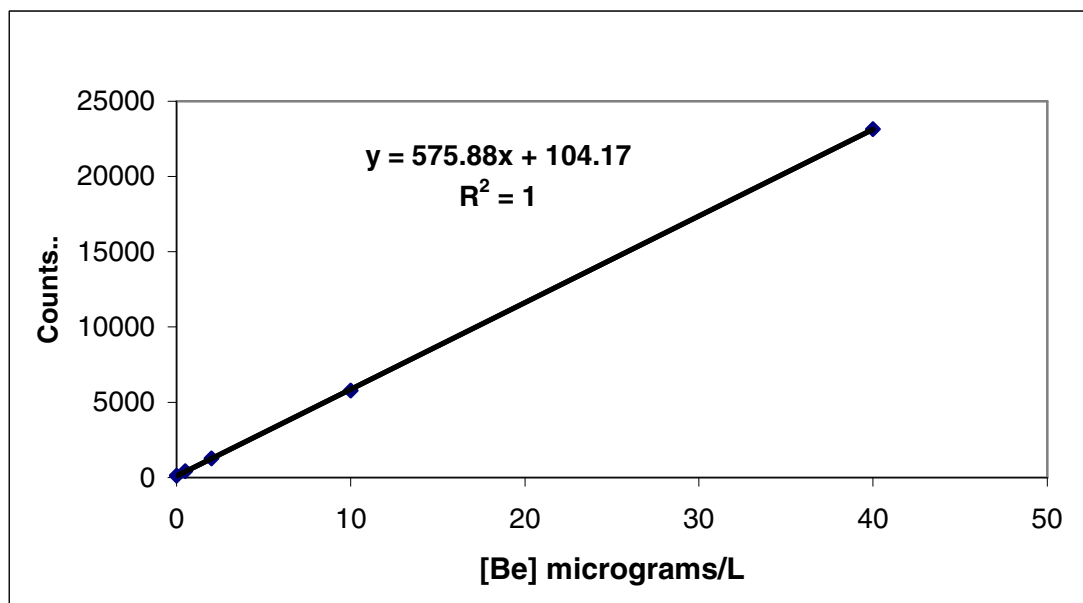
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**Experimental**

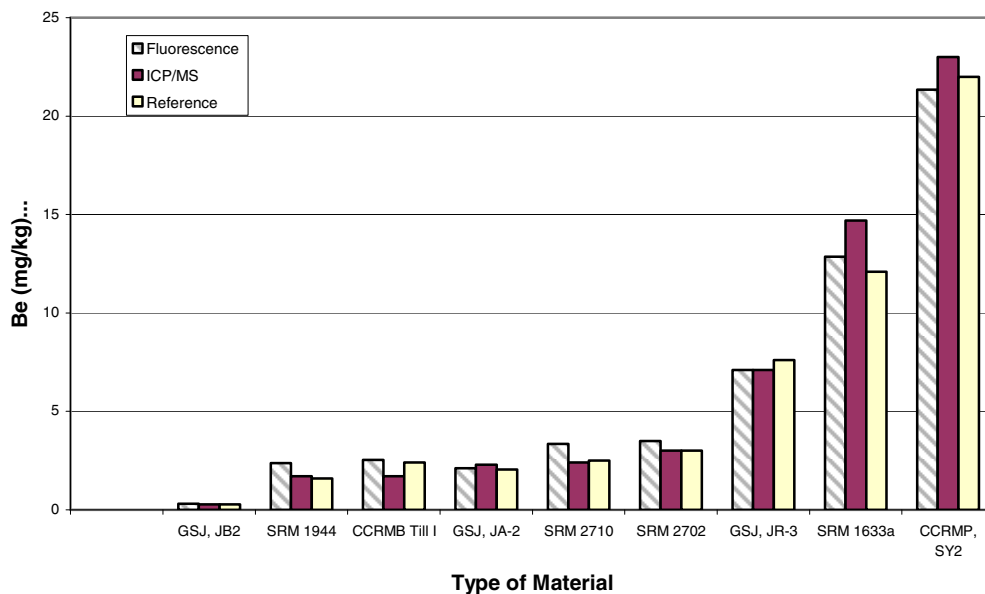
Materials used in the preparation of the samples for fluorescence were as follows; Polypropylene 15-mL centrifuge tubes and 60-mL flat-bottom vials, 25-mm diameter nylon syringe filters (0.45  $\mu\text{m}$  pore size), plastic 5-mL syringes, and disposable fluorescence cuvettes (10-mm diameter) were obtained from Fisher Scientific (Waltham, MA, USA). A Labquake<sup>®</sup> rotator (Barnstead, Dubuque, IA, USA) was used for mechanical agitation of 15-mL tubes during the dissolution step at room temperature ( $23 \pm 1^\circ\text{C}$ ), and a VWR Digital Heatblock (West Chester, PA, USA) was employed for heating of 15-mL tubes at  $80 \pm 2^\circ\text{C}$ . Heating experiments for dissolution using the 60-mL vials were done by placing these in a laboratory oven at  $85 \pm 2^\circ\text{C}$ . Typically 0.5g of soil was reacted in 50ml of ABF solution.

Figure SI-S1 shows a typical standards plot used to calibrate the fluorometer. Insert is the formula used for the regression fit.



**Figure SI-S1: Calibration curve for Be standards 0, 0.5, 2 and 40 $\mu\text{g/L}$  generated using the Turner Quantech Fluorometer.**

Figure SI-S2 is a comparison of fluorescence, ICP-MS and reference values for the different materials used in the study. The conditions for the extraction are given in the figure caption.



**Figure SI-S2: Comparison of beryllium reference values to those determined by fluorescence and ICP-MS by using dissolution of 0.5 g of material using 50 ml of 3% ABF solution for 40 hours at 90°C**