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QUANTITATIVE ANALYSIS OF ELEMENTS IN SEDIMENTS AND SOILS BY X-RAY FLUORESCENCE: A REPLY

Key Words—Sample Homogeneity, Soil Analysis, X-ray Fluorescence.

Since the references cited in Tuncer *et al.* (1977) address many of the points raised by Subramanian (1979), e.g., Diehl (1970) for the determination of iron in earth materials, we do not feel obliged to elaborate on all of his comments. However, his remarks on grain-size distribution which directly influences the homogeneity of a sample deserve special attention.

For the sake of brevity the method of sample preparation used in the original experiments was not outlined in detail in the 1977 paper; however, all of the materials used were ground to pass a 200 mesh sieve to assure a maximum composite particle size of less than 75 μm, which was considered satisfactory for achieving homogeneity for relatively strong iron radiation. The internal standard and the unknown sample were then thoroughly mixed and reground in a high-speed vibratory ball mill to achieve homogeneity as much as possible. The linear fit of the experimental data was taken as a verification of the reliability of the method for iron radiation. It should be pointed out, of course, that for determination of lower atomic number elements, more elaborate methods of sample preparation may be needed. The fusion method recommended by Subramanian may provide a solution to the heterogeneity problem even though it may complicate other matters. Subramanian's criticisms with respect to sample homogeneity are well taken.

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REFERENCES

Diehl, H. (1970) *Quantitative Analysis*: Oakland Street Press, Ames, Iowa.

Subramanian, V. (1979) Quantitative analysis of elements in sediments and soils by X-ray fluorescence: a discussion: *Clays & Clay Minerals* **27**, 305.

Tuncer, E. R., Demirel, T., and Lohnes, R. A. (1977) Quantitative analysis of elements in sediments and soils by X-ray fluorescence: *Clays & Clay Minerals* **25**, 73–77.

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