

COMMENTS AND LETTERS TO THE EDITOR

“Calgon” No Longer Suitable

I would like to sound a warning regarding the continuous use of Calgon as the dispersing agent in grain size analyses of soils as it may cause serious errors. Following its introduction as an efficient dispersant (Tyner, E. H., 1939. Soil Sci. Soc. Am. Proc. 4:106-113.), technical grade Na-hexametaphosphate (NaPO$_4$)$_6$ was marketed under the common name of Calgon. As such it was cheaper than reagent grade chemicals and the small amounts of Na$_2$CO$_3$ added to it assured the desired high pH of the dispersing solution.

Being a slowly decomposing detergent, Calgon was eventually forced to change its formula, and did so without changing name or packaging. The currently marketed Calgon does not contain any soluble phosphates, and is hence no longer as effective for dispersing soils. Where such Calgon continues to be used for dispersion, and I have found several laboratories not being aware of the change in the content of the package, the clay percentages obtained may be seriously in error and should be viewed with suspicion.

As pyrophosphates have been shown equally effective in dispersing soils (Lameris, C. L., 1964. Neth. J. Agric. Sci. 12:40-56), it is recommended that the more easily available Na-pyrophosphate (Na$_4$P$_2$O$_7$) be adopted for common use in mechanical analysis of soils and that the name Calgon be dropped from all instruction manuals. A solution concentration of 0.02N with regard to Na$^+$ and adjusted to pH 9.5-10.0 is suitable for most soils.

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Determination of Arsenate, Methanearsonate, and Dimethylarsinate in Water and Sediment Extracts

A recent paper by Yamamoto (1975) proposed a method for separation of three arsenical compounds in water and sediment extracts. While their proposed method does well in studies with the addition of known compounds to pond water and sediments, there are two shortcomings of the procedure: (i)—only the absence of any extractable arsenical can be proven; and (ii)—other arsenicals, natural or man-made, can elute from the ion exchange column in a fraction designated as containing one of the subject arsenicals.

To expound a little further, the method is nonspecific as there is no proof that arsenic found in any particular fraction of the eluant is indeed arsenate, methanearsonate, or dimethylarsinate. Arsenic undergoes cyclical distribution in nature, and it has been found in compounds of greater complexity than the aforementioned three compounds. When oxidized, the trimethylarsineoxide has the same elution characteristics, using the Yamamoto (1975) procedure, as the dimethylarsinate. Since both are likely to occur in natural waters, the appearance of arsenic in the specified fraction cannot be attributed solely to the dimethylarsinate.

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Literature Cited


Methylene Bromide as a Manometer Liquid for Tensiometers

Tensiometers is an established method of determining water pressures. Appropriate use of tensimeters, such as a mercury manometer or a Bourdon gauge, is often required. However, commercially available instruments are not sufficiently sensitive to meet our requirements to measure changes in water pressures. We constructed tensiometers with software and hardware modifications to meet our requirements.

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