We took care not to invert the tubes, because zinc in the rubber stopper has been shown to be the main source of contamination (*1*). Zinc was measured by flame atomic absorption spectrophotometry (Perkin-Elmer, Model 370).

Mean zinc concentration of samples drawn into conventional tubes (no. 4710) were respectively 1470, 1460, and 1460 μg/L after the three time intervals (Table 1). The mean zinc concentration of samples drawn into the special tubes (no. 6527) were 1060, 1040, and 1080 μg/L, which is significantly decreased ($p < 0.01$) in comparison to zinc concentrations in conventional tubes. In addition, blood zinc concentrations measured at two days and two weeks did not differ significantly from the 2-h values, indicating no further contamination occurred. Thus we confirm (2) that use of the special tubes for trace metal analysis does decrease the serum zinc contamination as compared to conventional stoppered tubes.

To determine if serum zinc concentration was correlated with contamination, we plotted zinc concentration in blood drawn into trace-element tubes (x) vs zinc concentrations in blood drawn into conventional tubes (y). A linear regression line ($y = -35.5 + 0.99x$) and a correlation coefficient of 0.92 ($p < 0.01$) was obtained. Evidently, zinc contamination does not vary with serum zinc concentration, but remains constant. Thus, when the extent of contamination is known and constant, a correction factor may perhaps be used to calculate actual serum zinc concentrations.

INCAP Publication C-98

Minimizing Contamination of Specimens for Zinc Determination

To the Editor:

A blood-collection tube was recently marketed by Becton Dickinson (BD, no. 6527) especially for use in sampling blood for trace-element determination. We have used these tubes and conventional BD Vacutainer Tubes (no. 4710) to determine serum zinc concentrations in adults.

Blood was drawn from six healthy subjects into both types of tubes and stored at −20 °C. Samples were analyzed after 2 h, two days, and two weeks.

References

1. Helman, E. Z., Wallick, D. K., and Reingold, I. M., Vacutainer contamination in trace-element studies. *Clin. Chem.* **17**, 61–62 (1971).

2. Reimold, E. W., and Besch, D. J., Detection and elimination of contaminations interfering with determination of zinc in plasma. *Clin. Chem.* **24**, 675–680 (1978).

3. Urquhart, N., Zinc contamination in trace-element control serum. *Clin. Chem.* **24**, 1652–1653 (1978).

Table 1.

Zinc Found in Blood from Six Persons, Drawn into Trace-Analysis Tubes (No. 6527) and Conventional Tubes (No. 4710)

2-h storage		Two-day storage		Two-week storage	
6527	4710	6527	4710	6527	4710
		μg/L			
1070	1320	1070	1320	1130	1390
1450	1760	1390	1830	1390	1760
1010	1450	950	1450	950	1390
1010	1510	1070	1510	1070	1450
880	1320	820	1260	950	1320
950	1450	940	1390	1010	1450
$\bar{x} \pm$ SEM	1060 ± 80	1470 ± 70	1040 ± 80	1460 ± 80	1080 ± 70	1460 ± 60
p value	<0.01		<0.01		<0.01	