

U.S. Department of Commerce  
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National Bureau of Standards  
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# National Bureau of Standards Certificate of Analysis Standard Reference Material 2672 Freeze-Dried Urine Certified for Mercury

This Standard Reference Material is intended primarily for use as an analytical standard for the determination of mercury in urine. This standard consists of two bottles of freeze-dried human urine containing mercury at low and elevated levels, respectively. The certified values are based on analysis of the reconstituted urine, resulting from addition of 50 ml of pure water, (i.e., containing less than 0.0001 mg/l Hg), to each bottle.

Material	Mercury, mg/l
Low Level	0.0498 ± 0.0042
Elevated Level	0.294 ± 0.024

The certified values are based upon the determination by cold vapor atomic absorption spectrometry of the mercury content of samples randomly selected from the entire lot. Confirmatory analyses were made by isotope dilution mass spectrometry for both materials and by neutron activation analysis for the elevated level material.

The certified values are the means obtained in the measurement of seven samples while the uncertainties represent the 95 percent tolerance limits based on measurement errors and variability between samples.\*

The Standard Reference Materials should be reconstituted by addition of 50 ml of pure water to each bottle. The water used should be demonstrated not to contain mercury, or suitable blank corrections should be made for its mercury content. The reconstituted materials may be considered as fresh urine and should be handled under the same conditions as such samples.

The certified values are based upon measurements made at the National Bureau of Standards by T. C. Rains, M. S. Epstein, and M. A. Waguespack while the confirmatory analyses were made by J. R. Moody, P. J. Paulsen, and M. J. Seward, and also by T. E. Gills, L. T. McClendon, and H. L. Rook. Statistical analysis was made by H. H. Ku. The overall direction and coordination of the technical measurements leading to certification was performed under the chairmanship of J. K. Taylor.

The technical and support aspects involved in certification and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by C. L. Stanley and W. P. Reed

\* See page 14, The Role of Standard Reference Materials in Measurement Systems, NBS Monograph 148, 1975. The concept of tolerance limit is also discussed in Chapter 2, Experimental Statistics, NBS Handbook 91, 1966.

In brief, if measurements were made on all the units, almost all (at least 95 percent) of these measured values would be expected to fall within the indicated tolerance limits with a confidence coefficient of 95 percent (or probability = .95).