U.S. Department of Commerce
Juanita M. Kreps
Secretary
National Bureau of Standards
Ambler, Acting Director

National Bureau of Standards
Certificate of Analysis
Standard Reference Material 1577
Bovine Liver

This Standard Reference Material is intended for use for the calibration of apparatus and the validation and/or verification of methods used in the chemical analysis of animal tissue for major, minor, and trace elements.

Certified Values of Constituent Elements: The certified values for the constituent elements are shown in Table 1. Certified values are based on results obtained by reference methods of known accuracy and performed by two or more analysts; or alternatively, from results obtained by two or more independent, reliable analytical methods. Noncertified values are given for information only in Table 2. All values are based on a minimum sample size of 250 mg of the dried material. The analytical techniques used and the names and affiliations of the analysts are shown in Table 3.

Notice and Warnings to Users:

Expiration of Certification: This certification is invalid after 5 years from the date of shipping. Should it become invalid before then, purchasers will be notified by NBS.

Stability: The material should be kept in its original bottle and stored at temperatures between 10-30 °C. It should not be exposed to intense sources of radiation, including ultraviolet lamps or sunlight. Ideally, the bottle should be kept in a desiccator in the dark at the temperature indicated.

Use: A minimum sample of 250 mg of the dried material (see Preparation, Testing, and Analysis) should be used for any analytical determination to be related to the certified values of this certificate.

The overall direction and coordination of the analytical chemistry measurements leading to this certificate were performed in the NBS Analytical Chemistry Division by P. D. LaFleur and H. L. Rook. The overall coordination of the cooperative work performed by the Commission of European Communities, Joint Research Center, Ispra Establishment, Italy, was by G. Rossi of the Chemistry Division.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by T. W. Mears.

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J. Paul Cali, Chief
Office of Standard Reference Materials

(over)

Table 1. Certified Values of Constituent Elements

Element	Content[a] (Wt. Percent)
Nitrogen	10.6 ± 0.6
Potassium	0.97 ± 0.06
Sodium	0.243 ± 0.013
	(μg/g)
Magnesium	604 ± 9
Iron	268 ± 8
Copper	193 ± 10
Zinc	130 ± 13
Calcium	124 ± 6
Rubidium	18.3 ± 1.0
Manganese	10.3 ± 1.0
Selenium	1.1 ± 0.1
Lead	0.34 ± 0.08
Cadmium	0.27 ± 0.04
Chromium	0.088 ± 0.012
Arsenic	0.055 ± 0.005
Mercury	0.016 ± 0.002

[a]Dry weight: For drying instructions, see the section of this certificate on Preparation, Testing, and Analysis.

The reported concentrations are based on results of 6 to 12 determinations by at least two methods. The estimated uncertainties include sample variations, possible methods differences, and error of measurement (but in no case less than the 95 percent confidence limits computed for the concentrations).

Table 2. Noncertified Values of Constituent Elements

Element	Content[a] (Wt. Percent)
Phosphorus	(1.1)
Chlorine	(0.27)
	(μg/g)
Antimony	(0.005)
Beryllium	(0.017)
Cobalt	(0.18)
Indium	(0.05)
Iodine	(0.18)
Molybdenum	(3.4)
Silicon	(17)
Silver	(0.06)
Strontium	(0.14)
Thallium	(0.05)
Uranium	(0.0008)

[a]Dry weight: For drying instructions, see the section of this certificate on Preparation, Testing and Analysis.