Interlaboratory Survey on Thallium in Urine*

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Summary. Quality assurance of analytic results was legalized in the Federal Republic of Germany by the law regulating the calibration of measuring devices of July 11, 1969, and the ordinance concerning the exception from compulsory calibration dated June 29, 1970. Accordingly, in the field of health care the Guidelines of the Medical Society of West Germany for the realization of quality assurance activities have to be followed. Since January 1, 1974, the law regulating the calibration of measuring devices has been fully effective.

In the field of legal medicine the clinico-toxicologic analysis is considered to be a part of health care. As far as quantitative determinations are considered, these analyses have to follow the regulations mentioned above. To fulfil the basic program, adequate control samples are necessary. For toxicologic analysis there have been no control samples so far. Therefore, a control sample for thallium has been developed which can be used for long- and short-term interlaboratory surveys. The results are reported.

Key words: Quality assurance, thallium – Interlaboratory survey, thallium – Thallium, quality assurance


Von den in rechtsmedizinischen Instituten durchgeführten Untersuchungen stellen mindestens die klinisch-toxikologischen eine Tätigkeit im

* Dedicated to Prof. Dr. Oskar Grünner on the occasion of his 65th anniversary

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Internal and external quality control are essential for quality assurance in the analysis of biologic material. This is true for samples with environmental, occupational, and clinico-toxicologic relevance.

Quality assurance for the results of analyses in the Federal Republic of Germany has a legal basis by the law regulating the calibration of measuring devices of July 11, 1969 (Eichgesetz). This law has to be applied to all laboratory equipment which is used for quantitative measurements and, in principle, consists of a calibration of laboratory equipment under official control. This is not feasible in practice; therefore, some exceptions have been made by governmental regulations (Eichpflicht-Ausnahmeverordnung).

Practically all quantitative analyses in the FRG related to health care have to be performed strictly according to the Guidelines of the Medical Society of West Germany (Bundesärztekammer 1974). These Guidelines include the following basic program (Stamm 1974, 1980).

1. Internal quality control: The first part of the internal quality control is the control of the precision at the most frequent decision limits by analyzing samples of the same control specimen in every run of analysis. The second part is the control of accuracy over the whole clinically relevant range of measurements by analyzing an accuracy control specimen in every 4th run of analysis, the control specimen being selected from a number of different control specimens kept on hand.

2. External quality control: The external quality control takes place in the form of short-term interlaboratory surveys with two control specimens having different concentrations.

In this basic program control specimens are used both for internal precision and accuracy control and for interlaboratory surveys. The same control specimens are used in short-term (Stamm 1969, 1971) and long-term interlaboratory surveys.

There are three approaches for the evaluation of interlaboratory surveys: The concentration of the analyte in each control sample is determined by
- consensus value approach,
- assigned value approach,
- reference method value approach.