



Assessment of Iodine Intake: Analytical Methods and Quality Control

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PRESENTATION ABSTRACT

A Review of CDC's EQUIP Program and Iodine Status of the U.S. Population

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Abstract

In 2001, the Centers for Disease Control and Prevention (CDC) established a program, Ensuring the Quality of Urinary Iodine Procedures (EQUIP), to assist laboratories around the world assess the accuracy and precision of their urinary iodine procedures. The accuracy and precision of measurements of iodine are important not only to monitor the status of iodine nutrition of populations around the world but also for quality assurance to ensure accurate data are collected to document efforts to eliminate iodine deficiency disorders. EQUIP urine iodine samples are prepared at CDC and assigned target values using CDC's inductively coupled plasma mass spectrometry (ICP-MS) methodology. Based on the analysis results of the pools and the desired target concentrations, we spike pools using National Institute of Standards and Technology (NIST) traceable single-element stock standard, if necessary, to obtain concentrations of about 10–400 μ g/L. Overall participation in this worldwide program was excellent, with 174 reference laboratories from 80 countries. Most of the participating laboratories use spectrophotometric monitoring of the Sandell-Kolthoff reaction with sample digestion accomplished by using either ammonium persulfate or chloric acid. ICP-MS provides a measurement standard by which other laboratories can assess accuracy and precision when measuring urinary iodine (UI). Since EQUIP was established, our data show the usefulness of the program, supporting the contention that interlaboratory comparisons are an effective tool for laboratory performance improvement. There has been significant improvement in the quality of data from laboratories measuring iodine in different parts of the world. EQUIP will continue to be a tool available to laboratories by encouraging good laboratory practices, providing an assurance of quality data, and assisting those who are establishing new laboratories or modernizing old ones. We will also share data on the National Health and Nutrition Examination Survey (NHANES) UI concentrations in the U.S. population.

References

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