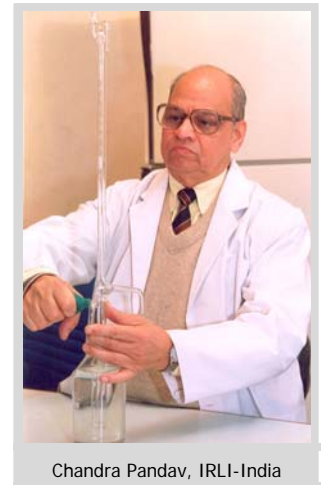


International Resource Laboratories for Iodine (IRLI) Network Bi-Annual Update, August 2006

IRLI Laboratories Fulfill Roles as Regional Resources

Laboratories in the International Resource Laboratories for Iodine (IRLI) Network serve as effective resources for their regions, thus strengthening the capacity of laboratories (labs) throughout the world to accurately measure iodine in urine and salt. As regional resources, IRLI labs provide both training and technical assistance to the labs in their regions. As reported by Chandra Pandav, IRLI-India representative, the IRLI-India lab provided valuable training for regional labs. Up to June 2006, IRLI-India held three training sessions and dissemination workshops for 75 technical staff members from 26 different salt-iodine labs. The labs that participated monitor the iodine content of salt at production and loading sites throughout India. IRLI-India lab also provided a three-week training to staff from the Institute of Nuclear Medicine and Allied Sciences, Ministry of Defense who also received technology transfer in urine iodine analysis.



Chandra Pandav, IRLI-India

IRLI-South Africa

The broad range of technical assistance and support provided by IRLI labs is well illustrated by the work of Pieter Jooste and Emmerentia Strydom of IRLI-South Africa. From 2005-06, IRLI-South Africa lab analyzed urine iodine samples collected from national nutrition surveys in Uganda and Mozambique. Recently, IRLI-South Africa lab analyzed urine and salt samples for 24 schools in Angola. IRLI-South Africa lab also provided technical support to a salt lab in Kabul, Afghanistan in the determination of iodine in salt using the WYD checker. IRLI-South Africa lab provided urine iodine analysis methods and exchanged quality control samples with Kenya Medical Research Institute. IRLI-South Africa lab slightly modified the WYD checker salt iodine assay to accommodate the availability and shelf life of reagents in developing countries.

IRLI labs also serve as resources for forming regional lab networks. The following items illustrate how IRLI labs have embraced this role:

IRLI-Guatemala

Carolina Martinez of IRLI-Guatemala manages a regional inter-lab network of 15 labs for analyzing iodine in salt. In October 2005, the seventh round of iodine salt samples for the program was sent to 15 participating labs in Central America network and other countries. During the past year, IRLI-Guatemala lab analyzed urine iodine survey samples for Haiti, Honduras, Nicaragua, and Guatemala. The lab also analyzed salt iodine samples for sentinel schools in Guatemala and Consumer's League Association of Guatemala. IRLI-Guatemala lab provided technical assistance to Honduras National lab in the determination of the iodine levels of salt. Early this year, the Guatemala lab evaluated labs in Nicaragua to assess their capacity to analyze urine iodine and recommended that Nicaragua purchase supplies and equipment for urine iodine analysis.



Proficiency test salt samples preparation, 2006.

IRLI-Peru

IRLI-Peru representatives Eduardo Pretell and Ana Maria Higa Yamashiro, runs a regional external quality assurance program for UI for 21 labs and salt iodine for 45 labs in 16 countries. The Peru lab provides quality control materials to these labs which are part of their countries iodine deficiency disorder control programs. Peru lab analyzed urine iodine survey samples over the past year for Bolivia, Brazil, and Haiti. In addition, the lab trained five Biochemists from Argentina (Division of Endocrinology of the Children Hospital), Brazil (Institute Adolfo Lutz and Hospital das Clinics), and Cuba (Institute of Nutrition and Foods Hygiene). The Sam Pino's method for urinary iodine analysis was transferred by Peru IRLI-lab to the following labs: Division of Endocrinology, Argentina; Institute of Nutrition and Food Technology, Santiago, Chile; Costa Rican Institute of Nutrition; Urinary Iodine Laboratory, Ministry Of Health, Quito, Ecuador; National Institute for Diagnosis and Epidemiologic References, Ministry Of Health, Mexico City; References Central Laboratory for Public Health Studies, Ministry Of Health, Panama; Food and Nutrition



National Institute, Ministry Of Health, Asunción, Paraguay; and Faculty of Chemistry, University of the Republic of Uruguay, Montevideo.

IRLI-Australia

In June 2005, IRLI-Australia lab on behalf of ICCIDD, evaluated and assessed the Iodine Laboratory of The Food and Drug Quality Control Centre, Vientiane, The Lao PDR to ensure that the lab was equipped appropriately to analyze March 2006, National urinary and salt iodine survey.

Gary Ma of IRLI-Australia reports that his lab maintains a UI quality assurance program within the region that sends samples twice a year to eight participating labs. In early 2006, the lab analyzed 3600 urine samples for iodine as part of Nepal national iodine survey. The Micronutrient Initiative Office in Nepal organized and sub-contracted the analysis of these survey samples to the IRLI-Australia lab.

IRLI-China

IRLI-China (Representative Li Sumei) runs an ongoing QC network for salt and UI analyses in at least 1,500 labs from provinces, prefectures, counties, and some universities in China, sending samples to each lab once a year for testing. In addition, seven labs from various regions in Vietnam participate in the network.

IRLI-Belgium

Daniella Gnat, IRLI-Belgium lab representative has formed a network of 40 iodine labs located throughout Europe. Participating labs receive quality control samples for testing through an inter-lab comparison program.

IRLI-India

IRLI-India lab analyzed 3600 urine iodine samples for Nepal as part of a national iodine survey. In addition, urine iodine samples were also analyzed for the endocrinology department school survey (200 samples) and Jharkhand State Survey (1200 samples) of India.

As reported by Chandra Pandav, IRLI-India representative, the IRLI-India lab provided valuable training for regional labs. Up to June 2006, IRLI-India held three training sessions and dissemination workshops for 75 technical staff members from 26 different salt-iodine labs. The labs that participated monitor the iodine content of salt at production and loading sites throughout India. IRLI-India lab also provided a three-week training to staff from the Institute of Nuclear Medicine and Allied Sciences, Ministry of Defense who also received technology transfer in urine iodine analysis.

IRLI-Bulgaria

Laboratories in the International Resource Laboratories for Iodine (IRLI) Network serve as effective resources for their regions, thus strengthening the capacity of laboratories (labs) throughout the world to accurately measure iodine in urine and salt. As regional resources, IRLI labs provide both training and technical assistance to the labs in their regions. For example, IRLI-Bulgaria representative Ludmila Ivanova visited Ashgabat, Turkmenistan, in January and February 2004 to assist in establishing an iodine laboratory in the Hospital for Mother and Child Health. Ludmila provided training to staff members on the ammonium persulfate method to measure iodine in urine and helped to implement proper internal quality control (QC) procedures. The new iodine laboratory analyzed 200 urinary iodine (UI) samples for the first time between January and February 2004. The samples were later cross-checked, and the results correlated well with results from the IRLI-Bulgaria laboratory.

IRLI-Russia

IRLI-Russia representatives Alexander Ilyin and Ekaterina Troshina have identified five labs in Russia that are equipped for UI analysis. IRLI-Russia lab staff plans to establish a regional external quality assurance program for these labs. In 2005, IRLI Russia lab analyzed 30 urine iodine samples for Armenia and 5200



IRLI-China holds a training session on data analysis.



IRLI-India Lab Staff at work in the urinary iodine lab, 2006.



With technical help from IRLI-Bulgaria representative Ludmila Ivanova, staff at the Hospital for Mother and Child Health in Ashgabat, Turkmenistan, establish a new iodine laboratory.

urine iodine samples for Russia. In 2005, IRLI Russia lab wrote guidelines for doctors in the analysis of urinary iodine.

IRLI-Cameroon

IRLI network labs also collaborate with the salt industry to ensure the production and distribution of adequately iodized salt. An example of this collaboration is the biyearly visits by IRLI-Cameroon representatives Dan Lantum and Julius Bonglaisin Nsawir to four iodized salt refineries in the port city of Douala, Cameroon. Two types of industrial iodized salt (table and fine salt) are collected from each industrial site and analyzed by titration method for iodine content to determine the trend of quality control and quality assurance in the salt manufacturing process. These salt refineries serve several countries in the Central African Region: Cameroon, Chad, Republic of Central Africa, Democratic Republic of Congo, Equatorial Guinea, and Gabon. During the visits, the representatives inspect and advise on the quality control and assurance system for the production of iodized salt. The IRLI-Cameroon lab has also offered to provide training for the refineries' lab technicians.

EQUIP Program Helps Laboratories Reach Quality Goals

A CDC program called Ensuring the Quality of Iodine Procedures (EQUIP) uses lab quality assurance as a tool for eliminating IDD worldwide. EQUIP is a CDC standardization program designed to provide urinary iodine labs with an independent assessment of their analytical performance. The program assists labs to monitor the degree of variability and bias in their urinary iodine assay. CDC established the EQUIP program in February 2001. Initially, CDC shipped samples to 34 labs from 24 countries. In June 2006, CDC shipped the 14th EQUIP round to 62 labs from 38 countries.

IRLI labs are required to participate in the EQUIP program. The labs are expected to meet the 80% proficiency score in the most recent three consecutive rounds of quality assurance testing. Labs that do not submit EQUIP results, must communicate the reasons to CDC EQUIP program as soon as possible and before the results submission deadline. For the year 2005, 58% of participating IRLI labs were granted a 'successful participation certificate' (scored 80% or higher) and 42% were granted a 'participation certificate' (scored less than 80%). IRLI labs that did not perform well, received additional technical assistance from CDC. Four IRLI labs did exceptionally well with a score of 100%. To improve efficiency of EQUIP, CDC has developed a Web-based data reporting system, now available at <https://www2a.cdc.gov/nceh/dls/itndatasubmission/login.asp>. The Web site has data submission forms, reports from previous EQUIP rounds, and a discussion board. Each EQUIP lab has received a login ID and a password, and all EQUIP labs are encouraged to use the Web site as a tool to communicate with staff members in other labs that conduct iodine analysis. Almost 60% of the participating EQUIP labs use the Web-based reporting system.



Example certificate of successful EQUIP participation.

Workshop on Region Wide Strengthening of Laboratory Support Methodology of IDD in the Central and East Europe/Common of Independent States (CEE/CIS)

CDC iodine lab staff, Drs Kathleen Caldwell and Amir Makhmudov attended the Istanbul, Turkey workshop, May 18-19, 2006. Participants also included lab and program personnel from UNICEF (Geneva Regional office, Turkey and Bulgaria), ICCIDD (Russia, and South Africa), Emory University (USA), Armenia, Belarus, Bosnia & Herzegovina, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Romania, Turkey, Turkmenistan, and Ukraine.

Purpose:

1. Contribute to national systems to continuously assess and analyze population iodine status (urinary iodine assays), salt iodine content and iodized salt supply in countries of CEE/CIS region through improved practices in internal quality assurance and external quality control (QC) of salt iodization, population surveillance/surveys, information management, training and technology transfer.
2. Develop technical guidance on population iodine assessment methods, which would enable each country of the Region to conduct quality assurance of iodine status/nutrition and iodized salt quality and supply monitoring.
3. Strengthen the networking among national, regional and international resource labs for iodine measurements in support of national public health and industry performance monitoring.

Key Issues, Outcomes and Accomplishments: Workshop participants from the CEE/CIS region included three IRLI labs from Russia, Bulgaria and Kazakhstan and eight labs that participate in CDC's EQUIP program. Most of the participating labs are successful and achieved high scores (80% proficiency on the EQUIP blind challenges). General plans for salt and urine iodine networks in the region were discussed. It was agreed upon that Bulgaria would serve as a coordinating center for the three IRLI labs in the region. IRLI-Bulgaria lab will be responsible for maintaining contact with iodine labs in the region (19 have been surveyed by ICCIDD recently). Bulgaria will be responsible for preparing and issuing one round of external quality assurance this year. The labs present at the workshop requested more guidance from CDC on proper procedures for preparing quality control/assurance material such as would be required to support an external quality assurance program for their region. CDC will provide written guidance or other training material defining the steps necessary to prepare bench quality control material, and distribute to all IRLI labs. The model we are striving is for CDC/EQUIP to support the IRLI labs and the IRLI labs to support their regions. Further discussions on survey design were useful.

Future plans: CDC, UNICEF and ICCIDD will work to encourage the regional coordinating lab (Bulgaria) to define the labs in the region (UNICEF has mapped labs currently measuring urinary iodine in the region). It will be important to keep the momentum going, with assistance in development of standard operating procedures. The lab network will continue to form a working agreement between country labs and resource labs for analysis, external quality control, training, and communication. The coordinating lab will develop information for communication with salt iodine labs. The salt labs in this region are more closely aligned and tied primarily to iodine producers. EQUIP will continue to support any lab that requests participation.

Workshop on Food-Based Strategy for the Sustained Elimination of Iodine Deficiency in the Russian Federation

The purpose of the workshop was to train Russian participants in urinary and salt iodine assay methods to monitor the urinary iodine level of the population and household salt iodine content. Workshop participants included personnel from the iodine laboratories, representatives of the Sanitary Epidemiological Service, and Medical Departments of Central Regions of Russia.

Outcomes

- There are four regional iodine labs left in the Russian federation from the nine labs that were created in the 1990's. In the regional labs, ammonium persulfate is the method of choice for the determination of urinary iodine.
- Addressed the need to standardize and improve the determination of urinary iodine levels in the lab and the use of external and internal quality controls for quality assurance purposes.
- There is a need in the region for the creation of iodine laboratories because of the extent of iodine deficiency in the region.
- Representatives of Sanitary Epidemiological Service recognized the importance and necessity to regulate the quality of the iodine content of salt.
- There is a need to coordinate communication and information exchange among iodine labs.

Internet Links to Iodine News

For updates and the latest iodine news, visit the following Web sites:

What's New from the Network for Sustained Elimination of Iodine Deficiency
<http://www.sph.emory.edu/PAMM/sang/partnership/board.htm>

Monthly Updates from the International Council for the Control of IDD (ICCIDD)
<http://www.people.virginia.edu/~7Ejtd/iccidd/monthlyupdates.htm>

UNICEF Nutrition Newsline
http://www.unicef.org/nutrition/index_newsline.html

WHO—selected recent publications and documents
<http://www.who.int/publications/en/>

Publications and Achievements of CDC Iodine Lab

1. Amir Makhmudov, Kathleen L. Caldwell, and Robert L. Jones. CDC iodine lab. Use of Inductively Coupled Plasma Mass Spectrometry to measure urinary iodine in EQUIP. Poster winner of the 2006 Winter Conference on Plasma Spectrochemistry, Tucson, Arizona, January 8-14th, 2006.
2. Caldwell KL, Jones R, Hollowell JG. Urinary iodine concentration: United States National Health And Nutrition Examination Survey 2001-2002. *Thyroid*. 2005 Jul; 15 (7):692-9.
3. Caldwell KL, Makhmudov A, Jones RL, Hollowell JG. EQUIP: a worldwide program to ensure the quality of urinary iodine procedures. *Accred Qual Assur*. 2005; 10:356-361.
4. Dearth-Wesley T, Makhmudov, Pfeiffer CM, Caldwell K. Fast and reliable salt iodine measurement: evaluation of the WYD Iodine Checker in comparison with iodometric titration. *Food Nutr Bull*. 2004 Jun; 25 (2):130-6.

Publications of IRLI labs Network

IRLI-Australia

The long awaited Australian National Iodine Nutrition Study was published in the Medical Journal of Australia (MJA 184, 4 p165-169). In this study, 1709 students from 88 schools in mainland Australia were surveyed to determine the population iodine status of Australia school children. Australia is classified as borderline iodine deficiency with a population median urinary iodine level of 104 µg/L. Thyroid volumes in Australia school children are marginally increased compared with international normative data obtained from children living in iodine sufficient countries. Therefore, mandatory fortification of salt with iodine as a public health strategy is under consideration. The IRLI-Australia lab is discussing with appropriate government regulatory bodies to implement salt iodization as soon as possible.

IRLI Resource Laboratories

Australia

Institute of Clinical Pathology and Medical Research
Gary Ma, garym@icpmr.wsahs.nsw.gov.au

Belgium

Centre Hospitalier Universitaire Saint-Pierre
Daniella Gnat, daniella.gnat@pi.be or Daniella_GNAT@stpierre-bru.be

Bulgaria

National Center of Hygiene, Medical Ecology and Nutrition
Ludmila Ivanova, Livanova@nchmen.government.bg

Cameroon

Faculty of Medicine and Biomedical Sciences
Dan Lantum and Julius Bonglaisin Nsawir, dlantum@camnet.cm

China

National Reference Laboratory for IDD
Disease Control Department, Ministry of Health
Li Sumei, lisumei@icdc.com.cn

Guatemala

Food Safety and Fortification Area
Institute of Nutrition of Central America and Panama (INCAP)
Carolina Martinez, cmartine@incap.ops-oms.org

India

All India Institute of Medical Sciences
Centre for Community Medicine
Chandrakant Pandav, cspandav@mantraonline.com
Madhu Karmarkar, cpandav@now-india.net.in

Indonesia

Laboratorium Bioteknologi Bioteknologi Kedokteran/GAKY
Diponegoro Medical Faculty
Rachmawati Banundari, hertanto@indosat.net.id or banundari@hotmail.com

Kazakhstan

The Kazakh Nutrition Institute
Feruza Ospanova, ospan@nets.kz
Zhanar Tolysbayeva, nutrit@nursat.kz

Peru

Unidad de Endocrinología y Metabolismo
Instituto de Investigaciones de la Altura
Universidad Peruana Cayetano Heredia
Eduardo Pretell, epretell@terra.com.pe
Ana Maria Higa Yamashiro, ahigay@minsa.gob.pe or amhiga@viabcp.com

Russia

Institute of Endocrinology
Alexander Ilyn and Ekaterina Troshina, iod@endocrincentr.ru

South Africa

Medical Research Council
National Research Programme for Nutritional Intervention
Pieter Jooste, pieter.jooste@mrc.ac.za
Emmerentia Strydom, estrydom@mrc.ac.za



Group shot from the IRLI workshop in Cape Town, South Africa, Nov 2003.