



## BULLETIN

*A Quarterly newsletter of the Industrial Technology Institute, successor to the Ceylon Institute of Scientific & Industrial Research*

Vol. 15 No. 4

August-October 2007

ISSN 1391-4391

### **Metrology Laboratory offers Accredited Calibration Services**

The Industrial Metrology Laboratory (IML) of the ITI has received International Laboratory Accreditation ISO/IEC 17025 by the Swedish Board for Accreditation and Conformity Assessment (SWEDAC) with effect from 28<sup>th</sup> August 2007.

In 2004, the thermometry and mass laboratories were accredited by SWEDAC. While having the surveillance audit on 16<sup>th</sup> and 17<sup>th</sup> August this year to extend the accreditation of these two areas, the scope of accreditation was expanded to three other areas namely dimension, electrical and volumetric.

The new areas of accreditation have a direct impact on the local industrialists, especially the exporters, to maintain high quality and conformity of the products to the international as well as the local standards of the receiving market. The presence of such an internationally accredited Metrology Laboratory in the country provides the much-needed reliability of the calibration capabilities of the country. Without credible metrology, conformity to standards and the protection of consumers and environment is a near impossibility. Accredited calibration and certification facilities have strategic importance to a country. The importance is not only in reducing the extremely high costs involved in calibrating instruments abroad or providing pre-shipment services and certifications but also in providing companies with objective results which are necessary for technological improvements.

The accreditation of the IML was materialized through the project "Quality, Standardization and Metrology" of the Integrated Industrial Development Support Programme of UNIDO for Sri Lanka that provided assistance for upgrading the laboratories to international status. This project also received a significant financial contribution from the Government of Norway through NORAD. Further to the accreditation UNIDO/NORAD rendered their assistance in training the ITI technical staff members at the Korea Research Institute of Standards and Science.

In the area of mass metrology, the laboratory is in a position to provide calibration services for weighing balances that includes electric top loading, single pan, two knife edge and triple beam and the

determination of the conventional mass values of classes E2, F1, F2, M1, M2 and M3 set of weights.

In the area of thermometry the laboratory is capable of providing internationally accredited services on thermometers, dial thermometers, PRT, digital thermometers, thermocouples, temperature indicators and controllers, simulators for voltage resistance and current as well as carrying out performance tests on block calibrators, laboratory ovens/ incubators, stirred liquid baths, autoclaves, muffle furnaces and water baths.



In addition to the above accredited calibration services, the laboratory also provides services to industry with respect to calibration of gauge blocks, vernier calipers, micrometers, dial gauges, and meter rulers in the dimensional

laboratory. In electrical and volumetric laboratories calibration of digital multimeters upto 6 ½ digits including AC/DC voltage, current and resistance and volumetric glassware which are widely used in chemical, testing and medical laboratories including one mark pipette, graduated pipette, burette, volumetric flask and graduated measuring cylinder could be carried out.

Meeting consumer requirements and continual improvement of the calibration and measurement services to meet the highest professional standards are the main quality policies of the laboratory. The management and staff are fully committed to operate the laboratory efficiently and effectively, satisfying the requirements of the clients with on time delivery.

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**Our Mission**

To provide demand driven scientific industrial R&D and internationally competitive technical services to catalyse rapid industrialisation for the benefit of the people of Sri Lanka

## Freddie Laurentius – Legendary Icon of Industrial Research & the CISIR of Yore

A few weeks ago the mortal remains of a much loved scientific personality Mr. Freddie Laurentius, was laid to rest. He was an icon of the then CISIR, and was attached to the original Industrial Research laboratory (IRL) the nucleus of the post-independence organization, the CISIR.

Mr. Laurentius was the Chief Research Officer (CRO) of the CISIR for more than a decade and a half, and then its Director in 1975. Fittingly he was at the helm of the CISIR when the Institute formally celebrated its twenty first anniversary. As Director, Laurentius was the guide philosopher and friend of the research staff, both young and old and affectionately referred to as “pappa”. One could see him come in early in the morning, immaculately clad in starched white trousers, tie and long sleeved shirt, sporting his characteristic cigarette at the end of a long cigarette holder, and thermos flask in hand. He had a brisk walk, and a cheery manner, and greeted everyone as he ventured along the laboratories and pilot-plant sections. After his “rounds” of the institute, he would settle in his office at the front of the building, with his “hot cuppa tea”, poured from his thermos, and ready for any industrial clients who may have had appointments for the day.

Laurentius was by his training a chemical engineer, and in addition, possessed a post-graduate Diploma in management. His main research interest in the latter years was, in the technology for the processing of coconut milk, and he worked in this area with singular interest.

Following his retirement from the post of Director in 1977, he lived a quiet life but showed an avid interest in the CISIR and was always happy to hear about any success stories of the Institute, and also of his previous colleagues and subordinates.

The year 2005 saw the fiftieth anniversary of the CISIR, and the newest state-of-the-art laboratory of the institute, now the Industrial Technology Institute or ITI., was housed in a building which was named, the “S.F.Laurentius Building”. Mr. Laurentius and his wife Florie, were present on the occasion, and hugely enjoyed the day. He greatly appreciated the gesture of the present management, and particularly that of Ministers: Tissa Vitarana, and, Sarath Amunugama, who stepped aside themselves, and invited Mr Laurentius to open the building and Laboratory by officially cutting the ceremonial ribbon.

Mr Laurentius was one who made a great contribution to industrial research not merely with his own work, but also by the benevolent managerial skills he used in facilitating the work of the rest. He was quick to encourage and even demanded explanation for any trespasses by others with a stubborn ferocity. Yet he was swift in apologizing for any errors of judgment that he himself had made. He was a rare soul and his just reward was not in riches but in the endearment of those who worked with him

*He is one who worked for his fellow-beings and has earned a heavenly repose.*

*(Extracted from the Appreciation written by Dr. R.O.B. Wijesekera)*

## Head QAD provides consultancy to Pakistani Fish Laboratory

The ITI has taken a step further to reach the international level in consultation work on accreditation of laboratories, with the recent assignment given to Mrs. Subadra Jayasinghe, Head Quality Assurance Department. Mrs. Jayasinghe recently visited Marine Fisheries Department (MFD), Karachi, Pakistan as the Expert in Organic Chemical Testing on an assignment on laboratory accreditation to improve the quality of the fish and fish products exported from Pakistan. The project was initiated and supported by the United Nations Industrial Development Organization.

Export of fish and fish products is one of the major income sources of Pakistan and at present it encounters many problems related to the quality and hygiene. The main objective of the assignment is to assist the MFD laboratory to obtain accreditation to overcome the problems encountered.

The assignment was started by reviewing the quality and the technical manuals of the chemical testing laboratory at MFD. Technical manual for the histamine analysis of fishery products was also drafted by Mrs. Jayasinghe and the technical staff were trained on testing as well as the statistical analysis of the results.

With the wealth of experience obtained locally as a consultant in laboratory proficiency testing, Mrs. Jayasinghe also provided advisory services to the Pakistani laboratory staff on proficiency testing. As the final part of the assignment she assisted the laboratory staff in preparation of the application for accreditation.

It is relevant to note in this connection, that the ITI has been designated as the official laboratory for histamine analysis, by the Ministry of Fisheries for the export of fish products to the European Union.

## Trihalomethanes in Drinking Water

Clean and safe drinking water supply is of utmost importance to ensure the good health of the people of a country. Usually, water from natural sources such as rivers, reservoirs and tanks are used in Sri Lanka as the water intake for treatment before supplying it as drinking water. Various treatment processes are then carried out in order to supply drinking water, which is in compliance with the potable water standard of Sri Lanka SLS 614 of 1983.



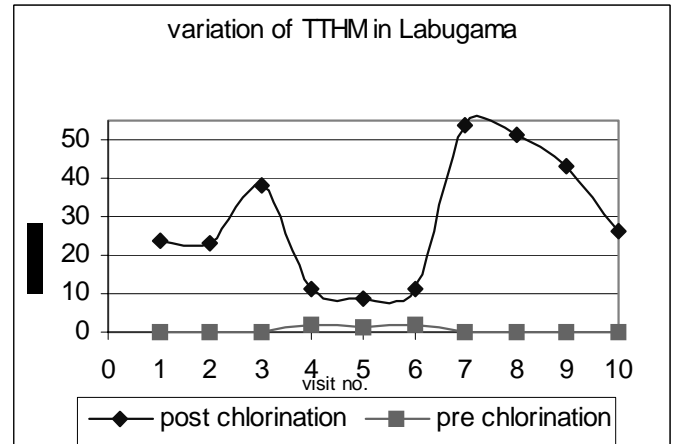
Microbial content in the drinking water is one of the most important parameters. Various disinfection methods are used to ensure the microbiological quality of drinking water. Usually in these methods the chemical oxidants are incorporated into the water. Chlorination is the widely accepted and preferred method for disinfecting drinking water supplies. Gaseous Chlorine, Calcium hypochlorite and Sodium hypochlorite are used as disinfectants. Highly reactive “hypochlorite” plays an important role in the disinfection process by penetrating the cell wall of bacteria to react with cell components and destroying the bacteria.

However, chlorination also seems to pose a lurking danger with the formation of Trihalo methanes (THMs). THMs are formed in drinking water as a by product, primarily as a result of a reaction between pulvic and humic acids from decaying plant material with hypochlorite. THMs are halogen substituted single carbon compounds with the general formula  $CHX_3$ , where X represents halogens which may be fluorine, chlorine, bromine or iodine, or combinations there of. The most common THMs present in drinking water are Dichloromethane ( $CHCl_3$ ), followed by Bromodichloromethane ( $CHBrCl_2$ ) and Chlorodibromomethane ( $CHBr_2Cl$ ).

The rate and degree of THM formation increases with

the increasing chlorine and humic acid concentrations, pH, temperature and bromide concentration. The four THMs considered here are liquids at room temperature and highly volatile.

A research conducted at the Chemical and Microbiologi-



cal Laboratory of the ITI showed that the municipal water, which is used in Greater Colombo contains THMs in very minute quantities. Water samples collected from Ambathale, Labugama and Kalatuwawa were analysed over a period of eleven months to quantify the THMs present.

According to the study, total THMs varied from 80 to 10 µg/L levels in water samples from Ambathale, Labugama & Kalatuwawa plants. This is well below the WHO & US EPA guideline level. In addition to this, the regional sumps of Greater Colombo area were analyzed. These values varied from 145 to 80 µg/L levels. However, the analysis of municipal water from Anuradhapura resulted in a value higher than the guideline level which was 202 µg/L. To evaluate the THMs at the user's end samples from the ITI canteen tap & new building tap were analyzed and observed as 35 & 29 µg/L Total THM respectively.

There are several effective and simple treatment methods to remove THMs from water, such as boiling water for 15 minutes, aerating the water for 1 hour, passing through activated carbon and sonication for 30 minutes.

Funds for this initial study were obtained from the National Science Foundation. More studies need to be done to establish baseline data to ensure the safety of the consumers.

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## Fruits and Vegetables from Farm to Table

(Workshop on HACCP and Traceability)

*Conducted by the Food Technology Section of ITI*

**7<sup>th</sup> December 2007 at the ITI Auditorium**

Topics under focus:

- Concepts and Principles of Hazard Analysis and Critical Control Point (HACCP).
- Concepts and Principles of Traceability and Risk Management.
- Application of Good Agricultural Practice (GAP) on Farm and Good Management Practice (GMP)/ HACCP in the Pack House.

Target Group - Growers, Producers, Suppliers and Exporters of Horticultural Produce.

Course Fee - Rs. 3000/- + 15% VAT (inclusive of course material, lunch and refreshments)

Course Medium - English

Course Duration - 8.30 a.m. to 4.00 p.m.

For registration and further details: Tel: 2693807-9, Ext: 241 Dr. Shanthi Wilson, Anira Fernando or Deepthi Weerasinghe e-mail: [chanaki@iti.lk](mailto:chanaki@iti.lk)

## EQUIPMENT CORNER

### Purge & Trap – Gas Chromatograph

Purge & Trap – Gas Chromatography is a novel method to analyze the volatiles in water samples such as Trihalo methanes, a group of water disinfectant by products. The sample extractor of the instrument can simultaneously extract and pre-concentrate and then inject the sample to the GC. The Purge & Trap – GC is an automated, sensitive and ultramodern instrument which can analyze samples even at parts per billion level.

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