



**INDUSTRIAL RESEARCH INSTITUTE**  
*In the service of Industry & Development*



# IRI NEWS

Issue N°2  
2000

## Editorial

The earlier edition of IRI NEWS was meant to highlight the various services that the Industrial Research Institute can offer to the Lebanese industry. That edition can still serve as a documentary reference which you may keep and refer to anytime you need information about IRI.

We view this issue of IRI NEWS as a simple reminder or summary of all the year's hardships and joint efforts exerted by our technical people, administrative staff and simple workers in order to start the new millennium in the spirit of globalization that it acquires.

In the year 1999, new laboratories were erected, other laboratories were renovated, many of our staff received intensive professional training and various courses and seminars were given at the IRI, as part of the Institute's development strategy.

Moreover, the Lebanese government has bestowed the IRI with a role in the control of the application of Lebanese standards; the role that we see as our obligation and duty to namely participate in the protection of the consumer in regard to both local and imported commodities.

In the purpose of measuring up to our responsibilities, a new managerial approach was started in 1999, whereby a quality system is being implemented according to the ISO 9000 standard.

Finally, we kindly urge you to view our IRI NEWS issues as our means to reach out to you and share with you our activities and plans that are aimed always towards the service and development of our national economy.

## Cooperation Agreements

with CSTB and LPEE

In December 1999, IRI signed two cooperation agreements with the Centre Scientifique et Technique du Bâtiment-CSTB France, represented by its president Mr. Alain Maugard and with the Laboratoire Public des Essais et Etudes - LPEE



Morocco, represented by its Director General Mr. Ahmed Hakimi. The agreement represents the first step in creating the Euro-Mediterranean industrial research centers network, which is expected to promote regional development and expansion. It will help the country prepare for globalization by upgrading its standards and specifications. The agreement allows the IRI to expand its role beyond technical and management consultancy for local industries, by including industrial development policy planning.

The agreements cover the fields of civil engineering, environment and industry. They will be implemented through:

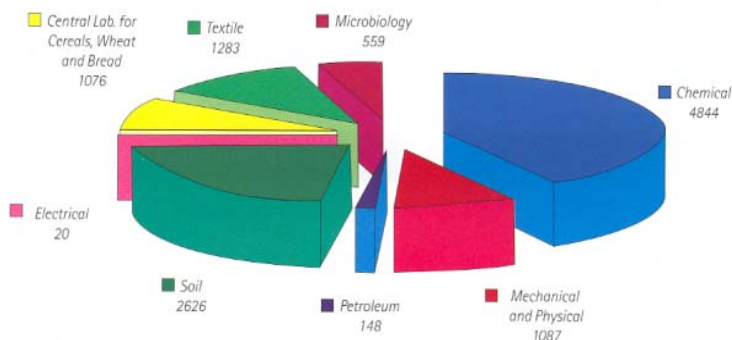
- Exchange of general information and training
- Organization of events on mutual basis or upon the request of one of the parties
- Exchange of documentation, information and expertise in the fields of documentation, media and technology transfer.

This event was under the patronage of H.E. the minister of Industry Dr. Nasser Saidi, with the presence of the French ambassador Mr. Daniel Jouaneau, the President of the Lebanese Industrialists' Association Mr. Jacques Sarraf, the Vice President of the Union of the Lebanese Chambers of Commerce, Industry and Agriculture Mr. Robert Debbas and other representatives from both public and private sectors.

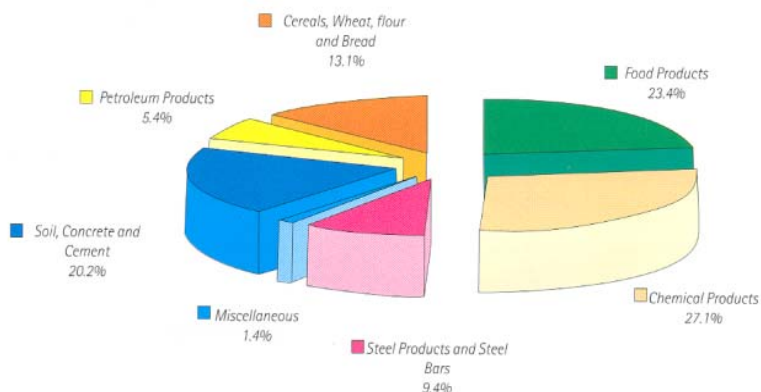
For more information about CSTB: <http://www.cstb.fr>

Testing and analysis is one of the basic activities of the Industrial Research Institute, and it includes sampling, testing and certification. The following graphs represent these activities' distribution in 1999.

Number of tests by laboratory:



Percentage of tests and analyses by type of product



### - Metrology and Calibration:

In 1999, IRI conducted numerous Metrology and Calibration activities

Metrology and Calibration:					Number
Temp. gauges	Pressure gauges	Measuring instruments	Weights	Testing machines	183

### - Inspection, Control and Certification:

IRI team carried out, in 1999, many inspection and control activities in different fields:

Inspection and Control	
Boilers	148
Tankers	139
Welded Structures	59
<b>Total</b>	<b>346</b>

22

1999

23

1999

### Tests and Analyses Comparative Table ( 1 9 9 8 - 1 9 9 9 )

LABORATORY	NUMBER OF TESTS AND ANALYSES CONDUCTED	
	1998	1999
Chemical	1842	4844
Textile and Leather	2250	1283
Petroleum	16	148
Civil Engineering	1391	2626
Mechanical and Physical	339	1087
Electrical	32	20
Central Lab. For Bread and Wheat	445	1076
Microbiology	-	559
<b>Total</b>	<b>4315</b>	<b>11643</b>

### Certificate Distribution by Type of Product in 1 9 9 9

Product Type	Number of Certificates
Food and Beverages	484
Chemical Products	506
Bread, Wheat and Flour	283
Petroleum Products	91
Soil, Concrete and Cement	371
Steel Products and Steel Bars	237
Boilers, Tankers and Fuel Tanks	339
Miscellaneous	63
<b>Total</b>	<b>2374</b>

## Lebanese Welding Center

The Lebanese Welding Center's activities, as part of the development strategy, were as follows:

- In practical training, 8 persons followed a practical training course in SMAW, MIG, MAG, TIG, and OA, according to EN 287 - part 1.
- The inspectors of the Lebanese Welding Center carried out 146 inspection visits for: visual, die penetrant, X-ray, macrography, bending, hardness, tension, and ultrasound inspection on welded structures.
- 36 persons passed qualification exams in the exam center, among which 25 received a qualification certificate.
- In the aim of continuously improving its performance, the Lebanese Welding Center personnel followed 16 weeks of professional training in welding and inspection techniques in Lebanon, France, Saudi Arabia, Iran and Syria.

## Metrology and Calibration Unit

Special attention was given during 1999 to the Metrology and Calibration Unit, for ISO 9000 certification purposes or for general production quality improvement, the demand for instruments and equipment verification showing a big increase. Therefore, new expertise and the most up-to-date precision and scientific equipment were introduced for the verification of loads, weights, pressure, length, temperature, torque, and electrical multimeters...

## Training Courses

### Professional training courses received by IRI members in 1999

- Training Course on Non-Destructive Testing in Industry: Damascus - Syria - Nov 29 - Dec 9, 1999.
- Regional Training Course on Non-Destructive Testing (NDT) In-Service Inspection for Industry: Dhahran - Saudi Arabia - October 2 - 13, 1999.
- Sustainable Industrial Development: Process Simulation and Optimization Techniques: Trieste - Italy - July 20-24, 1999.
- Regional training Course and Examination on Radiographic Testing - Level 2 - Tehran - June 5 - 23, 1999.
- Training course and examination on Non-Destructive Testing - X Ray - level 2 - France - Feb. 28 - March 24, 1999.

### IRI Internal Training Courses

- Training on Atomic Absorption Spectrophotometer, and Introductory Training FTIR - December 15 - 18, 1999.
- Welding Practical Training at the Lebanese Welding Center : 7 persons.
- Welding Qualification for more than 30 persons.
- Internal Audit Course: Oct 4 - 8, 1999.
- أسس وأساليب سياسة تشجيع الصادرات - Sep 27 - Oct 2, 1999.
- "Qualification de Soudeur suivant EN 287 / Partie 1" - June 21 - July 9, 1999.
- Italian Plastic Processing Machinery: Feb 15 - 19, 1999.
- World Class Manufacturing: Jan 11 - 15, 1999.

### Workshops, Seminars and Round Tables attended by IRI Staff in 1999

- Enhancing the competitiveness of exports of textiles and clothing in countries of the ESCWA region in the light of globalization and WTO agreement - ESCWA - November 3-4, 1999.
- Project Planning And Management in Research and Development and Quality Assurance - ESCWA - September 21, 22 and 23, 1999.
- Trade and Environment Expert Group Meeting - ESCWA - November 2,3 and 4, 1999.
- Seminar of Mechanical Engineers - Syndicate of Engineers - June 6, 1999.
- Introducing cleaner production options to tanneries in Lebanon - Ministry of Environment - May 12, 1999.
- المؤتمر الخامس لاسواق رأس المال العربية - UNESCO Palace - May 12, 1999.
- استراتيجيات إدارة النفايات في لبنان - Summerland Hotel - May 12, 1999.
- ندوة مخصصة حول التحضير للانضمام الى منظمة التجارة العالمية - ESCWA - May 7, 1999.
- دور الحكومة في خلق بيئة مواتية للاقتصاد الصناعي في لبنان - IRI - March 25, 1999.
- Stuttgart 99 (Barcelona III)- Commodore Hotel - March 17, 1999.



## Quality system at the IRI

The Industrial Research Institute uses methods of testing and analysis that are compatible with the latest international standards. And it is linked to international institutions through cooperation agreements that allow enriching exchanges.

Being concerned about the technical and scientific development of the Lebanese industrialists, and in parallel to the improvement of its quality services, the IRI is carrying out the establishment of a quality system in accordance with the requirements of the ISO 9000 standard.

The implementation of a quality system, adapted to the Lebanese market, was a must for the Institute to cope with today's client requirements.

This system insures to the client a service of quality, without delay, and at very reasonable prices.

A quality team was formed and has been working on this issue for few months. The team members have followed an exhaustive training course on internal audit and quality assurance, enabling them to implement the quality system at the Institute.

## IRI assistance to LIBNOR

Further to the contract signed between LIBNOR and IRI according to which IRI offers technical assistance to LIBNOR, IRI offered the services of several specialists to LIBNOR: (Civil, Agricultural, Electrical, Chemical Engineers ...), aiming at reviving LIBNOR to continue the standardization activity in the globalization era where norms and standards have become a national necessity. In this framework, numerous standards and decree-laws were issued in 1999, among which 47 were made mandatory. For some of these mandatory standards, the Industrial Research Institute is one of the three accredited laboratories in Lebanon to carry out the tests and deliver the certification of conformity:

- Decree-law n° 1835, dated December 3rd 1999 concerning food items, cosmetics and sanitary ware
- Decree-law n° 1836, dated December 3rd 1999 concerning some food items
- Decree-law n° 1039, dated August 2nd 1999 concerning drinking water
- Decree-law n° 1040, dated August 2nd 1999 concerning Labneh and gelatin cream.
- Decree-law n° 1840, dated December 6th 1999 concerning Arak and grape's arak.

For the mandatory Decree-law no 1032, dated July 30th 1999 related to reinforced steel for concrete construction, the Industrial Research Institute is the sole laboratory accredited to do the sampling at the harbor, to perform the testing on the steel and to deliver the certificate of conformity, which allows the shipment to enter the Lebanese territory.

## Membership in International Organizations:

The Industrial Research Institute is a member in the ICC, International Association for Cereal Science and Technology. This membership allows the Institute to be informed about all activities in cereal field and to exchange research results and experience with colleagues from other countries.

ICC (Headquarters in Vienna-Austria) is the international organization that is active worldwide in the field of cereal science and technology. The aims and activities of the ICC are formulated and decided by a policy-making body of international experts from member countries. It is known as a neutral forum for the exchange of knowledge and experience (<http://www.icc.orat/icc/>).

AIDMO, the Arab Industrial Development and Mining Organization groups together the industrial research centers in the Arab countries. Within this organization, a committee of technical consultancy function is formed, the members of which being representatives of the industrial research centers in the Arab countries. The aim of this technical committee is to be the Liaison for collaboration and cooperation among the various centers.

The Industrial Research Institute represents the Lebanese government in this organization, and participates in all the committee meetings.

IRI's membership in the St. Louis Network (Headquarters in USA) keeps it regularly updated with all news related to NDT / welding ISO standards. The St. Louis Network provides its members, on a regular basis, with the latest news concerning issuing, revising or updating those standards.

## ISO 9001:2000 - A NEW STANDARD FOR THE END OF THE YEAR

It is well known that the ISO (International Standards Organization) carries out a revision of each standard every 5 years approximately. Thus, the ISO 9000 standard is also subject to a revision that will end up with a new version of the standard by the end of the year.

The first version of the standard was published in 1987. It had to undergo some modifications in the revision of 1994. Now, it's the very structure of the standard that will be modified. We talk about a standard that is "client-centered", where the client has a certain influence on the quality management of the certified enterprises.

ISO 9001:2000 will replace the 1994 editions of ISO 9001, ISO 9002 and ISO 9003.

A Draft International Standard (DIS) was released in November 1999. Current plans are to circulate a Final Draft International Standard (FDIS) in the third quarter of 2000 and to publish the new ISO 9001 as an International standard (IS) in the fourth quarter of 2000.

Certificates issued to the 1994 editions of ISO 9001, ISO 9002 and ISO 9003 will have a maximum validity of 3 years from the date of publication of ISO 9001:2000.

ISO 9001:2000 will require auditors and other relevant Certification/Registration Body personnel to demonstrate new competencies; they should demonstrate knowledge and understanding of:

- The eight Quality Management Principles on which the revised standards are based
- The requirements of the latest draft of ISO 9001:2000
- The concepts and terminology of the latest draft of ISO 9001:2000.

Certification/Registration Bodies will need to take particular care in defining the scope of certificates issued to ISO 9001:2000, and the permissible exclusions to the requirements of that standard.

## THE ROLE OF THE GOVERNMENT IN CREATING AN ENABLING ENVIRONMENT FOR INDUSTRIAL INNOVATION IN LEBANON

The Industrial Research Institute hosted in March 1999 the conference on "the role of the government in creating an enabling environment for industrial innovation in Lebanon".

The event was under the auspices of H.E. Dr. Nasser Saidi, organized by the Lebanese Industrialists' Association, in collaboration with Friedrich Ebert Institute and the World Trade Organization.

Dr. Louis Hobeika, expert in Economics, presented the study, focusing on a future industrial policy that enhances the economic development. In the perspective of enhancing this research, some experts will discuss its contents in order to publish this activity in a booklet and distribute it to the interested parties: public officers, industrialists and decision makers. This strategy goes in parallel with developing the industrial research, in coherence with the globalization of the industrial development.



## INTERNAL AUDIT TRAINING COURSE

The Industrial Research Institute and AOQC France, its partner in quality assurance, organized in October 1999 an internal audit training course in the premises of the IRI.

The course offered to the participants the opportunity to know in depth the standard ISO 9000, and to understand the utility of setting up a quality system in their institutions according to this standard. The participants, being individuals or representatives of companies from different industrial sectors, enjoyed a highly interactive 5-day course, where they got the opportunity to learn how to interpret a procedure, prepare a check-list, detect the non-conformities, write the audit report and follow up corrective actions: to make the course more applicable, the theoretical part was demonstrated in a steel factory.

Five of the Institute's staff participated in this training course. The practicality and importance of this course is being reflected with the efficiency and uptrust it provided us in the implementation of the quality system at the IRI.

## WORLD CLASS MANUFACTURING

In the framework of the Lebanese industrial development program, the Industrial Research Institute organized the "World Class Manufacturing" training course held by the Italian consultant Dr. Carlo Scodanibbio.

It was a 5-day (8hrs/days) course, sponsored and organized jointly by the Industrial Research Institute and Debbas Holding. The main objectives were the following:



- \* To illustrate the World Class Manufacturing picture and its core disciplines
- \* To give participants a thorough understanding of the Lean Manufacturing concept
- \* To furnish participants with operational and practical tools suited to detect, recognize, quantify, and eliminate waste in manufacturing operations
- \* To instill practical criteria to introduce/improve/perfect Lean Manufacturing Operations
- \* To furnish participants with theoretical and practical concepts of the Quick Change-Over discipline, a prerequisite for Lean Manufacturing
- \* To give participants an overview of related WCM disciplines such as Total Productive Maintenance and Total Employee Involvement
- \* To make participants aware of the primary importance of adopting an "integrated" approach to Manufacturing, featuring the simultaneous deployment of the available "state-of-the-art" disciplines and techniques
- \* To make participants sensible to the necessity of a new Industrial Culture, based on continuous change, learning and adaptation to a rapidly changing world.

The course was attended by 25 upper level managers from the Lebanese industrial sector. It was highly interactive, and rich in simulations, exercises and real case studies.

## INAUGURATION OF NEW LABORATORIES

In June 1999, the Industrial Research Institute inaugurated its new Microbiological and Physical Chemistry Laboratories, in the presence of H.E. the Minister of Industry Dr. Nasser Saidi, Mr. Jacques Sarraf, President of the Lebanese Industrialists' Association, Mr. Robert Debbas, Vice President of the Union of Chambers of Commerce, Industry and Agriculture, Mr. Georges Tohme, President of NCSR and others. New sophisticated equipment were installed providing us with the ability to perform the newest and most accurate methods of analysis of various products.



### The Physical Chemistry Laboratory instruments are:

- 1- Optical Emission Spectrophotometer: used for metal analysis in alloys while they are in the solid state. i.e. no need for dissolution. Alloys of the Iron base, Copper base, Nickel base, Aluminum base and Lead base can be analyzed for over 15 elements of their components and in different concentrations.
- 2- HPLC: with which various analyses can be conducted such as vitamins, coloring matter, preservatives, antioxidants, organic acids, caffeine and aspartame in food, aflatoxin, pesticides, carbamates, polyaromatic hydrocarbons in water, etc.
- 3- Atomic Absorption Spectrophotometer: thirty various elements (Aluminum, antimony, beryllium, bismuth, cadmium, calcium, barium, gold, sodium, lithium, selenium, potassium, chromium, cobalt, copper, hafnium, iron, lead, magnesium, manganese, molybdenum, nickel, niobium, silicon, silver, tin, strontium, titanium, tungsten, vanadium and zinc) can be analyzed in mg/kg or as low as 0.1 µg/kg in various products ranging from water, waste water, food products, animal feed, to waste effluents. Any sample that can be digested or dry ashed can thus be analyzed after dissolution.
- 4- Fourier Transformer Infrared Spectrophotometer (FTIR): various organic and inorganic compounds have specific absorption spectra in the Infrared Range. This is used as a means towards identification and analysis of various materials such as: rubbers, powders, films and plastics, coating films on metals and resins, paint, polymers, volatile and non volatile solvents, gases in % levels, paper, cloth, yarn, mineral oils and pharmaceuticals, among others.



### Microbiological Laboratory:

To fill the gap and tally with the needs of Agro-Food industry and food safety, the Industrial Research Institute set up the Microbiological laboratory, as complementary to its Chemical and Physical laboratories.

The Microbiological Laboratory is equipped with the most up to date instruments (Elisa Reader, Autoclaves, Safety Cabinet, Incubators, Stomacher, Microscopes...) that enable us to conduct microbiological examinations for a wide range of microorganisms in various food

## FUME EMISSION AT "HOMMAR" MINE LOCATION

### HASBAYA - SOUTH LEBANON

At the request of H.E. the Minister of Industry, Economy and Trade, Dr. Nasser Saidi, and H.E. the Minister of Information and the Displaced, Mr. Anwar el Khalil, the Industrial Research Institute assigned a team to proceed to the location of "Hommar", where a piece of land was set on fire and heavy gases were being emitted with unpleasant odors.

On April 22 1999, the IRI team moved to the site equipped with all instruments and devices needed for sampling.

The team started visual exploration and sampling. Temperatures were recorded at different points on the fuming soil. Concentrations of Hydrogen Sulfide were measured at different spots of the location.

A sample of the fumes generated on the fuming slope was trapped in a gas bulb with the aid of a vacuum pump; also a sample of gas was collected from the mine exhaust pipe. Finally, soil samples from different spots of the site were collected. All samples were taken to the IRI laboratories for analysis and based on the results, as well as on measurements and observations, conclusions and recommendations were reported.

## FLAMMABLE GAS EMANATION FROM A WATER WELL

### TAL EL-AKHDAR - BEKAA

At the request of H.E. the Minister of Electricity and Hydraulic Resources and Petroleum, Mr. Sleiman Traboulsi, the Director General of the Industrial Research Institute assigned a team to immediately proceed to the location of a water well that started emissions of flammable gas since February 26 1999.

On March 9 1999, and after having insured the presence of the local authorities to remove the seals installed by order of the Attorney General Mr. Charbel Abou Samra, the IRI team moved to the site equipped with all instruments and devices needed for sampling.

The team started visual exploration and sampling. After recording temperature of flame, the fire was extinguished and water samples from the well were extracted. The well was sealed with a rubber diaphragm and gas samples were collected. Finally, soil samples from different spots were collected.

The results were reported with the recommendations.

## POLLUTION OF THE FISHING HARBOR

### DORA - BEIRUT

After a group of fishermen complained about the presence of a thick layer of said to be petroleum material covering the area on which they anchor their boats and the surroundings, the Industrial Research Institute was asked to analyze this material. A professional team proceeded to the location and took samples to determine the nature of the compounds polluting the sea and seaside. The results of the analysis were communicated to the interested parties.

# Membership at the IRI

The Industrial Research Institute has the mission to respond to the numerous and diversified needs of the industrial establishments and those of the productive sector. That is why it is developing its human power, machines and equipment for testing and analysis and metrology and calibration... along with the partnership agreements that IRI has and will have with international institutions.

The IRI board approved a membership plan that aims at creating more interaction with the industrial establishments, thus participating in assisting those establishments in testing, analysis, metrology, calibration and others at the lowest possible costs and with the best quality of service.

Each IRI member will benefit from the following:

Free of charge:

- IRI's Newsletter, IRI's documentation center (scientific references, newsletters, international standards...)
- Assistance in making contacts with international organizations, in the field of certification for conformity, quality or calibration
- Invitations to the participation in all conferences and workshops organized by the IRI

Special discount on all the services offered by the IRI among which:

- Practical and theoretical training in management, production and testing, including the Lebanese Welding Center...
- Tests including steam boilers, and all kinds of analysis
- Certification of conformity with local and international standards
- ISO certification
- Organizing conferences and seminars in the IRI seminar hall (200 persons / free parking)

## IRI Delivers the First AOQC ISO 9002 Certificate:

In May 1999, L.I.T. - Lebanese International Technologies, obtained the first ISO certificate delivered in Lebanon by AOQC Moody via the IRI.

AOQC and IRI auditors carried out the certification audit, and concluded the conformity of the quality system implemented by L.I.T. This system entitled the company to obtain two certificates: ISO 9002 for its quality system and EN 46002 that is a supplementary requirement for all products of medical use.

L.I.T. showed a high level of efficiency in its organization and, according to its General Director Mr. Michel Azzi, the implementation of a quality system according to the ISO and EN standards has but increased this efficiency, showing a more rigorous work and a better control of the product and the production process.

L.I.T. is a small enterprise located in Mazraat Yachouh, with 19 employees working on the manufacturing of medical devices: single and dual spiral electrodes. The whole production is exported to the United States and Europe. The electrodes manufactured by L.I.T. play a major role during the childbirth; they allow the detection of oxygen insufficiency in the blood of the foetus, thus avoiding numerous accidents that may have catastrophic results.

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