PREPARING PESTICIDE RESIDUE TESTING LABORATORY FOR ACCREDITATION

July 21, 2009

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PREPARING PESTICIDE RESIDUE TESTING LABORATORY FOR ACCREDITATION

USAID JORDAN ECONOMIC DEVELOPMENT PROGRAM

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EXECUTIVE SUMMARY

The production of fresh fruits and vegetables in Jordan has been, and still is, the nucleus of income and development of the rural areas, where approximately one fifth of the Jordanian population resides. The contribution of agriculture to GDP was approximately 3.8% in 2002, and increased to a constant 4.1% between 2003–2005 and reversed back to 3.9% in 2006. Due to its year-round warm climate, Jordan is able to export fresh fruits and vegetables year round, giving it a competitive advantage over other markets.

The agricultural sector was identified as a priority sector by Jordan Economic Development Program (SABEQ). The value chain of the sector identifies marketing as a key element to export promotion. The Global Gap Certification is one of the internationally recognized tools that facilities export of fruits and vegetables. Testing fruits and vegetables for pesticide residue by an accredited laboratory is a requirement of the Global Gap Certification. SABEQ decided to assist the Pesticide Residue Testing Laboratory at the Ministry of Agriculture in fulfilling the requirements of Jordanian Accreditation System through developing a quality management system that fulfills the requirements of the international standard ISO/IEC 17025: General requirements of the competence of testing and calibration laboratories.

The consulting team conducted a pre-assessment of the current management practices and management system documentation and defined the gaps to fulfill the requirements of ISO/IEC 17025. Accordingly a documented management system for the laboratory was developed that includes the following:

- Quality manual,
- Quality management system procedures and relevant work instructions,
- Forms,
- Guidance on the layout of testing Standard Operating Procedures (SoPs)

In an effort to build capacity of the laboratory staff, the consulting team assisted the staff to gain better understanding on the implementation of key technical issues related to the requirements of accreditation such as the estimation of measurement uncertainty, calibration of critical equipment and selection of a suitable proficiency testing provider. Additionally, the laboratory staff were provided with six days of specialized training covering the developed system, internal audit and measurement uncertainty.

The consulting team will conduct a post assessment on the laboratory's performance by the end of September 2009 to evaluate the level of system implementation and define further corrective and improvement actions, as appropriate.

Although the quality management system for the laboratory has been developed, there are other aspects that could hinder the laboratory's competence, thus the consulting team assessed those aspects and provided recommendations. The recommendations section of this report provides more details about those aspects.

PHASES

The objective of this project is to assist the Pesticide Residue Testing Laboratory (PRTL) in fulfilling the accreditation requirements of the Jordanian Accreditation System and the international standard ISO/IEC 17025: General requirements of the competence of testing and calibration laboratories. This project was implemented in the following phases:

Phases

1. Pre-assessment: the consulting team conducted a pre- assessment of the current management practices and management system documentation in the laboratory and compared that to the requirements of ISO/IEC 17025.
2. System development and consultation: the consulting team developed the management system documentation including the quality manual, quality procedures, forms and SoPs layout. The laboratory also received consultation related to equipment calibration and participation in proficiency testing.
3. Training: the laboratory staff received a six-day training program covering the developed system, internal audit and measurement uncertainty. The training was tailored to fit the needs of the laboratory.
4. Implementation: the laboratory will be allowed a period of two months to start implementing the system before the post assessment can be conducted.
5. Post assessment: by the end of September 2009, the consulting team will conduct a post assessment to evaluate the level of system implementation and define further corrective and improvement actions, as appropriate.

To-date, the consulting team implemented the phases from 1 to 3 . The subsequent sections of this report describe the work that took place under those three phases.

In addition to the above mentioned phases, many aspects of the laboratory's management were assessed by the consulting team. Those aspects can hinder the competence of the laboratory and prevent it from obtaining accreditation. The consulting team assessed the following aspects:

1. The legal status of the laboratory,
2. Commercial pressure,
3. Appointment of the Quality and Technical Managers/ Officers,
4. Laboratory Information Management System (LIMS),
5. Personnel and equipment files,
6. Ownership of calibration of the laboratory equipment and participation in Proficiency Testing Programs (PTP).

PRE-ASSESSMENT

The pre-assessment covered all actual activities currently running in the laboratory. The main objective of the assessment was to conduct a gap analysis by comparing current situation (documentation and practices) with the requirements of the International Standard ISO/IEC 17025 and the requirements of the Jordanian Accreditation System. A representative sample of documents used and records generated by the laboratory were reviewed before the documenting the conclusions in the pre-assessment report . Annex 1 includes the pre-assessment report.

SYSTEM DEVELOPMENT AND CONSULTATION

In this phase the consulting team developed the laboratory quality management system and provided consultation to the laboratory on other important aspects.

Quality Management System

A quality management system was developed for the laboratory that fulfils the requirements of ISO/IEC 17025 standard, the management system included:

- Quality manual: that provides the framework for the management system as a whole to be implemented by the laboratory. It outlines the management policies and overall direction to be applied for each element of the system and in some cases contains cross-referenced supplementary policies and procedures for each major business function of the laboratory.

  The quality manual was organized under the sub-headings of the key requirements of ISO/IEC 17025. It also includes the organizational chart of the laboratory, job descriptions and an index of procedures and work instructions.

- Quality procedures: covering the needed quality management system documentation according to the requirements of ISO/IEC 17025; the quality procedures include:
  1. Document and record control
  2. Purchasing of goods and services
  3. Handling of customer feedback and complaints
  4. Control of nonconformities, corrective and preventive actions
  5. Internal audits and management reviews
  6. Personnel competence and training
  7. Measurement uncertainty
  8. Test method for analysis of pesticides residues of food items
  9. Maintenance and calibration of equipment
  10. Handling of test items
  11. Quality assurance
  12. Handling compressed gas cylinders (Work instruction).

- Forms: to facilitate the consistent implementation of the quality system and ensuring that the required records are kept and maintained, 21 forms were developed corresponding to the needs of the procedures and work instructions mentioned above. Annex 3 includes the master list of the quality management system documentation.

- Layout template for SoPs, a standard layout for SoPs was developed and used to document the testing SoP. The consulting team worked hand-in-hand with the technical staff of the laboratory through several working sessions to develop the testing SoP.

Consultation and Support

In addition to developing the quality system documentation of the laboratory, the consulting team provided advice, consultation and support to several aspects of management practices.

- *Legal status of the laboratory:* the pre-assessment indicated lack of evidence of a clear identifiable legal status of the laboratory, consequently the consulting team reviewed related by-laws at the Ministry of Agriculture and advised the laboratory on legal and administrative actions needed to clarify an identifiable legal status of the laboratory. The consulting team conducted several sessions to clarify this matter with the laboratory management and heads of relevant sections in the Ministry of Agriculture.

- *Commercial pressure:* the number of samples received by the laboratory exceeds its ability to test. As mentioned in the pre-assessment report, no contract review takes place. Contract review practices were imbedded within section 4.4 of the quality manual and TO-05 Handing of Test Items procedure. Yet, the consulting team suggested several means to handle the number of samples sent to the laboratory by Border Control Department and the corresponding commercial pressure to the testing fees collected by the Ministry of Agriculture.

- *Personnel files:* the consulting team assisted the laboratory in collecting and organizing personnel files, this included defining the content of the files and reviewing the actual files and assisting the laboratory in handling missing records.

- Equipment files: the consulting team assisted the laboratory in collecting and organizing the equipment files, this included defining the content of the files and reviewing the actual files and assisting the laboratory in handling missing records.

- *Equipment list:* the consulting team designed the template of the equipment list that is user friendly and assisted the laboratory in populating it with the current equipment information.

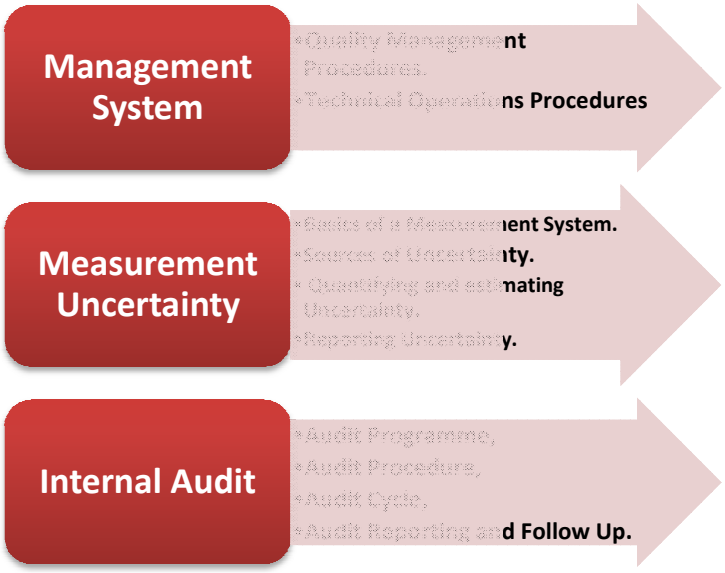
- *Appointment of technical and quality manager:* the consulting team assisting the laboratory management in appointing the technical and quality managers, by defining the qualifications and functions of the two positions and suggesting names from the existing staff of the laboratory to fill such positions. The consulting team also reviewed related by-laws in the Ministry of Agriculture and advised on the legal and administrative actions needed to formalize the appointment.

- *LIMS:* the LIMS was assessed by an IT specialist who provided the consulting team with valuable information on the system status. The laboratory was advices regarding regular back-up, anti-virus update and other IT aspects. The consulting team also highlighted the weaknesses of the current LIMS and the actions needed to improve its performance.

- *Proficiency testing:* the consulting team identified accredited proficiency testing providers and will assist the laboratory in participating in a suitable scheme. Yet related advice and support is pending the calibration of the laboratory equipment.

TRAINING

The laboratory staff received six days of training to enable them to implement the management system that was developed. The training covered the newly developed management system documents, internal audit and measurement uncertainty.



Management System Training

The training covered all procedures of the newly developed system. It was interactive and included class participation both as individuals and in teams. It consisted of exercises, case studies and syndicate work, aimed at enabling the participants to understand, learn and implement the newly developed processes in practical situations. The Agenda of this training is enclosed in Appendix 4 below.

The consulting team utilized the discussions made during the training sessions to get feedback and comments from the laboratory staff on the procedures and forms introduced. This feedback was then used as an input for improving these procedures and the amended procedures were re-sent to the laboratory for review and approval.

Internal Audit Training

This training course provided the basic knowledge for understanding the accreditation requirements for laboratories and skills needed to perform internal auditing according to these requirements. It also covered the approach to develop management systems in laboratories according to the international standard ISO/IEC 17025: 2005 and the methodology of auditing these systems appropriately, and to encourage constructive development of effective audit skills through analysis and self-criticism based on the requirements of the international standard ISO/IEC 17025: 2005 and ISO 19011:2002.

The course was a mixture of practical and theoretical sessions involving a variety of syndicate work and class discussions. Adequate explanation of the Measurement Uncertainty concept was also provided in the course accompanied with practical exercise.

Measurement Uncertainty Training

The training covered all aspects of traceability, calibration, corrections and SI units, classifications of uncertainty - Type A & Type B, discovering distributions, combination of uncertainties, calculation of uncertainty for a measurement, sources of uncertainty, approaches to evaluating sources of uncertainty, and Statement of Uncertainty and Compliance.

RECOMMENDATIONS AND FUTURE ACTIONS

In order for the laboratory to fulfill the requirements of ISO/IEC 17025 and accreditation requirements, the following actions need to take place before the post-assessment scheduled end of September:

1. Implementation of the developed system:
   The laboratory is expected to start applying the newly developed procedures and use the designed forms to generate the needed records. The laboratory is advised to implement the new documentation to its fullest within the coming two months, including the calibration of equipment and participation in an appropriate proficiency testing scheme in order to generate enough records as evidence of fulfilling the requirements of accreditation.

2. Legal status of the laboratory:
   Although a directorate of laboratories was recently created, a clear set of functions were not yet defined. The consulting team provided advice on the functions that the laboratory should be entitled of to ensure impartiality, integrity and independence. Ministry of Agriculture should formally issue the official functions of the laboratory in accordance with the advice of the consulting team.

3. LIMS:
   The assessment of the current LIMS showed many deficiencies in the system software, hardware, network security, backup operations and system security. The consulting team, with the assistance of an IT specialist, advised the laboratory on the needed procedures. Consequently the Ministry of Agriculture provided the needed IT support to the LIMS hardware and back-up. The laboratory was advised to obtain the source code for the current LIMS and hire a local company that can support the deficiencies related to system validation, security, data control, handling and reporting.

   The Ministry of Agriculture should handle the deficiencies of the LIMS prior to applying for accreditation.

4. Commercial pressure and contract review:
   The laboratory should be authorized to refuse samples beyond its testing capacity as part of the contract review process. Yet, as part of the Ministry of Agriculture, the laboratory receives samples from Licensing and Border Control Department of imported fruits and vegetables collected at the border points. MoA collects a testing fee for every sample collected and expects the laboratory to test all samples received. The current samples received exceed the laboratory's testing capacity.

The Ministry of Agriculture should handle the current commercial pressure and ensure the laboratory's right in refusing samples exceeding its testing capacity; this should be done before applying to accreditation.

APPENDIX

APPENDIX 1- ABBREVIATIONS

PRTL	Pesticide Residue Testing Laboratory
PTP	Proficiency Testing Program
IEC	International Electro-technical Commission
ISO	International Organization for Standardization
LIMS	Laboratory Information Management System
MoA	Ministry of Agriculture
SoP	Standard Operating Procedure

APPENDIX 2- PRE-ASSESSMENT REPORT

GENERAL INFORMATION

Assessed Organization:	**Pesticide Reside Testing Laboratory (PRTL) – Ministry of Agriculture.**
Assessment Type:	**Pre-assessment.**
Lead assessor:	**Lina Qudah.**
Technical assessors:	_____
Assessment criteria:	**ISO/IEC 17025**
Assessment Dates:	**28 January 2009**

ASSESSMENT DETAILS

SCOPE ASSESSED

Methods and Procedures Assessed and Witnessed

This pre-assessment visit covered all actual activities running in the laboratory currently. However, no witnessing of any testing was covered during the visit. The main objective of the visit was to conduct gap analysis by comparing current situation (documentation and practices) with the requirements of the International Standard ISO/IEC 17025 and the requirements of the National accreditation System.

A representative sample of documents used and records generated by the laboratory were reviewed before the conclusions documented below were made.

Staff Interviewed

During the assessment, the following employees were interviewed:

- Lina Al-Hmoud, Head of PRTL
- Mukarram Hamed, Laboratory Supervisor
- Ibtisam Hamad, Deputy Laboratory Supervisor

ASSESSMENT FINDINGS

The followings are the main findings of the pre-assessment documented under the sub-subheadings of the key requirements of the ISO/IEC 17025: 2005:

Organization

- Legal status:
  Aside from the overall organization structure of the Ministry of Agriculture, there exists no legal document that describes the legal status of the laboratory. This needs to be provided by the laboratory manager.
    - Resources:

- **Equipment:** aside from the calibration program (which lists down the main equipments of the laboratory that require calibration) and the laboratory needs list of chemicals and glass wares, the PRTL does not have an inventory list of equipment nor a complete record system of the available equipment, their maintenance and calibration history. None of the equipments used in the laboratory are calibrated. However, there is a list of all equipment (preliminary calibration program) that needs calibration. The sufficiency of the equipment available in the laboratory was considered suitable for the time being.
- **Personnel**: the personnel records are partially developed; these included information about the personnel major qualifications and training. The records need to be completed and training needs have to be identified. An excel template was developed and sent to the laboratory supervisor on Thursday 29 January 2009 in order to develop the list of personnel and collect necessary information regarding their qualifications and training needs in order to establish the next line of action. It was found out that current staff number is insufficient to cover the volume of work for the laboratory.
- **Test methods:** the PRTL is using the instructions used in the equipment manual for performing the extraction test of pesticides residues in vegetables and fruits; the equipment used being the Gas Chromatography (GC)-Mass Spectrometry (MS) HP 5973 GC-ECD (HP 5890/ GC NPD (HP 5890)). However, in preparation for accreditation the laboratory is intending to start using the following method "Fast and Easy Multiresidue Method Employing Acetonitrile Extraction/ Partitioning and Dispersive Solid-Phase Extraction for the Determination of Pesticide Residues in Produce" which is published by the Journal of AOAC International Vol. 86, No. 2, 2003. For applying this method the laboratory needs to document it, perform the necessary validation, establish necessary quality control system, train the personnel on performing the method and start implementing the method in order to collect the necessary records.
- **Other facilities in the laboratory:** there is a need for Air Conditioners (AC) and metal curtains in several rooms (e.g. cutting samples and standard rooms) in order to control the temperature and humidity in these rooms. Refrigerators are attached to data-loggers, connected to computers, used to monitor the refrigerator temperature. The software used on these computers needs to be regularly updated and the technical support provided through the website of the software provider; this is not being made currently by the laboratory.

- Organization structure:

There is a clear description of the responsibilities and flow of work. The work is distributed among the staff however this is not formally documented neither in a form of job descriptions neither through organization chart.

- Responsibility & authority**:**

As mentioned above, job descriptions are not available.

Impartiality, Independence, Integrity and Confidentiality

There are measures to ensure the confidentiality of the customer information, but these are neither documented nor monitored through sample coding. This is also applicable to independence and integrity.

Management

- Management system including documented policies & procedures:
  The lab has a documented quality manual which was prepared by an external consultant in 2007; the quality manual also includes the following documented procedures:
    - Control of documents & records,
    - Management of subcontractors and purchases,
    - Handling complaints,
    - Control of nonconforming items & dealing with corrective & preventive actions
    - Internal audit & management review.

  The documented quality manual does not reflect the actual situation in the laboratory, some procedures are too theoretical and sometimes extensively written. Therefore, the documentation of the quality management system needs to be simplified and some procedures need to be re-written. It was noted that none of the documented policies and procedures are implemented.

- Roles & responsibilities for quality:

  There is a need to appoint a quality manager , technical manager and their deputies through a decision from the Secretary General of the Ministry of Agriculture or any suitable authority.

- Supervision and monitoring of staff:

  From an administrative point of view, the type of supervision and monitoring made is through the leaves-control. From technical point view, the type of supervision and monitoring made is through cross-checking of the information entered on the computer by the administrative staff such checking is made by the analysts. The cross-checking of the final report is made by the laboratory supervisor only before releasing the final report to signing by the laboratory manager. It was also noted here that there is no retaining of the raw data records.

Evaluation Processes

- Enquiries, tenders and contracts:
  There is no contract review taking place; any samples recieved are considered. Some samples of forms used for documenting the samples information were collected and reviewed. All of these forms needs to be re-designed in order to comply with the accreditation requirements. The laboratory is using two systems for logging the received samples; the Laboratory Information Management System (LIMS) software and an excel sheet. The LIMS software needs maintenance and upgrade however none of the laboratory staff can make such maintenance and upgrade therefore the support of the Ministry of Agriculture IT department. was sought but no support is provided until now.

- Planning and resource allocation:
  There is no clear system of how the planning and allocation of resources are done.

- Testing/ calibration process:
  In preparation for accreditation the laboratory is intending to start using the method “Fast and Easy Multiresidue Method Employing Acetonitrile Extraction/ Partitioning and Dispersive Solid-Phase Extraction for the Determination of Pesticide Residues in

Produce" which is published by the Journal of AOAC International Vol. 86, No. 2, 2003. This method needs to be documented internally, with validation and Measurement Uncertainty information. Recovery, Repeatability & Reprouducability, detection limits and Quality Control charts.

- Reports and certificates:
  The laboratory has developed different templates of reports based on the sample source (i.e. local samples, imported samples, etc). All of these report templates are not complying with the requirements of ISO/IEC 17025; they all need to be re-designed.

Technical Competence

- Personnel:
  Personnel competence was not evaluated during the pre-assessment visit. However, it was demonstrated that the staff is trained but no records of training that proves competence neither of authorization were available. As mentioned earlier in this report these needs to be developed in order to identify the training needs to fulfil the needed competence gap.
- Test Methods:
  The technical capability of the test method was not evaluated during the pre-assessment visit.
- Facilities / equipment:
  All equipments used in the laboratory are not calibrated. The maintenance carried out on equipments is not fully recorded.
- Quality Assurance:
  There is no quality control system that satisfy the requirements of accreditation and this needs to be prepared and implemented right away.

CONCLUSIONS AND DECISIONS OF THE LEAD ASSESSOR

The laboratory is still not ready for accreditation and there is a need for establishing a documented system that meets the requirements of accreditation and guide the laboratory on how to effectively implement it. The non-conforming points referred to within the body of this pre-assessment report must be given priority.

The following points shall be resolved before finalizing the quality management system of the laboratory:

- The Ministry of Agriculture should take a decision regarding the number of samples transferred to the laboratory as they are a way beyond the resources of the laboratory,
- Appointment of Quality and Technical Managers and their deputies,
- Assessment of the check if the current LIMS system, related hardware and backup by an IT specialist and providing the consulting team with a summary of its current status.
- The decision must be made whether the scope of accreditation will include the test methods that the laboratory is currently using or there will be an introduction of new test methods referred to in the body of this pre-assessment report; which requires validation and other technical preparations.

APPENDIX 3- MASTER LIST

Procedures and Work Instructions

#	Doc ID	Doc Name	Cross-Reference to ISO/IEC 17025	Issue #	Date	Issue #	Date	Issue #
								Policy Documents
1	PRTL-QManual	PRTL Quality Manual	whole standard	0	31/03/2009	1	25/06/2009	2
								Technical Operations Procedures
2	**TO-01**	Personnel Competence and Training	Clause 5.2	0	15/03/2009	1	25/06/2009	2
3	**TO-02**	Measurement Uncertainty	Clause 5.4	0	15/03/2009	1	25/06/2009	2
3	**TO-03**	Test Method for Analysis of Pesticides Residues of Food Items	Clause 5.4	0	13/05/2009	1	25/06/2009	
4	**TO-04**	Maintenance and Calibration of Equipment	Clauses 5.5 and 5.6	0	15/03/2009	1	25/06/2009	2
5	**TO-05**	Handling of Test Items	Clause 5.8	0	22/04/2009	1	25/06/2009	2
6	**TO-06**	Quality Assurance	Clause 5.9	0	9/4/2009	1	25/06/2009	2
								Quality Management Procedures
7	**QM-01**	Document and Record Control	Clauses 4.3 and 4.13	0	7/4/2009	1	25/06/2009	2
8	**QM-02**	Purchasing Goods and Services	Clause 4.6	0	12/5/2009	1	25/06/2009	2
	QM-03	Handling Customer Feedback and Complaints	Clauses 4.7 and 4.8	0	10/5/2009	1	25/06/2009	2
9	**QM-04**	Control of Nonconformities, Corrective and Preventive Actions	Clauses 4.9, 4.10, 4.11 and 4.12	0	12/5/2009	1	25/06/2009	2
10	**QM-05**	Internal Audits and Management Reviews	Clauses 4.14 and 4.15	0	15/03/2009	1	25/06/2009	2
								Work Instructions
11	**WI TO 4.1**	Handling Compressed Gas Cylinders	Clauses 5.5	0	10/5/2009	1	25/06/2009	2

Forms

#	Form ID	Form Name	Corresponding Procedure	First Issue #	Date	Current Issue #	Date
Technical Operations Procedure							
1	**TO 1.1**	Staff experience Level Sheet	Personnel Competence and Training	**0**	7/4/2009	**1**	25/06/2009
2	**TO 2.1**	Uncertainty Budget Sheet	Measurement Uncertainty	**0**	13/05/2009	**1**	25/06/2009
3	**TO 4.1**	Equipment List	Maintenance and Calibration of Equipment	**0**	16/4/2009	**1**	25/06/2009
4	**TO 4.2**	Equipment Acceptability for Use Form		**0**	17/4/2009	**1**	25/06/2009
5	**TO 4.3**	Equipment Maintenance Register		**0**	7/5/2009	**1**	25/06/2009
6	**TO 4.4**	Performance Check for Balances		**0**	7/5/2009	**1**	25/06/2009
7	**TO 5.1**	Client's Test Request Form	Handling of Test Items	**0**	7/5/2009	**1**	25/06/2009
8	**TO 6.1**	Quality Assurance Plan	Quality Assurance	**0**	23/06/2009	**1**	25/06/2009
Quality Management Procedures							
9	**QM 1.1**	Standardised Format for Controlled Documents	Document and Record Control	**0**	13/05/2009	**1**	25/06/2009
10	**QM 1.2**	Controlled Document Proposal and Change Form		**0**	13/05/2009	**1**	25/06/2009
11	**QM 1.3**	Approved Electronic Directory Structure		**0**	13/05/2009	**1**	25/06/2009
12	**QM 2.1**	Approved Suppliers/ Subcontractors List	Purchasing Goods and Services	**0**		**1**	25/06/2009
13	**QM 2.2**	Questionnaire of Supplier/Subcontractor Qualifications.		**0**	23/05/2009	**1**	25/06/2009
14	**QM 3.1**	Customer Satisfaction Survey Form	Handling Customer Feedback and Complaints	**0**	13/05/2009	**1**	25/06/2009
15	**QM 3.2**	Complaints Log Form		**0**	23/05/2009	**1**	25/06/2009
16	**QM 3.3**	Complaints Report Form		**0**	17/04/2009	**1**	25/06/2009
17	**QM 4.1**	Nonconformity/ Observation Report				**1**	25/06/2009
18	**QM 4.2**	Nonconformity Report /Corrective Action Log				**1**	25/06/2009
19	**QM 4.3**	Request for Improvement Log		**0**	13/05/2009	**1**	25/06/2009
20	**QM 5.1**	Internal Audit Report	Internal Audits and Management Reviews	**0**	17/04/2009	**1**	25/06/2009

Work Instructions							
20	**WI TO 4.1.1**	Gas Cyliners Check	Handling Compressed Gas Cylinders	**0**	7/6/2009	**1**	25/06/2009
21	**WI TO 4.1.2**	Gas Gauges/ Regulators Check		**0**	7/6/2009	**1**	25/06/2009

External Documents

#	Document ID	Document Name	Edition/Issue Number	Edition/Issue Date	Location
1	**ISO/IEC 17025**	General requirements for the competence of testing and calibration laboratories	**2**	15/05/2005	Quality Officer Office

APPENDIX 4- TRAINING AGENDA

Training of Management System for Pesticide Residue Laboratory - MoA

(Training Venue is at Citadel Hall - SABEQ Premises)

Training Agenda

Day 1: Sunday, 14 June 2009

Time	Subject	Responsibility
	Administration and Logistics	
08:30 – 09:00	• Registration. • Opening of the Course. • Welcome and short introduction of Participations and Trainers.	Eng. Raba'h Al-Ajarmeh
	Management System Procedures	
09:00 – 10:30	• Document and Record Control. • Purchasing Goods and Services.	Eng. Lina Qudah
10:30 – 11:00	**Coffee Break**	
11:00 – 13:00	• Handling Customer Feedback and Complaints. • Control of Nonconformities, Corrective and Preventive Actions.	Eng. Lina Qudah
13:00 - 14:00	**Lunch Break**	
14:00 - 15:30	• Internal Audits and Management Reviews. • Forms and Templates.	Eng. Lina Qudah
15:30	**End of Day 1**	

Day 2: Monday, 15 June 2009

Time	Subject	Responsibility
	Technical Operations Procedures	
08:30 – 09:00	• Personnel Competence and Training. • Measurement Uncertainty.	Eng. Lina Qudah
09:00 – 10:30	• Maintenance and Calibration of Equipment. • Handling of Test Items.	Eng. Lina Qudah
10:30 – 11:00	**Coffee Break**	
11:00 – 13:00	• Quality Assurance.	Eng. Lina Qudah
13:00 - 14:00	**Lunch Break**	
14:00 - 15:30	• Forms and Templates.	Eng. Lina Qudah
15:30	**End of Day 2**	

Training of Measurement Uncertainty for Pesticide Residue Laboratory - MoA

(Training Venue is at Citadel Hall - SABEQ Premises)

Training Agenda

Day 1: Sunday, 21 June 2009

Time	Subject	Responsibility
	Administration and Logistics	
08:30 – 09:00	• Opening of the Course. • Presentation of the Course Outline and Program.	Eng. Lina Qudah
	Introduction	
09:00 – 10:00	• History and Background. • Definition of Uncertainty and Relevant Terms. • Classification of Uncertainty - Type A & Type B. • Discovering Distributions.	Eng. Lina Qudah
10:00 – 11:30	**Case Study 1**	**Team Work**
11:30 – 12:00	**Coffee Break**	
12:00 – 13:00	**Estimation of Measurement Uncertainty** • Sources of Uncertainty. • Quantifying Uncertainty.	Eng. Lina Qudah
13:00 – 14:00	**Case Study 2**	**Team Work**
14:00	**End of Day 1**	

Day 2: Monday, 22 June 2009

Time	Subject	Responsibility
	Estimation of Measurement Uncertainty (Cont.)	
08:30 – 10:30	• Combining Uncertainties. • Calculating Combined Measurement Uncertainty.	Eng. Lina Qudah
10:30 – 11:30	**Case Study 3**	**Team Work**
11:30 – 12:00	**Coffee Break**	
	Reporting Measurement Uncertainty	
12:00 – 13:00	• Reporting standard uncertainty. • Reporting expanded uncertainty. • Numerical expression of results. • Compliance against limits.	Eng. Lina Qudah
13:00 – 14:00	**Case Study 4**	**Team Work**
14:00	**End of Day 2**	

Training on Internal Auditing for Pesticide Residue Laboratory - MoA

(Training Venue is at Citadel Hall - SABEQ Premises)

Training Agenda

Day 1: Sunday, 28 June 2009

Time	Subject	Responsibility
	Administration and Logistics	
08:30 – 09:00	• Opening of the Course. • Presentation of the Course Outline and Program.	Eng. Lina Qudah
	Introduction	
09:00 – 10:30	• Background to Auditing, • Designing an Internal Audit Programme, • The Internal Audit Procedure, • Methods of Audit (horizontal, vertical and witness audits).	Eng. Lina Qudah
10:30 – 11:30	**Case Study 1: Designing and Internal Audit Programme**	**Team Work**
11:30 – 12:00	**Coffee Break**	
	The Internal Audit Process	
12:00 – 13:00	• The Audit Cycle (Plan & prepare, conduct, report and follow up). • Internal Audit Report.	Eng. Lina Qudah
13:00 – 14:00	**Case Study 2: Document Review and Preparation of Checklist.**	**Team Work**
14:00	**End of Day 1**	

Day 2: Monday, 29 June 2009

Time	Subject	Responsibility
	The Internal Audit Process (Cont.)	
08:30 – 10:30	• Report back of the case study findings. • Dealing with the Outcome of Audits.	Eng. Lina Qudah
10:30 – 11:30	**Case Study 3: Reporting Audit Findings.**	**Team Work**
11:30 – 12:00	**Coffee Break**	
	The Auditor	
12:00 – 13:00	• Auditors Concerns. • Auditors Competence and Evaluation.	Eng. Lina Qudah
13:00 – 14:00	**Case Study 4: Auditor Reaction.**	**Team Work**
14:00	**End of Day 2**	

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