

# Implementation of MS ISO/IEC 17025 at Pesticide Residue Laboratory, Food Safety Group, MPOB

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## INTRODUCTION

ISO/IEC 17025 Standard is a general requirement for competence of testing and calibration laboratories. It is accepted and applied globally as a quality standard by any testing and calibration laboratories to ensure their tests and results are internationally recognized. This international standard includes two major components which comprise a management system and a technical system that are crucial in running the operations in a laboratory. If one of the components is lacking it will affect the quality of results in the laboratory. The ISO/IEC 17025 requirement has been designed to incorporate all requirements of ISO 9001 that are relevant to the scope of testing and services. Therefore, testing and calibration laboratories that comply with ISO/IEC 17025 requirements will also operate in accordance with ISO 9001.

In order to ensure the tests and results obtained from the Food Safety Group laboratories are internationally recognized, the management of the laboratory has decided to apply for MS ISO/IEC 17025 accreditation. For a start, the application for MS ISO/IEC 17025 accreditation is focused on Pesticide Residue Laboratory before expanding the scope to other laboratories under the Food Safety Group requirements. *Figure 1* shows the

organizational structure of Food Safety Group laboratories.

## QUALITY POLICY STATEMENT OF FOOD SAFETY GROUP LABORATORIES

The Quality Policy is a statement to express the intention, direction and aim regarding the quality of the services, product or process offered. In complying with the MS ISO/IEC 17025 requirements, Food Safety Group laboratories have set several quality policies to be adhered to by the staff and management. The established quality policies

are aimed to provide the palm oil industry worldwide with accurate, prompt and independent services in accordance with the procedure laid down in the *Quality Manual and Standard Operating Procedure* (SOP). Therefore the Food Safety Group will become a reference laboratory for the food safety analysis of palm oil, palm kernel oil and their products. It also helps fulfill MPOB mission to improve the well-being of the palm oil industry through research, development and services. It established the quality management system with seven elements, which include the provision of skilled and trained staffs, adequate facilities, recognized test methods, suitable environment, quality of audit/review and continuous improvement of analytical services. The most important objective is to fulfill the customer need for precision and accurate analysis carried out by the laboratories.

## ORGANIZATIONAL STRUCTURES OF FOOD SAFETY GROUP LABORATORIES

Food Safety and Codes of Practice Certification Unit is a new unit

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under the Product Development and Advisory Services (PDAS) Division. It was established on 1 September 2008. The Unit is divided into two group namely as Food Safety Group and Certification Group. Food Safety Group is responsible for R&D and analytical services related to food safety focusing on palm oil and its product. The Certification Group will focus their activities on Codes of Practice (CoP) certification. *Figure 1* shows the organizational structures of the Unit.

The Food Safety Group laboratories comprise of five different laboratories known as Pesticide Residue Laboratory, Chemical Contaminant Laboratory, Process Developed Contaminants Laboratory, Trace Elements Laboratory and Mycotoxin Laboratory. Pesticide residue laboratory will be responsible to analyze samples for pesticides residue in crude palm oil and crude palm kernel oil. Besides paraquat analysis, the laboratory also has the capability to conduct other pesticide residue analysis such as glyphosate, glufosinate ammonium, monochrotophos, methamido-

phos, acephate, deltamethrin and hexaconazole. However, for now only testing of paraquat is accredited with MS ISO/IEC 17025 certification.

### ACCREDITATION PROCESS

Accreditation process is a formal evaluation of the laboratory to check the capability and competency of the laboratory to comply with requirements stipulated in the ISO/IEC 17025 standards. The accreditation will assure the client that the procedures and results are technically valid, as it has endorsed the competence of the laboratory.

Accreditation of Pesticide Residue Laboratory was carried out by Standard Malaysia, previously known as Department of Standard Malaysia (DSM). Standard Malaysia is the national standardization and accreditation body. It fosters and promotes standardization and accreditation as a means of promoting industrial efficiency, benefiting the health and safety of the public, protecting the consumers, and facilitates trade and international recognition of quality products.

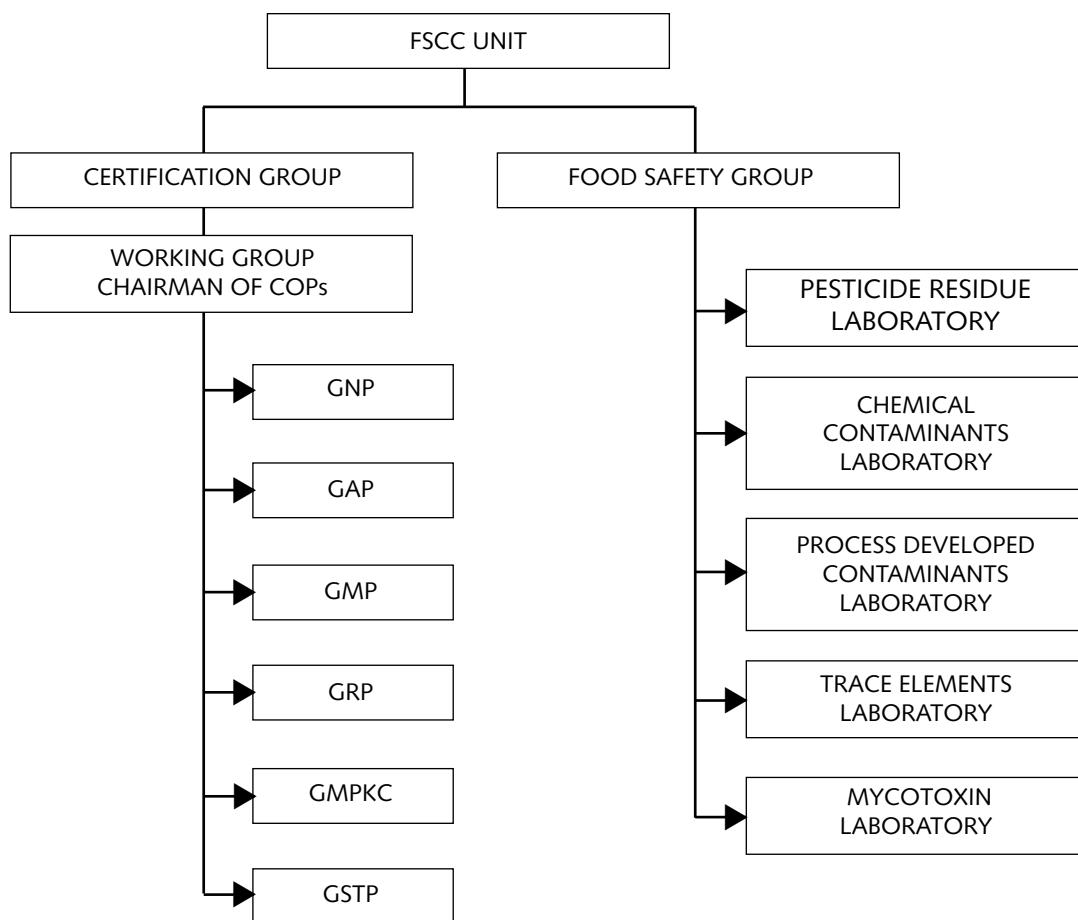
Paraquat was the first selection for analysis because this pesticide is widely used in the oil palm plantation. The MPOB method was modified based on Imperial Chemical Industry (ICI) method entitled *An Ion Ex-change Method for Determining Paraquat Residues in Food Crops* (Calderbank and Yuen, 1965). The analytical instrument for analyzing paraquat using this method is Perkin Elmer Lambda 12 UV-VIS Spectrometer as shown in *Figure 2*.

The audit process was carried out in three phases namely as adequacy audit, pre-assessment audit and lastly compliance audit. These audits were done by Standard Malaysia's auditors. For internal audit, an auditor from another division of MPOB has been selected to assess the competency of the laboratory. The management review meeting for pesticide residue laboratory is chaired by the Director of PDAS Division. The ISO/IEC 17025 activities for pesticide residue laboratory are shown in *Table 1*. The activities carried out by pesticide residue laboratory during the period of assessment includes laboratory audits by



*Figure 1. Perkin Elmer Lambda 12 UV-VIS Spectrometer (for sample analysis).*

from page 11



Note: \* GNP = Good Nursery Practice.  
 GAP = Good Agriculture Practice for the Oil Palm Estate and Smallholdings.  
 GMP = Good Milling Practice for Palm Oil Mills.  
 GRP = Good Refinery Practice.  
 GMPKC = Good Crushing Practice for Palm Kernel Crushers.  
 GSTP = Good Practice for Handling, Transport and Storage of Products from the Oil Palm.

Figure 2. Organizational structure of Food Safety and Codes of Practice Certification Unit.

TABLE 1. PESTICIDE RESIDUE LABORATORY ISO 17025 CERTIFICATION ACTIVITIES

Activities	Year 2008			Year 2009										Year 2010								
	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
Adequacy audit	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Management review	-	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-assessment audit	-	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Internal audit	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-
Compliance audit	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-
Submit compliance audit CA to Standard Malaysia	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-
Standard Malaysia replied for 2 unsatisfactory of CA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	-
Submit corrected CA to Standard Malaysia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-
Pesticide residue laboratory accredited	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-

Standard Malaysia (adequacy, pre-assessment and compliance audit), management review meeting, internal audit, correcting any non-conformity raised by Standard Malaysia's auditors and submitting the

corrected non-conformity aspects to the Standard Malaysia's auditors. After completing all requirements the Pesticide Residue Laboratory was finally accredited with MS ISO/IEC 17025 certification on

24 May 2010. The certificate was awarded to Pesticide Residue Laboratory as shown in Figure 3.

### CONCLUSION

The accreditation of Pesticide Residue Laboratory with MS ISO 17025 is a step forward for Food Safety Group laboratories to be recognized internationally as a reference laboratory for food safety analysis. The paraquat analysis carried out by the laboratory will be recognized internationally. The accreditation will be later expanded to the other laboratories under the Food Safety Group laboratories such as Chemical Contaminant Laboratory, Process Developed Contaminants Laboratory, Trace Elements Laboratory and Mycotoxin laboratory.

### ACKNOWLEDGEMENT

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### REFERENCES

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CALDERBANK, A and YUEN, S H (1965). An ion ex-change method for determining paraquat residues in food crops. *Analyst*, Vol. 90: 99-106.



Figure 3. The MS ISO 17025 certificate of Pesticide Residue Laboratory.