



SOP ON SAMPLE HANDLING AND ANALYSIS

Compiler: O.Mwaniki

Signature: 

Approver: P. Kamuti

Signature: 

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1. **Scope:**



SOP ON SAMPLE HANDLING AND ANALYSIS

This document describes the transportation, receipt, handling, protection, storage, retention and disposal of all samples received in the laboratory and the general outline on how analysis is carried out in a manner that will ensure their integrity up to the time of analysis

2. Procedure:

- a) After receipt and registration, the sample(s) shall be allocated a worksheet as follows:

Sample type	Worksheet	Worksheet no.
Formulated pesticides	M03/ACL/WS_AF	AF Year Worksheet No.*
Agricultural samples for pesticide analysis	M03/ACL/WS_PR	AA Year Worksheet No.*
Environmental samples for pesticide analysis	M03/ACL/WS_PR	AE Year Worksheet No.*
Soil	M03/FQC/WS_QS	QS Year Worksheet No.*
Plant	M03/FQC/WS_QP	QP Year Worksheet No.*
Irrigation Water	M03/FQC/WS_QW	QW Year Worksheet No.*
Manures	M03/FQC/WS_QM	QM Year Worksheet No.*
Fertilizers	M03/FQC/WS_QF	Q F Year Worksheet No.*
Agrochemicals	M03/FQC/WS_QA	QA Year Worksheet No.*
Food and Feed	M03/FQC/WS_QD	QD Year Worksheet No.*
Organic contaminants for analysis of PCB, PAHs	M03/ACL/WS_OC	CA Year Worksheet No.*
Heavy Metal Contaminants	M03/FQC/WS_CA	CA Year Worksheet No.*
Food Microbiology	M03/FML/WS_FM	FM Year Worksheet No.*
Portable Water	M03/FQC/WS_CW	CW Year Worksheet No.*
Mycotoxins	M03/ACL/WS_CM	CM Year Worksheet No.*
Environmental(Effluent)	M03/ACL/WS_QE	QE Year Worksheet No.*

* The year shall be represented by its last two digit (e.g. 08) and the first worksheet of the year shall be 001; Worksheet numbers are allocated serially.



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- b) The sample and the worksheet shall then be allocated to an analyst(s) by the receiving officer, the sample supervisor or his/her assistant, or the Laboratory Manager. The sample shall be analysed immediately where possible.
- c) When analysis does not start immediately, the receiving officer shall store the sample(s) appropriately to avoid deterioration and contamination as shown below

3. Sample Handling Summary Table

Sample handling summary table				
PESTICIDE ANALYSIS:				
Sample type	Analysis requested	Treatment before storage	storage conditions	Location The fridges and freezer to be physically be confirmed
Fruits vegetables and vegetation	Pesticide residues	None, or may be finely chopped ready for analysis	Analysis within a few days 1-5°C; Sample received deep frozen must be kept at $\pm 16^{\circ}\text{C}$; Samples that may require storage for a longer time should be stored at $-180^{\circ}\text{C} \pm 5$	DF01
Animal tissue or Fish	Pesticide residues	None, or may be finely chopped ready for analysis	Analysis within a few days 1-5°C; Sample received deep frozen must be kept at $\leq 16^{\circ}\text{C}$; Samples; Samples that may require storage for a longer time should be stored at $-180^{\circ}\text{C} \pm 5$ Samples that may require storage for a longer time should be stored at $-180^{\circ}\text{C} \pm 5$	DF04
Cereals	Pesticide residues	None	Analysis within a few days 1-5°C; Sample received deep frozen must be kept at $\pm 16^{\circ}\text{C}$; Samples	DF02



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			Samples that may require storage for a longer time should be stored at -18 ± 5 °C	
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Sample type	Analysis requested	Treatment before storage	storage conditions	Location
Honey	Pesticide residues	None	Analysis within a few days $1-5^{\circ}\text{C}$; Samples received deep frozen must be kept at $\leq -16^{\circ}\text{C}$; Samples that may require storage for a longer time should be stored at -18 ± 5 °C	DF02
Seed	Pesticide residues	None	On bench at room temperature	Pesticide residues laboratory
Water	Pesticide residues	None	20 ± 3 °C	RF07
Retained samples	Pesticide residues	None	-20 ± 5 °C	DF05
Soil and sediment	Pesticide residues	None	20 ± 3 °C	RF06
Formulated pesticide products	% Active ingredient	None	On bench at room temperature	Formulation laboratory weighing room
Contaminant analysis	Polychlorinated biphenyls (PCBs), poly-aromatic hydrocarbons (PAHs)	None, or may be finely chopped ready for analysis	For animal tissue and fruits and vegetables: Analysis within a few days $1-5^{\circ}\text{C}$; Samples received deep frozen must be kept at $\leq -16^{\circ}\text{C}$; Samples that may require storage for a longer time should be stored at -18 ± 5 °C 20 ± 3 °C (for soil and sediment samples)	DF08 if animal tissue, DF01 if fruits and vegetables, RF04 if soil



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INORGANIC ANALYSIS				
Sample type	Analysis requested	Treatment before analysis/ storage	Storage conditions	Location
Irrigation water	Irrigation suitability	Filtration into a conical or volumetric flask	On bench/archive at room temperature	Water laboratory
Granular fertilizer	Conformity to specification	Grinding to reduce particle size and mix well and place in polythene bags for storage after analysis	On bench at room temperature	Fertiliser laboratory
Foliar fertilizer	Conformity to specification	None	On bench at room temperature	Fertiliser laboratory
Plant tissue	Nutrient analysis	Dried at $80 \pm 3^\circ\text{C}$ for about 48 hours, ground using a mill and put in polythene bags	On bench at room temperature	Soil and plant tissue laboratory
Soil	Fertilizer recommendation	Mixed thoroughly, take the analytical sample and put in a khaki paper bag or designated sample bag. Dry in an oven at 400 ± 5 for 48 hours, grind, and sieved.	On bench at room temperature	Soil and plant tissue laboratory
Agrochemicals	Conformity to specification	None	On bench at room temperature	Fertiliser laboratory
Food and feed	Nutrient levels	Mixed thoroughly and ground.	On bench at room temperature	Macro Lab 3
Contaminant analysis	Heavy metals	Dried at $80 \pm 3^\circ\text{C}$ for about 48 hours, ground using the Kjeltec mill and put in polythene bags (FOR PLANT MATERIALS) Mixed thoroughly, take the analytical sample and put in a khaki paper bag or designated sample bag. Dry in an oven at	On bench at room temperature	Heavy metal laboratory



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		400C $\pm$ 5 for 48 hours, grind, and sieved. (FOR SOIL ANALYSIS)		
Portable water	Water quality	None	On bench at room temperature	Water laboratory
Effluent water	Water quality			Water laboratory
Cereal	Mycotoxin	ground using a mill and put in khaki bags	On bench at room temperature	Pesticide lab
Processed food: peanut butter	Mycotoxin	None	On bench at room temperature	Pesticide lab
Water	Food Microbiology	24 hours at 4C	Fridge	

- (c) The storage environment shall be properly maintained, monitored and appropriate records kept.
- (d) After weighing the analytical sample, the remaining portions shall then be stored securely in the laboratory under the same environmental conditions as it was when first received i.e. as described in the sample handling summary table.
- (e) The retained sample shall be transferred to the archive two weeks after the dispatch of the results or as appropriate. It shall be archived for six months and then disposed, or after despatch of the sample analysis results, or as otherwise advised.

4. Analysis

- (a) The analyst shall perform the analysis using the method authorised by the laboratory manager or the responsible officer. A reagent blank and a control



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sample shall be included in each batch of the analysis. (A batch refers to the samples analysed in one operation, mainly extraction).

- (b) A calibration curve shall be prepared, from which the concentration of the analytes in the sample shall be determined.
- (c) The concentration range for the standard(s) used to prepare the calibration curve(s) shall cover the expected concentration of the analytes in the sample.
- (d) All the raw data shall be recorded in the analysts work book or worksheet immediately it is generated.
- (e) The raw data including the calculated results shall be recorded in the workbooks or worksheet, which may have a summary of such data, as described in the SOP on the Recording of Raw data; G0517.
- (f) The workbook, worksheet and all records of raw data including all calculations shall be cross-checked by the sample supervisor/Technical signatory or assistant of the analysis. All chromatograms and equipment printouts shall be stored in the appropriate designated area, or filed appropriately in the case of equipment printouts.
- (g) Any repeat analyses shall be subject to approval by the laboratory manager or the sample supervisor/Technical signatory.
- (h) The results shall be transferred to a report to be dispatched to the customer. The results of the customer shall only be accessible to the person in charge of typing, printing and dispatching reports who accesses the analytical results folder by use of authorised password.
- (i) All the records for the raw data shall be kept securely in a designated area.



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5. Amendment list

Amendment No.	Date approved	Nature of amendment
1	03/08/2024	Changed the compiler and effective date

6. Revision List

Revision No.	Effective date	Nature of revision
4	01/09/09	• Inclusion of "Sample status register". • Inclusion of description of how analysis is carried out (batch analysis). • Inclusion of sample location form. • Inclusion of contaminant analysis sample handling • Withdrawal of the sample location form
5	20/05/2013	Inclusion of elaborate conditions for samples storage for pesticide residue samples and contaminant samples (animal tissue and fruits and vegetables) to include: "Analysis within a few days 1-5°C; Samples received deep frozen must be kept at -16°C; Samples that may require storage for a longer time should be stored at $-18^{\circ}\text{C} \pm 5^{\circ}$". Inclusion of title and KEPHIS logo as header in the SOP. Deletion of sample status registers. AA/Year/worksheet no. changed to AE/Year/worksheet no. in 3(a) Changed storage conditions to $-20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ in procedure part 3(b) Contaminants location changed to " DF08 if animal tissue and RF 04 if soil"



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6	13/05/15	Change in compiler and approver
7	26/05/2021	Inclusion of Portable water, Effluent water , Cereal Processed food, peanut butter, Water in sample handling procedure Inclusion of new sample categories and their codes i.e. Food microbiology, Portable water , Mycotoxin and Environmental Effluent Analysis
8	26/09/21	Change of compiler, Change of title to SOP on sample handling and analysis, Change of revision number and effective date AND amending the worksheet code for organic contaminants to M03/ACL/WS_OC,

7. Records

Laboratory Workbooks

Worksheets

Chromatograms

Equipment print-outs

Sample registers.