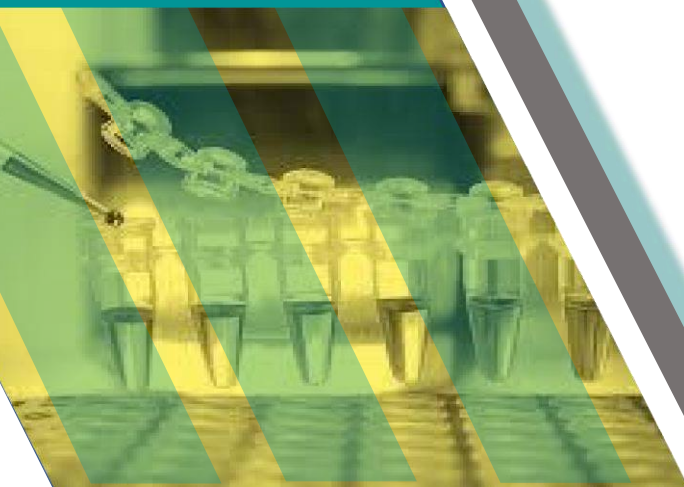




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MALAYSIA

2022

2nd EDITION



THE NATIONAL PUBLIC HEALTH LABORATORY

T E S T H A N D B O O K

Ministry of Health Malaysia



Second Printing, 2022

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Foreword by the Director General of Health Malaysia



The public health sector in Malaysia was critical in the country's agile response to the COVID-19 global public health crisis. Its success was aided by the assertive role played by the National Public Health Laboratory (NPHL) in Sungai Buloh, enabling effective public health response and policy decisions for the federal and state government.

The Ministry of Health, through the National Public Health Laboratory (NPHL), is committed to quality improvement in governance and practices with the latest publication of the 2nd Edition NPHL Test Handbook for 2022. This newest update demonstrates Ministry's determination to achieve excellence in producing timely and reliable laboratory results, particularly in assisting outbreak investigations such as the COVID-19 pandemic.

The publication of the second edition NPHL Test handbook will serve as a leading reference document for all the public health field officers and referring laboratories in Malaysia. It establishes a gold standard in laboratory practices paramount to advancing public health services by the Ministry of Health. The standard will ensure the desired outcome of high-quality results and reliable answers to the outbreak investigations.

My heartiest congratulations to the Sungai Buloh National Public Health Laboratory, Editorial Board, Taskforce and all contributors of this handbook for this timely and comprehensive guide.

Thank you.



TAN SRI DATO' SERI DR. NOOR HISHAM BIN ABDULLAH
DIRECTOR GENERAL OF HEALTH MALAYSIA

Foreword by the Deputy Director General of Health (Public Health)



The National Public Health Laboratory (NPHL) Sg Buloh was at the forefront of the battle against the deadly COVID-19 pandemic, which ravaged Malaysia and many other nations around the globe. The sudden increased in testing capacity and capability has the NPHL priming herself to transform into the Centre for Disease Control (CDC) Malaysia which will be up and running by 2023. In preparation for the near future, this institution published the 2nd edition NPHL Test Handbook 2022.

The commitment of the NPHL to to becoming an institution of excellence is reflected in her achievements such as the publication of this highly-important document which will serve as a foundation for the future CDC Malaysia in order that the right tests are ordered at the right time and transported in the right manner. Therefore, the desired deliverables and outcomes of the Public Health Sector will be quality results and reliable answers to battle the outbreak investigations such as the SARS-CoV-2 pandemic.

At this juncture, I would like to extend my heartiest congratulations to the NPHL Director, the NPHL Test Handbook Editorial Board and Taskforce and all the contributors of this test handbook. On that note, I hope to see that the 2nd Edition NPHL Test Handbook 2022 being fully utilized and being made the definitive reference for the Public Health Sector, Ministry of Health Malaysia for years to come.

Thank you.

A handwritten signature in black ink, appearing to read 'Chong Chee Kheong'. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

DATUK DR CHONG CHEE KHEONG
DEPUTY DIRECTOR GENERAL OF HEALTH (PUBLIC HEALTH)
MINISTRY OF HEALTH MALAYSIA

Foreword by the Director of Disease Control Division

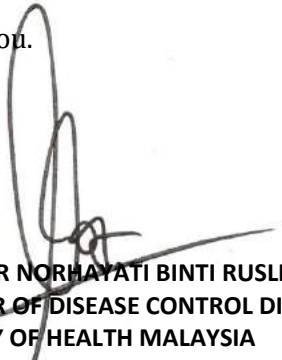


In the face of the on-going COVID-19 pandemic, the National Public Health Laboratory (NPHL) is spearheading the national effort to align all of the tests offered by the Public Health Sector to achieve the goals and objectives set by the Ministry of Health Malaysia and in preparation towards Centre for Disease Control (CDC) Malaysia. In doing so, the NPHL has produced and published a 2nd edition of the NPHL Test Handbook 2022 which describes in detail all the necessary information needed for the field officers in the Public Health Sector.

The publication of this very comprehensive 2nd edition test handbook is highly anticipated by all especially those in the frontlines of outbreak investigations. The information provided in this test handbook is extremely necessary for the ordering of tests where the results obtained can curb the spread of infectious diseases in the community. I highly encourage all relevant personnel involved in the frontlines of outbreak investigations to read and to make full use of this test handbook so that the key findings of your investigations can be determined early and accurately.

I hereby thank and congratulate the Director of NPHL and 2nd Edition NPHL Test Handbook Taskforce 2022 and the contributors of the handbook for the success and production of this guide.

Thank you.



DATUK DR NORHAYATI BINTI RUSLI
DIRECTOR OF DISEASE CONTROL DIVISION
MINISTRY OF HEALTH MALAYSIA

Preface by the Director of the National Public Health Laboratory



Since the establishment of the NPHL in 2000, few service handbooks have been published to provide clients with the necessary information related to its services. The services described in these handbooks not only included the tests offered but also other supplementary efforts such as quality and training activities. The National Public Health Laboratory Test Handbook 2018 was the first test handbook produced and is designed to function as the reference for all the tests offered by the NPHL that specifically focuses on the tests offered by the NPHL and other public health laboratories such as MKA Ipoh, MKA Johor Bahru, MKA Kota Bharu and MKA Kota Kinabalu.

In view of the feedback and comments for improvements received from clients, the new improved 2nd Edition NPHL test handbook 2022 was born. We believe that this latest edition of the test handbook will function as the ultimate reference guide for our clients in placing test requests for outbreak investigations such as the SARS-CoV-2 pandemic. It includes the latest and more comprehensive information on the tests offered, the suitable type and collection of samples, appropriate containers types, transportation requirements and other necessities for placing test requests. We have also included the information about the other Public Health Laboratories in Malaysia which offer similar tests, such as, MKA Ipoh, MKA Johor Bahru, MKA Kota Bharu and MKA Kota Kinabalu, for our users' reference.

The National Public Health Laboratory (NPHL) is comprised of five key divisions: The Disease, Food, Epidemiology, Quality and Administration Divisions. In accordance with the public health objectives of the country, the NPHL is committed to provide analytical and diagnostic testing capacity while serving as a reference centre for disease and food safety. The NPHL is also gearing herself to be transformed into the Centre for Disease Control (CDC) Malaysia by 2023. The quality and standard of the services offered by the NPHL is reflected in its assessments by the World Health Organization (WHO) and the following accreditations by Standards Malaysia: MS ISO 9001:2008 (General), MS ISO 15189:2014 (Disease Division), MS ISO 17043 (TB Reference Laboratory, Bacteriology Section and Parasitology Section) and MS ISO 17025: 2005 (Food Division, Bacteriology Section and Tar & Nicotine Unit).

This handbook will help the key users of this handbook such as the public health medical officers, Family Medicine Specialists, and other field officers during an outbreak to find the pertinent information that they need when ordering tests. This test handbook answers the How, What, Where, When, and Why questions related to test ordering. For instance, “*What specimen is the correct specimen? Which is the potential pathogen to test for in an outbreak? How do we collect a specimen? And who do we contact?*”.

The chapters in this book are arranged in sequence from the syndromic approach leading to the possible list of pathogens which will take users to the comprehensive lists of tests offered by the NPHL Disease Division and Food Division. The tests in each of these categories are organized alphabetically into tables according to the pathogens or parameters tested. The tests listed are further described by the method of testing, sample type, sample collection, sample volume, sample containers, transportation requirements, type of request form, cost per test and frequency of testing by the NPHL and the NPHL’s subsidiary laboratories that offer them. The remarks column indicates the tests that require prior approval from the NPHL and is followed by the details of the testing unit that can be contacted for such appointments. The contents of the comprehensive lists of tests are very important and users should pay attention to every detail in the columns for the information that they need.

We have also included a chapter on the procedure for specimen collection and transportation to assist first-time specimen collectors on the right methods to follow when collecting specimens. The tracing of results for the tests ordered can also be found in the proceeding chapters to enable the test requestors to trace their test results.

We hope that this book will serve its purpose as a complete and handy guide to our clients. This book also is a work in progress and hence, we encourage you to contact us with any queries, comments or ideas that we may employ in our continuous effort in providing our best service. It is my hope and expectation that this book will be a referenced resource for all health professionals leading to improved preparedness, prevention and control of infectious disease in our country.

If this handbook does not address any queries that you may have, we welcome you to contact us with your questions. The latest version of this handbook and its following revisions can be accessed through the NPHL’s official web address, <http://mkak.moh.gov.my/ms/>.

Thank you,



DR HAJAH NOORLIZA BT MOHAMAD NOORDIN
DIRECTOR
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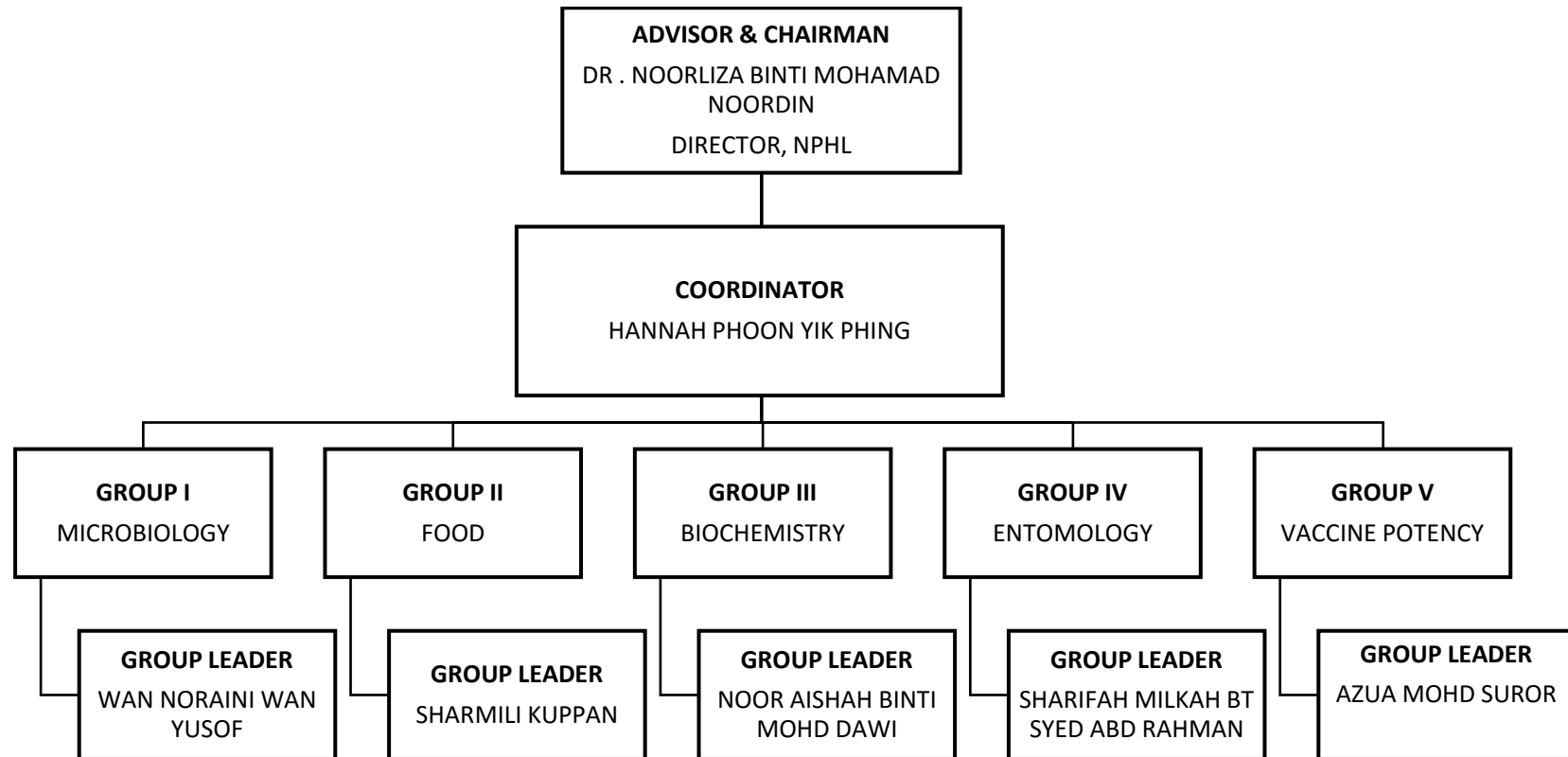


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INTRODUCTION

The National Public Health Laboratory (NPHL) is comprised of five key divisions: the Disease, Food, Epidemiology, Quality and Administration divisions. The NPHL which reports directly to the Disease Control Division in the Ministry of Health, Malaysia serves as the Malaysian reference laboratory for disease and food testing. All analytical and diagnostic testing done in the NPHL is performed to meet the public health objectives of the country and to achieve the vision and mission of being at the forefront of laboratory testing especially in outbreaks for disease control and prevention.

Since the establishment of the NPHL, few service handbooks have been published to provide clients with the necessary information related to its services. The services described in these handbooks not only included the tests offered but also the NPHL quality and training activities. However, in view of the feedback and comments received from the NPHL clients, a brand-new test handbook that specifically focuses on the tests offered by the NPHL and the other public health laboratories under the Ministry of Health in Malaysia was created.

The NPHL Test Handbook 2nd Edition 2022 offers the latest and most updated version of the tests offered and comprehensive but highly-relevant test details for the reference of clients who collect samples in the field. This effort was done to ensure the best possible information reaches the clients so that the right samples are collected at the right time and sent in the right conditions in order to obtain the right results. Ultimately, optimal control and prevention of communicable diseases can be achieved by the Ministry of Health, Malaysia.

OBJECTIVES OF THE NPHL TEST HANDBOOK 2ND EDITION 2022

1. To align the content of the test handbook with the core functions of the NPHL in achieving the public health objectives of the country.
2. To be the latest, updated and comprehensive reference to all the tests offered by the NPHL.
3. To function as a user-friendly, handy and easy-to-navigate directory for NPHL clients that catalogues the different tests.
4. To be a definitive guide for NPHL clients to meet all the requirements for test ordering and a directory to other laboratories than the NPHL that offer related tests.

BRIEF INFO OF THE NPHL TEST HANDBOOK COVER DESIGN, 2nd EDITION

THE COLOURS:

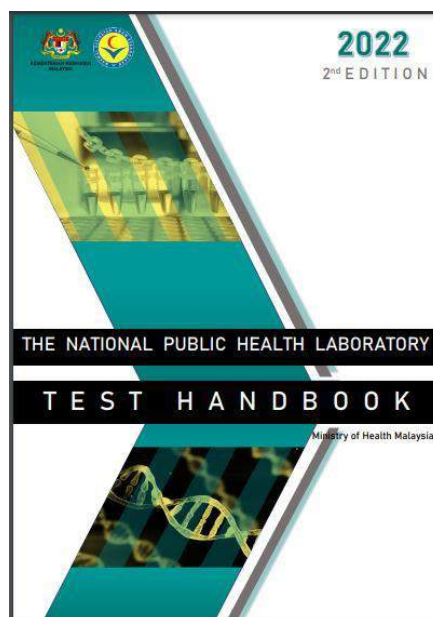
TEAL represents sustainability, fresh perspectives and reaching new horizons in healthcare technology.

GOLD means abundance and prosperity.

BLACK shows elegance, sophistication and power.

GREY exhibits modern innovations and techniques.

WHITE elucidates excellent quality, sincerity, trustworthiness, reliability as well as transparency.



THE DESIGN:

Keeping with the trend of “less is more”, this design adopts modern sleek minimalist layout. The arrow heading to the right elucidates moving forward; advancement of analytical diagnostic beyond boundaries.

THE PHOTOS:

LAB APPARATUS represents our core business, analytical diagnostic and confirmatory laboratory services with results that you can trust.

DNA STRAND alludes to the next BIG thing in laboratory services. Furthermore, it shows our preparedness to serve the nation in every capacity.

Front Cover Design Created by:

Norashikin bt Jamil
Science Officer (Biochemistry) C44
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QUICK GUIDE OF POSSIBLE PATHOGENS BY ROUTES OF TRANSMISSION

Infections according to transmission routes	Possible pathogens (in alphabetical order)
RESPIRATORY INFECTIONS	Adenovirus <i>Bordetella pertussis</i> <i>Burkholderia cepacia</i> <i>Burkholderia pseudomallei</i> <i>Corynebacterium diphtheriae</i> Ebola virus <i>Haemophilus influenzae</i> Human metapneumovirus Human parainfluenza virus 1 Human parainfluenza virus 2 Human parainfluenza virus 3 Human respiratory syncytial virus Influenza A Influenza B <i>Klebsiella pneumoniae</i> <i>Legionella pneumophila</i> Measles virus MERS CoV <i>Moraxella catarrhalis</i> Mumps virus <i>Mycobacterium tuberculosis</i> <i>Mycoplasma pneumoniae</i> <i>Neisseriae meningitidis</i> Nipah virus Non-tuberculosis mycobacterium (NTM) species <i>Pseudomonas aeruginosa</i> Rabies virus Rhinovirus Rubella virus SARS-CoV-2 virus <i>Staphylococcus aureus</i> <i>Stenotrophomonas maltophilia</i> Streptococcus Group C Streptococcus Group G <i>Streptococcus pneumoniae</i> <i>Streptococcus pyogenes</i>
VECTOR BORNE INFECTIONS	Dengue virus Chikungunya virus Japanese encephalitis virus

Infections according to transmission routes	Possible pathogens (in alphabetical order)
	West Nile virus Yellow fever virus Zika virus
GASTROINTESTINAL TRACT INFECTIONS	<i>Aeromonas sp. (caviae, hydrophilia, veronii)</i> <i>Bacillus cereus</i> <i>Blastocystis hominis</i> <i>Campylobacter jejunii</i> <i>Cryptosporidium parvum, hominis</i> <i>Dientamoeba fragilis</i> <i>Entamoeba histolytica</i> Enterovirus A (Human coxsackievirus A16) Enterovirus A (Human coxsackievirus A24) Enterovirus A (Human coxsackievirus B) Enterovirus A (Human echovirus 11) Enterovirus A (Human echovirus 30) Enterovirus A (Human echovirus 4) Enterovirus A (Human echovirus 6) Enterovirus A (human echovirus 9) Enterovirus A (Human enterovirus 70) Enterovirus A (Human enterovirus 71) Enterovirus C (Poliovirus 1) Enterovirus C (Poliovirus 2) Enterovirus C (Poliovirus 3) <i>Escherichia coli</i> (Diarrheagenic) <i>Giardia lamblia</i> Hepatitis A virus <i>Listeria monocytogenes</i> Mamastro virus (Astrovirus) Mammalian orthoreovirus Norwalk virus (Norovirus) <i>Plesiomonas shigelloides</i> Rotavirus A <i>Salmonella sp. (bongori & enterica)</i> <i>Salmonella Typhi</i> Sapporo virus <i>Shigella sp.</i> <i>Staphylococcus aureus</i> <i>Vibrio cholerae/ Vibrio sp</i>

Infections according to transmission routes	Possible pathogens (in alphabetical order)
	<i>Yersinia enterocolitica</i>
CENTRAL NERVOUS SYSTEM INFECTIONS	Human herpesvirus 1 (HSV Type 1)
	Human herpesvirus 2 (HSV Type 2)
	Human herpesvirus 3 (Varicella Zoster)
BLOOD BORNE INFECTIONS	<i>Brugia malayi</i>
	<i>Brugia timori</i>
	<i>Plasmodium falciparum</i>
	<i>Plasmodium knowlesi</i>
	<i>Plasmodium malariae</i>
	<i>Plasmodium ovale</i>
	<i>Plasmodium vivax</i>
	<i>Wuchereria bancrofti</i>
ZOONOTIC INFECTIONS	<i>Leptospira interrogans</i>
	<i>Brucella sp.</i> , <i>B. melintensis</i> , <i>B. abortus</i> , <i>B. suis</i>
	<i>Burkholderia pseudomallei</i>
	<i>Coxiella burnettii</i>
SEXUALLY TRANSMITTED INFECTIONS	<i>Neisseria gonorrhoeae</i>
	<i>Treponema pallidum</i>
CUTANEOUS INFECTIONS	<i>Mycobacterium leprae</i>
EMERGING AND SPECIAL PATHOGENS	Monkeypox virus
	Orthopoxvirus

NPHL'S COMPREHENSIVE TEST DIRECTORY

A. The Comprehensive Directory of Infectious Disease Tests in NPHL

IMPORTANT POINTS TO NOTE:

- i. List of test abbreviations:

Abbreviations:	Explanation
EM	Electron Microscopy
IFAT	Indirect immunoflouresence assay Test
PCR	Polymerase Chain Reaction (conventional)
RT-PCR	Reverse Transcription PCR (conventional)
qPCR	Quantitative or Realtime PCR
qRT-PCR	Realtime Reverse Transcription PCR
RR-TB	Rifampicin resistant tuberculosis
MDR-TB	Multidrug resistant tuberculosis
RTK	Rapid Test Kit
VI	Virus Isolation
VTM	Viral transport media

- ii. The **Cost Per Tests** listed in this directory are **NOT** the actual payment charges for the tests. The costs included in this directory are for user reference and understanding/appreciation of the costs involved to run tests which can be very expensive. For actual payment charges per tests, please refer to the **PERINTAH FI (PERUBATAN) (KOS PERKHIDMATAN) pua_20141231_P.U. (A) 363**.

Pathogen	Adenovirus (Respiratory)								
Category	Outbreak								
Test Method	qPCR								
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharyngeal Aspirate	Tracheal Aspirate	Endotracheal tube aspirate	Bronchoalveolar lavage	Throat swab	Nasal Pharyngeal Swab	Nasal Swab	Lung tissue (post-mortem case)
Sample Volume	1-3 ml	1-3 ml	1-3 ml	1-3 ml	1-3 ml	-	-	-	1.5cm ³ in a few drops of VTM
Container/Transport Media	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container
Sample Transportation	2-8°C								
Type of form	MKAK-BPU-U01								
LTAT	qPCR - 3 days								
Frequency of test	qPCR-Daily								
Cost/test (RM)	qPCR-RM210.00								
Laboratory name	Virology								
Tel No. 03-61261200 Ext. No	Molecular Unit 1321								
PHL	MKAK	√							
	MKA Ipoh	√							
	MKA Johor Bahru	√							
	MKA Kota Bharu								
	MKA Kota Kinabalu	√							
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 								

Pathogen		Adenovirus (Enteric)	
Category		Outbreak	
Test Method		RTK / qPCR	qPCR
Sample type (Preference of sample is in sequence. Sent either one only)		Fresh stool	Rectal Swab
Sample Volume		5 ml	-
Container/Transport Media		Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM
Sample Transportation		2-8°C	
Type of form		MKAK-BPU-U01	
LTAT		RTK - 24 hours qPCR - 3 days	
Frequency of test		RTK -Daily qPCR-Daily	
Cost/test (RM)		RTK -RM20.00 qPCR-RM214.30	
Laboratory name		Virology	
Tel No. 03-61261200 Ext. No		Virus Isolation Unit 1315 / 1325 Molecular Unit 1321	
PHL	MKAK	√	
	MKA Ipoh	√	
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	Aerobic bacteria	
Category	Outbreak	
Test Method	Culture, Enumeration and Identification	
Sample type	Water	
Sample Volume	250 mL	
Container/ Transport media	Whirl Pack	
Sample Transportation	Send immediately after collection at ambient temperature	
Type of form	MKAK/BP/ENV/01 Rev 1	
LTAT	14 working days	
Frequency of Test	By appointment	
Cost/test (RM)	RM 200.00	
Laboratory Name	Bacteriology	
Tel No: 03-61261200 Ext. No.	1329/1330	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource	Not applicable	
Remarks	<ol style="list-style-type: none"> 1. Please refer to page 283 – 284 for Specimen Collection Procedures for Environmental and Non-Clinical Samples. 2. Delay in transportation will affect the viability of the bacteria. 	

Pathogen	<i>Aeromonas spp.</i>		
Category	Outbreak		
Test Method	Culture & Sensitivity		
Sample type	Fresh stool	Fresh stool	Rectal swab
Sample Volume	3-5 gm	NA	NA
Container/ Transport media	Sterile container	Cary Blair	Cary Blair
Sample Transportation	Send within 2 hours after collection at 2°C – 8°C	Send immediately after collection at ambient temperature	Send immediately after collection at ambient temperature
Type of form	MKAK-BPU-U01/Rev2018		
LTAT	7 days		
Frequency of Test	Daily		
Cost/test (RM)	RM 70.00		
Laboratory Name	Bacteriology		
Tel No: 03-61261200 Ext. No.	1329/1330		
PHL	MKAK	√	
	MKA Ipoh	√	
	MKA Johor Bahru	√	
	MKA Kota Bharu	√	
	MKA Kota Kinabalu	√	
Outsource	Not applicable		
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	

Pathogen	All viruses	
Category	Outbreak	
Test Method	EM	
Sample type (Preference of sample is in sequence. Sent either one only)	By appointment only and to be consulted with officer in-charge.	
Sample Volume		
Container/Transport Media		
Sample Transportation		
Type of form	MKAK-BPU-U01	
LTAT	2 days	
Frequency of test	Daily	
Cost/test (RM)	RM 15.00	
Laboratory name	Virology	
Tel No. 03-61261200 Ext. No	1315 / 1325 / 1320 / 1335	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Remark(s)		

Pathogen	Astrovirus	
Category	Outbreak	
Test Method	RT-PCR	RT-PCR
Sample type (Preference of sample is in sequence. Sent either one only)	Fresh stool	Rectal Swab
Sample Volume	5 ml	-
Container/Transport Media	Sterile screw-capped container	Sterile container with 2.0-2.5 ml of VTM
Sample Transportation	2-8°C	
Type of form	MKAK-BPU-U01	
LTAT	RT-PCR - 5 days	
Frequency of test	RT-PCR-Daily	
Cost/test (RM)	RT-PCR-RM214.30	
Laboratory name	Virology	
Tel No. 03-61261200 Ext. No	Molecular Unit 1321	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	<i>Bacillus cereus</i>				
Category	Outbreak				
Test Method	Culture & Sensitivity			Toxin Detection	PFGE
Sample type	Fresh stool	Fresh stool	Rectal swab	Bacterial Culture	Bacterial Culture
Sample Volume	3-5 gm	NA	NA	Pure isolate	Pure isolate
Container/ Transport media	Sterile container	Cary Blair	Cary Blair	NA slant	NA slant
Sample Transportation	Send within 2 hours after collection at 2°C - 8°C	Send immediately after collection at ambient temperature	Send immediately after collection at ambient temperature	Send at ambient temperature	Send immediately after collection at ambient temperature
Type of form	MKAK-BPU-U01/Rev2018			MKAK-BPU-U01/Rev2018	MKAK-BPU-U01/Rev2018
LTAT	7 days			7 days	30 days
Frequency of Test	Daily			Daily	Special Requirement
Cost/test (RM)	RM 70.00			RM 70.40	RM 350.00
Laboratory Name	Bacteriology				
Tel No: 03-61261200 Ext. No.	1329/1330				
PHL	MKAK	√		√	√
	MKA Ipoh	√			
	MKA Johor Bahru	√			
	MKA Kota Bharu	√			
	MKA Kota Kinabalu	√			
Outsource	Not applicable				
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	Inoculate pure single colony into to NA slant.	Test will be done for outbreak investigation and epidemiological linkage only.	

Pathogen	<i>Blastocystis</i>	
Category	Outbreak/Surveillance	
Test Method	Polymerase chain reaction (PCR)	
Sample type	Fresh stool/rectal swab in transport media	
Sample Volume	2 - 3 gram (peanut size)	
Container/ Transport media	Sterile/Clean Container/Cary Blair transport media	
Sample Transportation	Send immediately after collection at ambient temperature. If delay is unavoidable, please send at 2°C – 8°C.	
Type of form	PER PATH 301	
LTAT	3 days	
Frequency of Test	Only working day	
Cost/test (RM)	70.00	
Laboratory Name	Parasitology	
Tel No: 03-61261200 Ext. No.	2002	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks	Fresh stool is highly recommended	

Pathogen	<i>Bordetella pertussis</i>			
Category	Outbreak/Diagnostic			
Test Method	Real-Time PCR		Culture & Identification	
Sample type	Nasopharyngeal Aspirate in sterile container (in-patient) or	Nasopharyngeal swab (contact)	Nasopharyngeal Aspirate in sterile container (in-patient) or	Nasopharyngeal swab (contact)
Sample Volume	1-3 ML	NA	1-3 ML	NA
Container/ Transport media	Amies clear with flocced or dacron swab	Amies clear with flocced or dacron swab	Amies Charcoal with flocced or dacron swab	Amies Charcoal with flocced or dacron swab
Sample Transportation	Send immediately after collection at 2°C - 8°C	Send immediately after collection at 2°C - 8°C	Send immediately after collection at ambient temperature. DO NOT REFRIGERATE.	Send immediately after collection at ambient temperature. DO NOT REFRIGERATE.
Type of form	MKAK-BPU-U01/Rev2018		MKAK-BPU-U01/Rev2018	
LTAT	48 hours		10 days	
Frequency of Test	Daily		Daily	
Cost/test (RM)	RM 350.00		RM 20.00	
Laboratory Name	Bacteriology			
Tel No: 03-61261200 Ext. No.	1329/1330			
PHL	MKAK	√		√
	MKA Ipoh	√		√
	MKA Johor Bahru	√		√
	MKA Kota Bharu	√		√
	MKA Kota Kinabalu	√		√
Outsource	Not applicable			
Remarks	1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the quality of the sample.	1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Do not use Calcium alginate or cotton swab. 3. Delay in transportation will affect the quality of the sample.	1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the viability of the bacteria.	1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Do not use Calcium alginate or cotton swab. 3. Delay in transportation will affect the viability of the bacteria.

Pathogen		<i>Brucella spp.</i>			
Category		Outbreak/Diagnostic			
Test Method		Serology IgM	Serology IgG	Brucella Capt	Real-Time PCR
Sample type		Serum	Serum	Serum	Isolate
Sample Volume		3 ML	3 ML	3 ML	NA
Container/ Transport media		Plain Tube	Plain Tube	Plain Tube	Culture plate
Sample Transportation		Send immediately after collection at 2°C – 8°C	Send immediately after collection at 2°C – 8°C	Send immediately after collection at 2°C – 8°C	Send immediately after collection at ambient temperature
Type of form		MKAK-BPU- U01/Rev2018	MKAK-BPU- U01/Rev2018	MKAK-BPU- U01/Rev2018	MKAK-BPU- U01/Rev2018
LTAT		5 working days	5 working days	5 working days	5 days
Frequency of Test		Daily	Daily	Daily	Daily
Cost/test (RM)		RM 30.00	RM 30.00	RM 30.00	RM 350.00
Laboratory Name		Bacteriology			
Tel No: 03-61261200 Ext. No.		1329/1330			
PHL	MKAK	√	√	√	√
	MKA Ipoh				
	MKA Johor Bahru				
	MKA Kota Bharu				
	MKA Kota Kinabalu				
Outsource		Not applicable			
Remarks		1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the quality of the sample. 3. Haemolysed sample shall be rejected.			Inoculate pure single colony onto Blood Agar.

Pathogen	<i>Burkholderia cepacia</i>				
Category	Outbreak/Diagnostic				
Test Method	Culture & Sensitivity			PFGE	
Sample type	Sputum	Tracheal Aspirate (in-patient)	Bronchoalveolar lavage (BAL) (in-patient)		
Sample Volume	1-3 ML			NA	
Container/ Transport media	Sterile container			NA slant	
Sample Transportation	Send immediately after collection at 2°C – 8°C			Send immediately after collection at ambient temperature	
Type of form	MKAK-BPU-U01/Rev2018			MKAK-BPU-U01/Rev2018	
LTAT	7 days			30 days	
Frequency of Test	Daily			Special Requirement	
Cost/test (RM)	RM 70.00			RM 350.00	
Laboratory Name	Bacteriology				
Tel No: 03-61261200 Ext. No.	1329/1330				
PHL	MKAK	√	√	√	√
	MKA Ipoh	√	√	√	
	MKA Johor Bahru	√	√	√	
	MKA Kota Bharu	√	√	√	
	MKA Kota Kinabalu	√	√	√	
Outsource	Not applicable				
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the viability of the bacteria. 			Test will be done for outbreak investigation and epidemiological linkage only.	

Pathogen	<i>Burkholderia pseudomallei</i>									
Category	Outbreak/Diagnostic									Surveillance
Test Method	Culture & Sensitivity			Immunofluorescent Antibody Test (IFAT)	Real-Time PCR	Culture and Identification of <i>B. pseudomallei</i> in environmental sample		Real-Time PCR	MLST	
Sample type	Sputum	Tracheal Aspirate (in-patient)	Bronchoalveolar lavage (BAL) (in-patient)	Serum	Pure Isolate & Blood in EDTA	Water	Soil	Water	Isolate	
Sample Volume	1-3 ML			3 ML	NA	200 ML	200 g	200 ML	NA	
Container/Transport media	Sterile container			Plain Tube	NA slant	Sterile Whirl Pack		Sterile Whirl Pack		
Sample Transportation	Send immediately after collection at 2°C – 8°C			Send immediately after collection at 2°C – 8°C	Send immediately after collection at 2°C – 8°C	Send immediately after collection at ambient temperature	Send immediately after collection at 2°C – 8°C		Send at 2°C – 8°C	
Type of form	MKAK-BPU-U01/Rev2018			MKAK-BPU-U01/Rev2018	MKAK-BPU-U01/Rev2018	MKAK/BP/ENV/01 Rev 1	MKAK-BPU-U01/Rev2018		MKAK-BPU-U01/Rev2018	
LTAT	7 days			7 days	5 days	21 working days		5 days	30 working days	
Frequency of Test	Daily			Daily	To call lab for appointment	Daily		To call lab for appointment	To call lab for appointment	
Cost/test (RM)	RM 70.00			RM 30.00	RM 350.00	RM 79.30		RM 350.00	RM 350.00	
Laboratory Name	Bacteriology									
Tel No: 03-61261200 Ext. No.	1329/1330									
PHL	MKAK	√	√	√	√	√	√	√	√	√
	MKA Ipoh	√	√	√			√	√		
	MKA Johor Bahru	√	√	√			√	√		
	MKA Kota Bharu	√	√	√			√	√		
	MKA Kota Kinabalu	√	√	√			√	√		
Outsource						√	√			
Remarks	1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the viability of the bacteria.			1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the quality of the sample. 3. Haemolysed sample shall be rejected.	1. Please refer to Specimen Collection Procedures for Environmental and Non-Clinical Samples. 2. Delay in transportation will affect the viability of the bacteria.				Test will be done for outbreak investigation and epidemiological linkage only.	

Pathogen		<i>Campylobacter jejunii</i>		
Category		Outbreak		
Test Method		Culture & Sensitivity		
Sample type		Fresh stool or	Fresh stool or	Rectal swab
Sample Volume		3-5 gm	NA	NA
Container/ Transport media		Sterile container	Cary Blair	Cary Blair
Sample Transportation		Send within 2 hours after collection at 2°C - 8°C.	Send within 6 hours after collection at ambient temperature	Send within 6 hours after collection at ambient temperature
Type of form		MKAK-BPU-U01/Rev2018		
LTAT		7 days		
Frequency of Test		Daily		
Cost/test (RM)		RM 70.00		
Laboratory Name		Bacteriology		
Tel No: 03-61261200 Ext. No.		1329/1330		
PHL	MKAK	√	√	√
	MKA Ipoh	√	√	√
	MKA Johor Bahru	√	√	√
	MKA Kota Bharu	√	√	√
	MKA Kota Kinabalu	√	√	√
Outsource		Not applicable		
Remarks		<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. Sample shall be sent to the laboratory within 6 hours after collection. Delay in transportation will affect the viability of the bacteria. 	

Pathogen	Chikungunya virus	
Category	Outbreak	
Test Method	qRT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)	Serum	
Sample Volume	1-3 ml	
Container/Transport Media	Plain tube with serum separator	
Sample Transportation	2-8°C	
Type of form	MKAK-BPU-U01	
LTAT	qRT-PCR - 3 days	
Frequency of test	qRT-PCR - Daily	
Cost/test (RM)	qRT-PCR -RM277.20	
Laboratory name	Virology	
Tel No. 03-61261200 Ext. No	Molecular Unit 1321	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	√
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	<i>Corynebacterium diphtheriae</i>								
Category	Outbreak or Diagnostic								
Test Method	Culture & Sensitivity				PCR for Toxin Detection	ELEK for Toxigenicity Testing	PFGE	MLST	
Sample type	Throat swab (contact)	Nasopharyngeal swab(contact) or	Nasopharyngeal Aspirate (in-patient)	Pseudomembrane exudates (in-patient)	Bacterial Culture				
Sample Volume	NA	NA	1-3 ML	NA	Pure isolate	Pure isolate	Pure isolate	Pure isolate	
Container/ Transport media	Amies clear	Amies clear	Sterile container	Sterile container	Blood Agar	Blood Agar	Blood Agar	Blood Agar	
Sample Transportation	Send immediately after collection at ambient temperature		Send immediately after collection at 2°C – 8°C		Send at 2°C – 8°C				
Type of form	MKAK-BPU-U01/Rev2018								
LTAT	7 days				5 days	7 working days	30 days	30 days	
Frequency of Test	Daily				Daily	Daily	Special Requirement	Special Requirement	
Cost/test (RM)	RM 70.00				RM 350.00	RM 100.00	RM 350.00	RM 350.00	
Laboratory Name	Bacteriology								
Tel No: 03-61261200 Ext. No.	1329/1330								
PHL	MKAK	√	√	√	√	√	√	√	√
	MKA Ipoh	√	√	√	√	√			
	MKA Johor Bahru	√	√	√	√	√			
	MKA Kota Bharu	√	√	√	√	√			
	MKA Kota Kinabalu	√	√	√	√	√			
Outsource	Not applicable								
Remarks	1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the viability of the bacteria.				Inoculate pure single colony onto Blood Agar.		Test will be done for outbreak investigation and epidemiological linkage only.		

Pathogen		<i>Coxiella burnettii</i>	
Category		Outbreak or Diagnostic	
Test Method		Serology IgM	Serology IgG
Sample type		Serum	Serum
Sample Volume		3 ML	3 ML
Container/ Transport media		Plain Tube	Plain Tube
Sample Transportation		Send immediately after collection at 2°C - 8°C	Send immediately after collection at 2°C - 8°C
Type of form		MKAK-BPU-U01/Rev2018	MKAK-BPU-U01/Rev2019
LTAT		5 working days	5 working days
Frequency of Test		Daily	
Cost/test (RM)		RM 30.00	
Laboratory Name		Bacteriology	
Tel No: 03-61261200 Ext. No.		1329/1330	
PHL	MKAK	√	√
	MKA Ipoh		
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Outsource		Not applicable	
Remarks		<ol style="list-style-type: none"> 1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the quality of the sample. 3. Haemolysed sample shall be rejected. 	

Pathogen	Coxsackie A16									
Category	Outbreak/Surveillance									
Test Method	qRT-PCR									
Sample type (Preference of sample is in sequence. Sent either one only)	Mouth Ulcer Swab	Vesicle Swab	Stool	Rectal Swab	Throat Swab	Pleural fluid	Cerebrospinal fluid (CSF)	Serum	Tissue biopsy / autopsy (post-mortem case)	
Sample Volume	-	-	5ml	-	-	1-3 ml	1-3 ml	1-3 ml	1.5cm ³ in a few drops of VTM	
Container/Transport Media	Sterile container with 2.0-2.5 ml VTM	Sterile container with 2.0-2.5 ml VTM	Sterile Screw capped container	Sterile container with 2.0-2.5 ml VTM	Sterile container with 2.0-2.5 ml VTM	Sterile screw capped container	Sterile Screw capped container	Plain tube with serum separator	Sterile screw capped container	
Sample Transportation	2-8°C									
Type of form	Borang Permohonan Ujian Makmal HFMD									
LTAT	qRT-PCR – Outbreak - 3 days Surveillance - 14 days									
Frequency of test	qRT-PCR - Daily									
Cost/test (RM)	qRT-PCR - RM292.00									
Laboratory name	Virology									
Tel No. 03-61261200 Ext. No	Molecular Unit 1321									
PHL	MKAK								√	
	MKA Ipoh								√	
	MKA Johor Bahru								√	
	MKA Kota Bharu								√	
	MKA Kota Kinabalu								√	
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 									

Pathogen	<i>Cryptosporidium</i>	
Category	Outbreak/Surveillance	
Test Method	Polymerase chain reaction (PCR)	
Sample type	Fresh stool/rectal swab in transport media	
Sample Volume	2 - 3 gram (peanut size)	
Container/ Transport media	Sterile/Clean Container/Cary Blair transport media	
Sample Transportation	Send immediately after collection at ambient temperature. If delay is unavoidable, please send at 2°C - 8°C.	
Type of form	PER PATH 301	
LTAT	3 days	
Frequency of Test	Only working day	
Cost/test (RM)	70.00	
Laboratory Name	Parasitology	
Tel No: 03-61261200 Ext. No.	2002	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks	Fresh stool is highly recommended	

Pathogen		Dengue		
Category		Outbreak/Surveillance		
Test Method		qRT-PCR		
Sample type (Preference of sample is in sequence. Sent either one only)		Serum	CSF	Tissue biopsy / autopsy (post- mortem case)
Sample Volume		2-4 ml	1 ml	1.5cm ³ in a few drops of VTM
Container/Transport Media		Plain tube with serum separator	Sterile screw capped container	Sterile screw capped container
Sample Transportation		2-8°C		
Type of form		MKAK-BPU-U01/Rev2018		
LTAT		qRT-PCR Outbreak - 3 days Surveillance - 14 days		
Frequency of test		qRT-PCR - Daily		
Cost/test (RM)		qRT-PCR -RM277.20		
Laboratory name		Virology		
Tel No. 03-61261200 Ext. No		Molecular Unit 1321		
PHL	MKAK	√		
	MKA Ipoh	√		
	MKA Johor Bahru	√		
	MKA Kota Bharu	√		
	MKA Kota Kinabalu	√		
Remark(s)		<p>Refer to:</p> <ol style="list-style-type: none"> 1. Pekeliling KPK Malaysia Bil 14/2011: Program DVSS; Bil(23)dmlKKM-171/BKP/07/35/0519Jld4, 25 Januari 2012. 2. Survelan Serotaip Virus Denggi bagi Kes "Severe Dengue" di ICU; Bil(2)dmlKKM-171/BKP/09/41/0601Jld.12, 13 Disember 2013. <p>After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C.</p>		

Pathogen	<i>Dientamoeba</i>	
Category	Outbreak/Surveillance	
Test Method	Polymerase chain reaction (PCR)	
Sample type	Fresh stool/rectal swab in transport media	
Sample Volume	2 - 3 gram (peanut size)	
Container/ Transport media	Sterile/Clean Container/Cary Blair transport media	
Sample Transportation	Send immediately after collection at ambient temperature. If delay is unavoidable, please send at 2°C - 8°C.	
Type of form	PER PATH 301	
LTAT	3 days	
Frequency of Test	Only working day	
Cost/test (RM)	70.00	
Laboratory Name	Parasitology	
Tel No: 03-61261200 Ext. No.	2002	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks	Fresh stool is highly recommended	

Pathogen		Ebolavirus
Category		Outbreak
Test Method		qRT-PCR
Sample type (Preference of sample is in sequence. Sent either one only)		Serum
Sample Volume		1 - 3 ml
Container/Transport Media		Plain tube with serum separator
Sample Transportation		2-8°C
Type of form		MKAK-BPU-U01
LTAT		qRT-PCR - 3 days
Frequency of test		qRT-PCR -Daily
Cost/test (RM)		qRT-PCR -RM257.00
Laboratory name		Virology
Tel No. 03-61261200 Ext. No		Molecular Unit 1321
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	√
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. Inform MKAK prior to samples collection. 4. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C.

Pathogen	<i>Entamoeba histolytica</i>	
Category	Outbreak/Surveillance	
Test Method	Polymerase chain reaction (PCR)	
Sample type	Fresh stool/rectal swab in transport media	
Sample Volume	2 - 3 gram (peanut size)	
Container/ Transport media	Sterile/Clean Container/Cary Blair transport media	
Sample Transportation	Send immediately after collection at ambient temperature. If delay is unavoidable, please send at 2°C - 8°C.	
Type of form	PER PATH 301	
LTAT	3 days	
Frequency of Test	Only working day	
Cost/test (RM)	70.00	
Laboratory Name	Parasitology	
Tel No: 03-61261200 Ext. No.	2002	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks	Fresh stool is highly recommended	

Pathogen	Enterovirus (HFMD)								
Category	Sporadic/Surveillance/Outbreak								
Sample type (Preference of sample is in sequence. Sent either one only)	Mouth Ulcer Swab	Vesicle Swab	Stool	Rectal Swab	Throat Swab	Pleural fluid	Cerebrospinal fluid (CSF)	Serum	Tissue biopsy/autopsy (post mortem)
Sample Volume	-	-	5ml	-	-	1-3 ml	1-3 ml	1-3 ml	1.5cm ³ in a few drops of VTM
Container/Transport Media	Sterile container with 2.0-2.5 ml VTM	Sterile container with 2.0-2.5 ml VTM	Sterile Screw capped container	Sterile container with 2.0-2.5 ml VTM	Sterile container with 2.0-2.5 ml VTM	Sterile screw capped container	Sterile Screw capped container	Plain tube with serum separator	Sterile Screw capped container
Sample Transportation	2-8°C								
Type of form	Borang Permohonan Ujian Makmal HFMD								
Test Method	Sporadic - qPCR			Surveillance - VI			Outbreak - qPCR		
LTAT	qRT-PCR - 3 days			VI - 21 days			qRT-PCR - 3 days		
Frequency of test	qRT-PCR - Daily			VI - Daily			qRT-PCR - Daily		
Cost/test (RM)	qRT-PCR - RM292.00			Virus Isolation - RM100.00			qRT-PCR - RM292.00		
Laboratory name	Virology			Virology			Virology		
Tel No. 03-61261200 Ext. No	Molecular Unit 1321			Virus Isolation Unit 1315 / 1325			Molecular Unit 1321		
PHL	MKAK	√			√			√	
	MKA Ipoh	√						√	
	MKA Johor Bahru	√						√	
	MKA Kota Bharu	√						√	
	MKA Kota Kinabalu	√						√	
Remark(s)	<ol style="list-style-type: none"> 1. Refer to Surat Arahan Pengukuhan Survelan Makmal untuk Penyakit Tangan, kaki dan mulut (HFMD); (7) dlm KKM-171/BKP/02/10/0142Jld3, Ogos 2012. 2. Enterovirus Screening Panel (Enterovirus 71, Coxsackie A16 & A24, Coxsackie B, Enterovirus 70, Echovirus type 4,6,9,11 &30 and Poliovirus type 1,2 & 3). 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 								

Pathogen	Enterovirus 71								
Category	Outbreak								
Test Method	qRT-PCR								
Sample type (Preference of sample is in sequence. Sent either one only)	Mouth Ulser Swab	Vesicle Swab	Stool	Rectal Swab	Throat Swab	Pleural fluid	Cerebrospinal fluid (CSF)	Serum	Tissue biopsy / autopsy (post-mortem case)
Sample Volume	-	-	5ml	-	-	1-3 ml	1-3 ml	1-3 ml	1.5cm ³ in a few drops of VTM
Container/Transport Media	Sterile container with 2.0-2.5 ml VTM	Sterile container with 2.0-2.5 ml VTM	Sterile Screw capped container	Sterile container with 2.0-2.5 ml VTM	Sterile container with 2.0-2.5 ml VTM	Sterile screw capped container	Sterile Screw capped container	Plain tube with serum separator	Sterile screw capped container
Sample Transportation	2-8°C								
Type of form	Borang Permohonan Ujian Makmal HFMD								
LTAT	qRT-PCR - 3 days								
Frequency of test	qRT-PCR - Daily								
Cost/test (RM)	qRT-PCR -RM292.00								
Laboratory name	Virology								
Tel No. 03-61261200 Ext. No	Molecular Unit 1321								
PHL	MKAK	√							
	MKA Ipoh	√							
	MKA Johor Bahru	√							
	MKA Kota Bharu	√							
	MKA Kota Kinabalu	√							
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 								

Pathogen	<i>Escherichia coli</i> (Diarrheogenic)				
Category	Outbreak				
Test Method	Culture & Sensitivity			PCR	Full Serotyping
Sample type	Fresh stool	Fresh stool	Rectal swab	Bacterial Culture	Bacterial Culture
Sample Volume	3-5 gm	NA	NA	Pure isolate	Pure isolate
Container/ Transport media	Sterile Container	Cary Blair	Cary Blair	NA slant	NA slant
Sample Transportation	Send within 2 hours after collection at 2°C - 8°C	Send immediately after collection at ambient temperature	Send immediately after collection at ambient temperature	Send at 2°C - 8°C	Send at ambient temperature
Type of form	MKAK-BPU-U01/Rev2018				
LTAT	7 days			14 working days	
Frequency of Test	Daily			Daily	Daily
Cost/test (RM)	RM 70.00			RM 350.00	RM 20.00
Laboratory Name	Bacteriology				
Tel No: 03-61261200 Ext. No.	1329/1330				
PHL	MKAK	√	√	√	
	MKA Ipoh	√	√	√	√
	MKA Johor Bahru	√	√	√	
	MKA Kota Bharu	√	√	√	
	MKA Kota Kinabalu	√	√	√	
Outsource					
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	Inoculate pure single colony onto Nutrient Agar.		

Pathogen	<i>Filaria</i>	
Category	Outbreak/Diagnostic	
Test Method	Microscopy Examination	
Sample type	Peripheral blood smear	
Sample Volume	60l Thick blood smear	
Container/ Transport media	Slide Folder/ Slide Box	
Sample Transportation	Slide Box	
Type of form	PER PATH 301	
LTAT	24 hours	
Frequency of Test	Only working day	
Cost/test (RM)	10.00	
Laboratory Name	Parasitology	
Tel No: 03-61261200 Ext. No.	2002	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	√
Outsource		
Remarks	NA	

Pathogen	Flavivirus (Pan Flavivirus)	
Category	Outbreak/Surveillance	
Test Method	qRT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)	Serum	CSF
Sample Volume	2-4 ml	1 ml
Container/Transport Media	Plain tube with serum separator	Sterile screw capped container
Sample Transportation	2-8°C	
Type of form	MKAK-BPU-U01/Rev2018	
LTAT	qRT-PCR Outbreak - 3 days Surveillance - 14 days	
Frequency of test	qRT-PCR - Daily	
Cost/test (RM)	qRT-PCR -RM214.30	
Laboratory name	Virology	
Tel No. 03-61261200 Ext. No	Molecular Unit 1321	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	
	MKA Kota Kinabalu	√
Remark(s)	Refer to: 1. Surat Arahan Pelaksanaan Program Survelan Makmal Flavivirus; MKAK 600-1/7/5(3), 3 Disember 2015. 2. Surat Arahan Penambahan Penghantaran Sampel Survelan Makmal Flavivirus; MKAK 600-1/7/5(10), 24 Jun 2016. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C.	

Pathogen	<i>Giardia</i>	
Category	Outbreak/Surveillance	
Test Method	Polymerase chain reaction (PCR)	
Sample type	Fresh stool/rectal swab in transport media	
Sample Volume	2 - 3 gram (peanut size)	
Container/ Transport media	Sterile/Clean Container/Cary Blair transport media	
Sample Transportation	Send immediately after collection at ambient temperature. If delay is unavoidable, please send at 2°C - 8°C.	
Type of form	PER PATH 301	
LTAT	3 days	
Frequency of Test	Only working day	
Cost/test (RM)	70.00	
Laboratory Name	Parasitology	
Tel No: 03-61261200 Ext. No.	2002	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks	Fresh stool is highly recommended	

Pathogen	<i>Haemophilus influenzae</i>									
Category	Outbreak or Diagnostic								Surveillance	Surveillance
Test Method	Culture & Sensitivity				Real-Time PCR				Serotyping	MLST
Sample type	Nasopharyngeal swab (contact) or	Nasopharyngeal Aspirates (in-patient)	Sputum or Tracheal Aspirate (in-patient) or Bronchoalveolar lavage (BAL) (in-patient)	CSF	CSF	Pleural Fluid	Plasma	Serum	Bacterial Culture	Bacterial Culture
Sample Volume	NA	1-3 ML	1-3 ML	1-3 ML	1-3 ML	1-3 ML	3 ML	3 ML	Pure isolate	Pure isolate
Container/Transport media	Amies Charcoal	Amies Charcoal	Sterile container	Sterile container	Sterile container	Sterile container	EDTA Tube	Plain Tube	Chocolate Agar	Chocolate Agar
Sample Transportation	Send immediately after collection at ambient temperature	Send immediately after collection at 2°C – 8°C		Send within 1 hour after collection at 2°C – 8°C	Send immediately after collection at 2°C – 8°C				Send at ambient temperature	Send at ambient temperature
Type of form	MKAK-BPU-U01/Rev2018								MKAK-BPU-U01/Rev2018	MKAK-BPU-U01/Rev2018
LTAT	7 days				5 days				7 working days	30 working days
Frequency of Test	Daily				Daily				Daily	Special Requirement
Cost/test (RM)	RM 70.00				RM 350.00				RM 20.00	RM 350.00
Laboratory Name	Bacteriology									
Tel No: 03-61261200 Ext. No.	1329/1330									
PHL	MKAK	√	√	√	√	√	√	√	√	√
	MKA Ipoh	√	√	√	√					
	MKA Johor Bahru	√	√	√	√					
	MKA Kota Bharu	√	√	√	√					
	MKA Kota Kinabalu									
Outsource	Not applicable									
Remarks	1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the viability of the bacteria.			CSF which is received more than 1 hour will be rejected because it is no longer suitable for culturing.	1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the quality of the sample.				Inoculate pure single colony onto Chocolate Agar.	Test will be done for outbreak investigation and epidemiological linkage only.

Pathogen	Hepatitis A virus	
Category	Outbreak	
Test Method	RT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)	Fresh stool	Rectal Swab
Sample Volume	5 ml	-
Container/Transport Media	Sterile screw-capped container	Sterile container with 2.0-2.5 ml of VTM
Sample Transportation	2-8°C	
Type of form	MKAK-BPU-U01	
LTAT	RT-PCR - 5 days	
Frequency of test	RT-PCR-Daily	
Cost/test (RM)	RT-PCR-RM214.30	
Laboratory name	Virology	
Tel No. 03-61261200 Ext. No	Molekul Unit - 1321	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Remark(s)	<ol style="list-style-type: none"> 1. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 2. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	Herpes viruses (Herpes simplex type 1 & 2, and Varicella Zoster virus)							
Category	Outbreak							
Test Method	VI							
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharangeal Aspirate	Tracheal / Endotracheal tube Aspirate	Bronchoalveolar lavage	Throat swab	Naso pharangeal / Nasal Swab	Cerebrospinal fluid (CSF)	Lungs tissue biopsy / autopsy
Sample Volume	1 - 3 ml	1 - 3 ml	1 - 3 ml	1 - 3 ml	-	-	1-3 ml	1.5cm cube in a few drops of VTM
Container/Transport Media	Sterile Screw capped container	Sterile Screw capped container	Sterile Screw capped container	Sterile Screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile Screw capped container	Sterile Screw capped container
Sample Transportation	2-8°C							
Type of form	MKAK-BPU-U01							
LTAT	VI - 21 days							
Frequency of test	VI – Daily							
Cost/test (RM)	VI -100.00							
Laboratory name	Virology							
Tel No. 03-61261200 Ext. No	VI Unit 1315 / 1325							
PHL	MKAK	√						
	MKA Ipoh							
	MKA Johor Bahru							
	MKA Kota Bharu							
	MKA Kota Kinabalu							
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 							

Pathogen	Herpes Simplex viruses									
Category	Outbreak									
Test Method	qPCR									
Sample type (Preference of sample is in sequence. Sent either one only)	Mouth ulcer swab	Skin lesion swab	Bronchoalveolar lavage	Nasopharyngeal aspirate	Tracheal aspirate	Nasopharyngeal swab	Rectal swab	Eye swab	Genital swab	Cerebrospinal fluid (CSF)
Sample Volume	-	-	1-3 ml	1-3 ml	1-3 ml	-	-	-	-	1-3 ml
Container/Transport Media	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile Screw capped container
Sample Transportation	2-8°C									
Type of form	MKAK-BPU-U01									
LTAT	qPCR - 3 days									
Frequency of test	qPCR - Daily									
Cost/test (RM)	qPCR - RM210.20									
Laboratory name	Virology									
Tel No. 03-61261200 Ext. No	Molekul Unit 1321									
PHL	MKAK	√								
	MKA Ipoh									
	MKA Johor Bahru									
	MKA Kota Bharu									
	MKA Kota Kinabalu									
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 									

Pathogen	Influenza A (H1, H3, H1N1)							
Category	Outbreak							
Test Method	qRT-PCR							
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharangeal Aspirate	Tracheal / Endotracheal tube Aspirate	Bronchoalveolar lavage	Throat swab	Nasal Pharyngeal Swab	Nasal Swab	Lung tissue
Sample Volume	1-3 ml	1-3 ml	1-3 ml	1-3 ml	-	-	-	1.5cm ³ in a few drops of VTM
Container/Transport Media	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container
Sample Transportation	2-8°C							
Type of form	MKAK-BPU-U01							
LTAT	qRT-PCR - 3 days							
Frequency of test	qRT-PCR - Daily							
Cost/test (RM)	qRT-PCR - RM 292.00							
Laboratory name	Virology							
Tel No. 03-61261200 Ext. No	Molekul Unit 1321 VI Unit 1315 / 1325							
PHL	MKAK	√						
	MKA Ipoh	√						
	MKA Johor Bahru	√						
	MKA Kota Bharu	√						
	MKA Kota Kinabalu	√						
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 							

Pathogen	Influenza A (H5N1)							
Category	Outbreak							
Test Method	qRT-PCR							
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharangeal Aspirate	Tracheal / Endotracheal tube Aspirate	Bronchoalveolar lavage	Throat swab	Nasal Pharyngeal Swab	nasal Swab	Lung tissue
Sample Volume	1-3 ml	1-3 ml	1-3 ml	1-3 ml	-	-	-	1.5cm ³ in a few drops of VTM
Container/Transport Media	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container
Sample Transportation	2-8°C							
Type of form	MKAK-BPU-U01							
LTAT	qRT-PCR - 3 days							
Frequency of test	qRT-PCR - Daily							
Cost/test (RM)	qRT-PCR - RM258.20							
Laboratory name	Virology							
Tel No. 03-61261200 Ext. No	Molekul Unit 1321 VI Unit 1315 / 1325							
PHL	MKAK	√						
	MKA Ipoh	√						
	MKA Johor Bahru							
	MKA Kota Bharu							
	MKA Kota Kinabalu							
Remark(s)	<ol style="list-style-type: none"> Sample should be collected within 5 days from onset of illness. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 							

Pathogen	Influenza A (H7N9)							
Category	Outbreak							
Test Method	qRT-PCR							
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharangeal Aspirate	Tracheal / Endotracheal tube Aspirate	Bronchoalveolar lavage	Throat swab	Nasal Pharyngeal Swab	Nasal Swab	Lungs tissue
Sample Volume	1-3 ml	1-3 ml	1-3 ml	1-3 ml	-	-	-	1.5cm cube in a few drops of VTM
Container/Transport Media	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container
Sample Transportation	2-8°C							
Type of form	MKAK-BPU-U01							
LTAT	qRT-PCR - 3 days							
Frequency of test	qRT- PCR -Daily							
Cost/test (RM)	qRT- PCR -RM258.20							
Laboratory name	Virology							
Tel No. 03-61261200 Ext. No	Molekul Unit 1321 VI Unit 1315 / 1325							
PHL	MKAK	√						
	MKA Ipoh	√						
	MKA Johor Bahru							
	MKA Kota Bharu							
	MKA Kota Kinabalu							
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 							

Pathogen	Influenza B							
Category	Outbreak							
Test Method	qRT-PCR							
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharyngeal Aspirate	Tracheal / Endotracheal tube Aspirate	Bronchoalveolar lavage	Throat swab	Nasal Pharyngeal Swab	nasal Swab	Lungs tissue
Sample Volume	1-3 ml	1-3 ml	1-3 ml	1-3 ml	-	-	-	1.5cm cube in a few drops of VTM
Container/Transport Media	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container
Sample Transportation	2-8°C							
Type of form	MKAK-BPU-U01							
LTAT	qRT-PCR - 3 days							
Frequency of test	qRT-PCR - Daily							
Cost/test (RM)	qRT-PCR - RM258.20							
Laboratory name	Virology							
Tel No. 03-61261200 Ext. No	Molekul Unit1321 VI Unit 1315 / 1325							
PHL	MKAK	√						
	MKA Ipoh	√						
	MKA Johor Bahru	√						
	MKA Kota Bharu	√						
	MKA Kota Kinabalu	√						
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 							

Pathogen		Influenza A / B viruses
Category		ILI Surveillance
Test Method		qRT-PCR
Sample type (Preference of sample is in sequence. Sent either one only)		Throat swab
Sample Volume		-
Container/Transport Media		Sterile container with 2.0-2.5 ml of VTM
Sample Transportation		2-8°C
Type of form		Malaysia Influenza - ILI surveillance form (Annex 6)
LTAT		qRT-PCR - 10 days
Frequency of test		qRT-PCR - daily
Cost/test (RM)		qRT-PCR- RM258.20
Laboratory name		Virology
Tel No. 03-61261200 Ext. No		Molekul Unit 1321 VI Unit 1315 / 1325
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	√
Remark(s)		<p>Refer to Malaysia Influenza Surveillance Protocol (MISP), Nov 2015.</p> <ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. <p>After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C.</p>

Pathogen	Japanese encephalitis virus	
Category	Outbreak/Surveillance	
Test Method	qRT-PCR Serology	
Sample type (Preference of sample is in sequence. Sent either one only)	Serum	CSF
Sample Volume	2-4 ml	1 ml
Container/Transport Media	Plain tube with serum separator	Sterile screw capped container
Sample Transportation	2-8°C	
Type of form	MKAK-BPU-U01/Rev2018	
LTAT	Serology Outbreak - 3 days Surveillance - 7 days qRT-PCR Outbreak - 3 days	
Frequency of test	Serology - Daily qRT-PCR - Daily	
Cost/test (RM)	Serology - RM 181.00 qRT-PCR - RM257.00	
Laboratory name	Virology	
Tel No. 03-61261200 Ext. No	Serology Unit 4027 Molekul Unit 1321	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	√ (Serology only)
Remark(s)	<ol style="list-style-type: none"> Refer to Surat Pekeliling KPK Malaysia bil 6/2012: Survelan JE Kebangsaan; Mkaka 600-1/1/1(13), 3 Februari 2012 Sample should be collected within 5 days from onset of illness. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	<i>Klebsiella pneumoniae</i>			
Category	Outbreak			
Test Method	Culture & Sensitivity			PFGE
Sample type	Sputum or	Tracheal Aspirate (in-patient) or	Bronchoalveolar lavage (BAL) (in-patient)	Pure isolate
Sample Volume	1-3 ml	1-3 ml	1-3 ml	NA
Container/Transport media	Sterile container	Sterile container	Sterile container	NA slant
Sample Transportation	Send immediately after collection at 2°C - 8°C			
Type of form	MKAK-BPU-U01/Rev2018			
LTAT	7 days			30 days
Frequency of Test	Daily			Special Requirement
Cost/test (RM)	RM 70.00			RM 350.00
Laboratory Name	Bacteriology			
Tel No: 03-61261200 Ext. No.	1329/1330			
P H L	MKAK	√	√	√
	MKA Ipoh	√	√	√
	MKA Johor Bahru	√	√	√
	MKA Kota Bharu	√	√	√
	MKA Kota Kinabalu	√	√	√
Outsource	Not applicable			
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the viability of the bacteria. 			

Pathogen	<i>Legionella pneumophila</i>	
Category	Outbreak or Diagnostic Surveillance	
Test Method	Culture, Enumeration and Identification	
Sample type	Water from Cooling tower	
Sample Volume	1 Liter	
Container/ Transport media	Insulated sterile screw cap container	
Sample Transportation	Send immediately after collection at 2°C – 8°C	
Type of form	MKAK/BP/ENV/01 Rev 1	
LTAT	21 working days	
Frequency of Test	By Appointment	
Cost/test (RM)	RM 200.64	
Laboratory Name	Bacteriology	
Tel No: 03-61261200 Ext. No.	1329/1330	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	√
Outsource	Not applicable	
Remarks	<ol style="list-style-type: none"> 1. Please refer to Specimen Collection Procedures for Environmental and Non-Clinical Samples. 2. Delay in transportation will affect the viability of the bacteria. 	

Pathogen	<i>Leptospira spp.</i>						
Category	Outbreak or Diagnostic Surveillance						
Test Method	Serology IgM	Serology Microagglutination Test (MAT)	Real-Time PCR	MLST	Culture and detection of <i>Leptospira spp.</i> in environmental sample		
Sample type	Serum	Serum	Plasma	Isolate	Water	Soil	
Sample Volume	3 ML	3 ML	3 ML	NA	250 ML	200 g	
Container/ Transport media	Plain Tube	Plain Tube	EDTA Tube	NA	Sterile Whirl Pack		
Sample Transportation	Send immediately after collection at 2°C – 8°C	Send immediately after collection at 2°C – 8°C	Send immediately after collection at 2°C – 8°C	Send at 2°C – 8°C	Send immediately after collection at ambient temperature.		
Type of form	MKAK-BPU-U01/Rev2018	MKAK-BPU-U01/Rev2018	MKAK-BPU-U01/Rev2018	MKAK-BPU-U01/Rev2018	MKAK/BP/ENV/01 Rev 1		
LTAT	5 working days	7 working days	5 days	30 working days	21 working days		
Frequency of Test	Daily	Daily	Daily	By appointment	Daily		
Cost/test (RM)	RM 30.00	RM 20.00	RM 350.00	RM 350.00	RM 350.00		
Laboratory Name	Bacteriology						
Tel No: 03-61261200 Ext. No.	1329/1330						
PHL	MKAK	√	√	√	√	√	
	MKA Ipoh	√	√	√		√	
	MKA Johor Bahru	√	√	√		√	
	MKA Kota Bharu	√	√	√		√	
	MKA Kota Kinabalu	√	√	√		√	
Outsource	Not applicable						
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the quality of the sample. Haemolysed sample shall be rejected. 	<ol style="list-style-type: none"> Requester shall attach the Serology IgM Leptospira result. Haemolysed sample shall be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the quality of the sample. 	Test will be done for outbreak investigation and epidemiological linkage only.	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Environmental and Non-Clinical Samples. Delay in transportation will affect the quality of the sample. 		

Pathogen	<i>Listeria monocytogenes</i>			
Category	Outbreak			
Test Method	Culture & Sensitivity			
Sample type	Fresh stool	Fresh stool or	Rectal swab	
Sample Volume	3-5 gm	NA	NA	
Container/ Transport media	Sterile container	Cary Blair	Cary Blair	
Sample Transportation	Send within 2 hours after collection at 2°C - 8°C	Send immediately after collection at ambient temperature	Send immediately after collection at ambient temperature	
Type of form	MKAK-BPU-U01/Rev2018			
LTAT	7 days			
Frequency of Test	Daily			
Cost/test (RM)	RM 70.00			
Laboratory Name	Bacteriology			
Tel No: 03-61261200 Ext. No.	1329/1330			
PHL	MKAK	√	√	√
	MKA Ipoh	√	√	√
	MKA Johor Bahru	√	√	√
	MKA Kota Bharu	√	√	√
	MKA Kota Kinabalu	√	√	√
Outsource	Not applicable			
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Samples which are received after more than 2 hours will be rejected 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 		

Pathogen		Malaria		
Category		For confirmation		
Test Method		Microscopy Examination	Real-Time qPCR	
Sample type		BFMP SLIDE	EDTA Blood	Dried Blood Spot (DBS) on Filter paper (e.g Whatman no 1, Whatman 3 MM)
Sample Volume		Slide with thin and thick smear	3 - 5 ml of EDTA Blood	Approximately 50 ul of fresh blood in each spot (3 spot are recommended)
Container/ Transport media		Slide Folder	Slide Folder	Biohazard zip-locked plastic bags, with desiccantszip
Sample Transportation		Slide Box	Keep and transport specimen at 2-8°C	Send immediately after collection at ambient temperature. If delay is unavoidable, please send at 2°C - 8°C.
Type of form		PER PATH 301	PER PATH 301	PER PATH 301
LTAT		24 hours	3 days	3 days
Frequency of Test		Daily	Daily	Daily
Cost/test (RM)		10.00	80.00	80.00
Laboratory Name		Parasitology	Parasitology	Parasitology
Tel No: 03-61261200 Ext. No.		2002	2002	2002
Test available at other Public Health Laboratory	MKAK	√	√	√
	MKA Ipoh	√	√	√
	MKA Johor Bahru	√	√	√
	MKA Kota Bharu	√	√	√
	MKA Kota Kinabalu	√	√	√
Outsource				
Remarks		Reference: Management Guideline of Malaria in Malaysia	Reference: Management Guideline of Malaria in Malaysia	Reference: Management Guideline of Malaria in Malaysia

Pathogen	Measles virus				
Category	Outbreak/Surveillance				
Test Method	Serology/qRT-PCR				
Sample type (Preference of sample is in sequence. Sent either one only)	Throat swab	Urine	Nasopharyngeal secretion	Tracheal aspirate	Serum
Sample Volume	-	10 ml of urine (Early morning first void)	1-3 ml	1-3 ml	2-4 ml
Container/Transport Media	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Plain tube with serum separator
Sample Transportation	2-8°C				
Type of form	Measles: Borang Permohonan dan Keputusan Ujian Makmal MSLF:01/2004				
LTAT	Serology - Outbreak 3 days, Surveillance 4 days qRT-PCR - Outbreak 3 days, Surveillance - 14 days				
Frequency of test	Serology - Daily qRT-PCR - Daily				
Cost/test (RM)	Serology - RM 61.34 qRT-PCR - RM257.00				
Laboratory name	Virology				
Tel No. 03-61261200 Ext. No	Serology Unit 4027 Molecular Unit 1321 Virus Isolation Unit 1315/1325				
PHL	MKAK	√			
	MKA Ipoh	√ (Serology only)			
	MKA Johor Bahru	√ (Serology only)			
	MKA Kota Bharu	√ (Serology only)			
	MKA Kota Kinabalu	√ (Serology only)			
Remark(s)	<ol style="list-style-type: none"> For Serology test, only serum sample is used. Refer to Measles Surveillance Manual, 1st Edition, September 2004, Specimens Collection for Laboratory Investigation Blood/serum should be taken any time up to 28 days of rash onset. Respiratory secretion should be taken 1 – 5 days of rash onset. Respiratory secretion (nasopharyngeal specimen) should be taken 1 – 7 days of rash onset. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 				

Pathogen	<i>MERS-CoV</i>								
Category	Outbreak								
Test Method	qRT-PCR								
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharyngeal Aspirate	Tracheal Aspirate	Endotracheal tube aspirate	Bronchoalveolar lavage	Throat swab	Nasal Pharyngeal Swab	Nasal Swab	Tissue biopsy / autopsy
Sample Volume	1-3 ml	1-3 ml	1-3 ml	1-3 ml	1-3 ml	-	-	-	1.5cm ³ in a few drops of VTM
Container/Transport Media	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container
Sample Transportation	2-8°C								
Type of form	MKAK-BPU-U01								
LTAT	qRT-PCR - 3 days								
Frequency of test	qRT-PCR - Daily								
Cost/test (RM)	qRT-PCR RM258.20								
Laboratory name	Virology								
Tel No. 03- 61261200 Ext. No	Molecular Unit 1321								
PHL	MKAK	√							
	MKA Ipoh	√							
	MKA Johor Bahru	√							
	MKA Kota Bharu	√							
	MKA Kota Kinabalu	√							
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 								

Pathogen	Metapneumovirus (Human Metapneumovirus)							
Category	Outbreak							
Test Method	IFAT/ Virus Isolation (VI)							
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharangeal Aspirate	Throat swab	Nasal Pharangeal Swab	Nasal Swab	Tracheal / endotracheal tube Aspirate	Bronchoalveolar lavage	Lungs tissue biopsy / autopsy
Sample Volume	1-3 ml	1-3 ml	-	-	-	1-3 ml	1-3 ml	1.5cm ³ in a few drops of VTM
Container/Transport Media	Sterile screw capped	Sterile screw capped	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped	Sterile screw capped	Sterile screw capped
Sample Transportation	2-8°C							
Type of form	MKAK-BPU-U01							
LTAT	IFAT - 7 days VI - 21 days							
Frequency of test	IFAT - Daily VI - Daily							
Cost/test (RM)	IFAT - RM 35.00 VI - RM 75.00							
Laboratory name	Virology							
Tel No. 03-61261200 Ext. No	Virus Isolation Unit 1315/1325							
PHL	MKAK	√						
	MKA Ipoh	√						
	MKA Johor Bahru							
	MKA Kota Bharu							
	MKA Kota Kinabalu	√ (IFAT only)						
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 							

Pathogen	<i>Moraxella catarrhalis</i>				
Category	Outbreak				
Test Method	Culture & Sensitivity				
Sample type	Nasopharyngeal swab (contact) or	Nasopharyngeal Aspirates (in-patient)	Sputum or	Tracheal Aspirate (in-patient)	Bronchoalveolar lavage (BAL) (in-patient)
Sample Volume	NA	1-3 ML	1-3ML	1-3ML	1-3ML
Container/ Transport media	Amies Charcoal	Amies Charcoal	Sterile container	Sterile container	Sterile container
Sample Transportation	Send immediately after collection at ambient temperature	Send immediately after collection at 2°C – 8°C			
Type of form	MKAK-BPU-U01/Rev2018				
LTAT	7 days				
Frequency of Test	Daily				
Cost/test (RM)	RM70.00				
Laboratory Name	Bacteriology				
Tel No: 03-61261200 Ext. No.	1329/1330				
PHL	MKAK	√			
	MKA Ipoh	√			
	MKA Johor Bahru	√			
	MKA Kota Bharu	√			
	MKA Kota Kinabalu				
Outsource	Not applicable				
Remarks	<ol style="list-style-type: none"> 1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the viability of the sample. 				

Pathogen		Mumps virus	
Category		Outbreak	
Test Method		Virus Isolation (VI)/ qRT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)		Oral or buccal swab	Saliva
Sample Volume		-	3.0 – 5.0 ml
Container/Transport Media		Sterile container with 2.0-2.5 ml of VTM	Saliva container
Sample Transportation		2-8°C	
Type of form		MKAK-BPU-U01	
LTAT		VI - 21 days qRT-PCR - 3 days	
Frequency of test		VI - Daily qRT-PCR - Daily	
Cost/test (RM)		VI - RM 100.00 qRT-PCR - RM257.00	
Laboratory name		Virology	
Tel No. 03-61261200 Ext. No		Molecular Unit 1321 VI Unit 1315/1325	
PHL	MKAK	√	
	MKA Ipoh	√ (qRT-PCR only)	
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen		<i>Mycobacterium leprae</i>			
Category		NIL			
Test Method		Culture & Sensitivity (<i>Mouse Foot Pad Inoculation Method</i>)	Detection of <i>Mycobacterium leprae</i> using PCR method		Detection of drug resistant <i>Mycobacterium leprae</i> by Molecular Line Probe Assay Method (MLPA)
Sample type		Skin Incision / Punch Biopsy			
Sample Volume		Minimum size of 4 mm x 12 mm (skin incision) or Minimum of 5 mm (punch biopsy).			
Container/ Transport media		Sterile plain container without preservative	a) Preferably in sterile plain container without preservative or b) In container with 70% ethanol		
Sample Transportation		Transport sample at 2-8 °C and to reach laboratory within 24 hours after collection	Sample in container without preservative should be transported to reach the laboratory at 2-8 °C within 5 days after collection.	Sample in container with 70% ethanol can be stored for longer period of time before delivery to the laboratory	
Type of form		<i>Mycobacterium leprae</i> Viability & Drug Sensitivity Test Request Form	PER-PAT 301		
LTAT		12-18 months	7 days	14 days	
Frequency of Test		Daily			1 X month (First week of each month)
Cost/test (RM)		715	210	240	
Laboratory Name		Kusta			
Tel No: 03-61261200 Ext. No.		03-61402474 (Direct line)			
Test available at other Public Health Laboratory	MKAK	√	√	√	√
	MKA Ipoh				
	MKA Johor Bahru				
	MKA Kota Bharu				
	MKA Kota Kinabalu				
Outsource					
Remarks					

Pathogen		<i>Mycobacterium tuberculosis complex (MTBC)</i>	
Category		For confirmation	
Test Method		Microscopy for Acid fast bacilli (AFB) smear Note: Only for selected cases	
Sample type		Sputum	Others specimen
Sample Volume		An adequate sample should be about 3-5ml	-
Container/ Transport media		Clean leak proof container	-
Sample Transportation		4°C – 8°C. Specimens should be kept cool during transportation but not frozen.	-
Type of form		TBIS 20C or PER PAT 301	
LTAT		1 working day	1 working day
Frequency of Test		Daily	Daily
Cost/test (RM)		5.00	5.00
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	30.00	30.00
	KELAS 2	15.00	15.00
	KELAS 3	7.00	7.00
	RUJUKAN BAYARAN	<i>Kumpulan E: Fluorescent Microscopi</i>	
Laboratory Name		TB	TB
Tel No: 03-61261200 Ext. No.		1327/1328	1327/1328
PHL	MKAK	√	√
	MKA Ipoh	√	√
	MKA Johor Bahru	√	√
	MKA Kota Bharu	√	√
	MKA Kota Kinabalu	√	√
Outsource			
Remarks		Early morning specimens have the highest yield of AFB.	It is not recommended for AFB Microscopy. Please consult the Science Officer in-charge.

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>												
Category	Diagnostic												
Test Method	Mycobacterial Culture												
Sample type	Sputum	Gastric lavage	Bronchiol washing	Serous Fluid	CSF	Other body fluids (eg. synovial)	Pus or pus swabs or any swab	Urine (early morning urine)	Tissue Biopsy	Blood	Bone Marrow	Post mortem specimen	
Sample Volume	An adequate sample should be about 3-5ml	Minimum 5 ml	Minimum 5 ml	2-5 ml	As much as available (preferably minimum of 1 ml)	2-5 ml	-	3-5 ml	As large a sample as possible should be sent	Adult sample: 5-10 ml Peadiatric sample: 3-5 ml	Adult sample: 5-10 ml Peadiatric sample: 3-5 ml	As per specimen type	
Container/ Transport media	Clean leak proof container	Sterile screw capped container							Sterile Screw capped container without preservatives.	Blood culture bottle	Blood culture bottle or sterile screw capped container	As per specimen type	
Sample Transportation	4°C – 8°C. Specimens should be kept cool during transportation but not frozen.												
Type of form	TBIS 20C or PER PAT 301												
LTAT	49 working days												
Frequency of Test	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	
Cost/test (RM)	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	
	KELAS 2	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	
	KELAS 3	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
	RUJUKAN BAYARAN	<i>Kumpulan F: Culture of Clinical Specimen</i>											
Laboratory Name	TB												
Tel No: 03-61261200 Ext. No.	1327/1328												
PHL	MKAK	√	√	√	√	√	√	√	√	√	√	√	
	MKA Ipoh	√	√	√	√	√	√	√	√	√	√	√	
	MKA Johor Bahru	√	√	√	√	√	√	√	√	√	√	√	

Pathogen		<i>Mycobacterium tuberculosis complex (MTBC)</i>											
Category		Diagnostic											
Test Method		Mycobacterial Culture											
Sample type		Sputum	Gastric lavage	Bronchiol washing	Serous Fluid	CSF	Other body fluids (eg. synovial)	Pus or pus swabs or any swab	Urine (early morning urine)	Tissue Biopsy	Blood	Bone Marrow	Post mortem specimen
	MKA Kota Bharu	√	√	√	√	√	√	√	√	√	√	√	√
	MKA Kota Kinabalu	√	√	√	√	√	√	√	√	√	√	√	√
Outsource													
Remarks		To ensure optimal recovery of AFB bacilli from sputum, at least two specimens should be collected and processed for mycobacterial culture.	Sample should be neutralised immediately by adding 1.5 ml sterile 40% anhydrous disodium phosphate (Na ₂ HPO ₄) for every 35-40 ml specimens if there is further delay for more than 4 hours.					Should be collected aseptically		Add 2-5 ml sterile saline/ distilled water to prevent desiccation			

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>		
Category	Diagnostic & Surveillance		
Test Method	Detection of MTB and assess resistance to fluoroquinolone (FQ) and secondline injectable drugs (SLID)		
Sample type	Sputum	Processes sediments for culture	
Sample Volume	An adequate sample should be about 3-5ml	An adequate sample should be about 0.5 ml	
Container/ Transport media	Clean leak proof container		
Sample Transportation	4°C – 8°C. Specimens should be kept cool during transportation but not frozen.		
Type of form	TBIS 20C or PER PAT 301		
LTAT	7 working days (external samples) 7 working days from date of RR-TB or MDR-TB detection (internal samples)		
Frequency of Test	2x/week	2x/week	
Cost/test (RM)	180.00	180.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	350.00	350.00
	KELAS 2	350.00	350.00
	KELAS 3	350.00	350.00
	RUJUKAN BAYARAN	<i>Memo Bertulis Ujian Molekular Bakteriologi</i>	
Laboratory Name	TB	TB	
Tel No: 03-61261200 Ext. No.	1327/1328	1327/1328	
PHL	MKAK	√	√
	MKA Ipoh		
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Outsource			
Remarks	Suitable for testing of culture isolates and direct testing of sputum specimens from RR-TB or MDR-TB case.		

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>	
Category	Diagnostic	
Test Method	Xpert MTB/Rif Assay	
Sample type	Sputum and extrapulmonary specimens. Please consult NPHL for extrapulmonary specimens	
Sample Volume	An adequate sample should be about 3-5ml	
Container/ Transport media	Clean leak proof container	
Sample Transportation	4°C – 8°C. Specimens should be kept cool during transportation but not frozen.	
Type of form	TBIS 20C or PER PAT 301	
LTAT	1 working day	
Frequency of Test	Daily	
Cost/test (RM)	80.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	350.00
	KELAS 2	350.00
	KELAS 3	350.00
	RUJUKAN BAYARAN	Memo Bertulis Ujian Molekular Bakteriologi
Laboratory Name	TB	
Tel No: 03-61261200 Ext. No.	1327/1328	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	
Outsource		
Remarks	For high suspected RR and MDR-TB	

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>	
Category	Diagnostic & Surveillance	
Test Method	Detection of MTB and assess resistance to rifampicin and isoniazid	
Sample type	Sputum	
Sample Volume	An adequate sample should be about 3-5ml	
Container/ Transport media	Clean leak proof container	
Sample Transportation	4°C – 8°C. Specimens should be kept cool during transportation but not frozen.	
Type of form	TBIS 20C or PER PAT 301	
LTAT	7 working days	
Frequency of Test	2x/week	
Cost/test (RM)	103.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	350.00
	KELAS 2	350.00
	KELAS 3	350.00
	RUJUKAN BAYARAN	<i>Memo Bertulis Ujian Molekular Bakteriologi</i>
Laboratory Name	TB	
Tel No: 03-61261200 Ext. No.	1327/1328	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	√
Outsource		
Remarks		

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>										
Category	Diagnostic										
Test Method	Detection of M. tuberculosis Complex by PCR method										
Sample type	Sputum	Gastric lavage	Bronchiol washing	CSF	Serous Fluid	Pus/ Pus swab/ Others swab	Urine	Tissue Biopsy	Blood	Bone Marrow	Post mortem specimen
Sample Volume	3-5 ml	Minimum 5 ml	1-2 ml	As much as available (preferably minimum of 0.5 ml)	1-2 ml	-	1-2 ml	As large a sample as possible should be sent	Adult sample: 5 ml	1-2 ml	As per specimen type
Container/ Transport media	Sterile Screw capped container							Sterile Screw capped container without preservatives	Plain tube (non-serum separator)	Sterile Screw capped container without preservatives	As per specimen type
Sample Transportation	4°C – 8°C. Specimens should be kept cool during transportation but not frozen.										
Type of form	TBIS 20C or PER PAT 301										
LTAT	7 working days										
Frequency of Test	2x/week										
Cost/test (RM)	60.00										
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	350.00									
	KELAS 2	350.00									
	KELAS 3	350.00									
	RUJUKAN BAYARAN	Memo Bertulis Ujian Molekular Bakteriologi									
Laboratory Name	TB										
Tel No: 03-61261200 Ext. No.	1327/1328										

Pathogen		<i>Mycobacterium tuberculosis complex (MTBC)</i>										
Category		Diagnostic										
Test Method		Detection of <i>M. tuberculosis</i> Complex by PCR method										
Sample type		Sputum	Gastric lavage	Bronchiol washing	CSF	Serous Fluid	Pus/ Pus swab/ Others swab	Urine	Tissue Biopsy	Blood	Bone Marrow	Post mortem specimen
PHL	MKAK	√	√	√	√	√	√	√	√	√	√	√
	MKA Ipoh	√	√	√	√	√	√	√	√	√	√	√
	MKA Johor Bahru	√	√	√	√	√	√	√	√	√	√	√
	MKA Kota Bharu	√	√	√	√	√	√	√	√	√	√	√
	MKA Kota Kinabalu	√	√	√	√	√	√	√	√	√	√	√
Outsource												
Remarks							No transport media is needed for swab. Only put in sterile container with sterile saline.		Add 2-5 ml sterile saline/ distilled water to prevent desiccation			

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>		
Category	Surveillance		
Test Method	Culture Identification		
Sample type	Culture isolates- solid medium	Culture isolates- liquid medium	
Sample Volume	Visible growth on the egg-based slope (> 20 colonies) Pure colonies on solid media	Pure growth in liquid culture	
Container/ Transport media	Screw capped container	Screw capped container eg.: MGIT tube	
Sample Transportation	Ambient temperature		
Type of form	TBIS 20C or PER PAT 301		
LTAT	3 working days for MTBC	3 working days for MTBC 35 working days for NTM	
Frequency of Test	Daily		
Cost/test (RM)	15.00-70.00		
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	50.00	
	KELAS 2	25.00	
	KELAS 3	12.00	
	RUJUKAN BAYARAN	KUMPULAN C: ANALISA MIKROBIOLOGICAL BAHAN-BAHAN MAKANAN DAN LAIN-LAIN	
Laboratory Name	TB		
Tel No: 03-61261200 Ext. No.	1327/1328		
PHL	MKAK	√	√
	MKA Ipoh	√	√
	MKA Johor Bahru	√	√
	MKA Kota Bharu	√	√
	MKA Kota Kinabalu	√	√
Outsource			
Remarks	Insufficient and contaminated/mixed growth will need additional procedure. This procedure will take another 2-8 weeks and exclude from LTAT criteria.	Must send within 3 days after tested positive.	

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>		
Category	Surveillance		
Test Method	First-line Drug susceptibility testing (SM, INH, RIF, ETB) for MTBC		
Sample type	Culture isolates on solid medium	Culture isolates in liquid medium	
Sample Volume	Visible growth on the egg-based slope (> 20 colonies) Pure colonies on solid media	Pure growth in liquid culture	
Container/ Transport media	Screw capped container	Screw capped container eg.: MGIT tube	
Sample Transportation	Ambient temperature		
Type of form	TBIS 20C or PER PAT 301		
LTAT	31 working days	14 working days	
Frequency of Test	Daily		
Cost/test (RM)	63.00 to 150.00	150.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	50.00	50.00
	KELAS 2	25.00	25.00
	KELAS 3	12.00	12.00
	RUJUKAN BAYARAN	<i>KUMPULAN C: ANTIBIOTIC ASSAY DAN UJIAN STERILITY</i>	
Laboratory Name	TB		
Tel No: 03-61261200 Ext. No.	1327/1328		
PHL	MKAK	√	√
	MKA Ipoh	√	√
	MKA Johor Bahru	√	√
	MKA Kota Bharu	√	√
	MKA Kota Kinabalu	√	√
Outsource			
Remarks	Insufficient and contaminated/mixed growth will need additional procedure. This procedure will take another 2-8 weeks and exclude from LTAT criteria.	Must send within 3 days after tested positive.	

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>		
Category	Surveillance		
Test Method	First-line Drug susceptibility testing (PZA) for MTBC		
Sample type	Culture isolates on solid medium		Culture isolates in liquid medium
Sample Volume	Visible growth on the egg-based slope (> 20 colonies)	Pure colonies on egg based medium	Pure growth in liquid culture
Container/ Transport media	Screw capped container		Screw capped container eg: MGIT tube
Sample Transportation	Ambient temperature		
Type of form	TBIS 20C or PER PAT 301		
LTAT	21 working days		21 working days
Frequency of Test	2x/week		2x/week
Cost/test (RM)	75.00		75.00
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	50.00	50.00
	KELAS 2	25.00	25.00
	KELAS 3	12.00	12.00
	RUJUKAN BAYARAN	<i>KUMPULAN C: ANTIBIOTIC ASSAY DAN UJIAN STERILITY</i>	
Laboratory Name	TB		
Tel No: 03-61261200 Ext. No.	1327/1328		
PHL	MKAK	√	√
	MKA Ipoh	√	√
	MKA Johor Bahru	√	√
	MKA Kota Bharu	√	√
	MKA Kota Kinabalu	√	√
Outsource			
Remarks	<ol style="list-style-type: none"> 1. Only proceed if resistant to INH or/and RIF. 2. For other cases, please consult NPHL's Clinical Microbiologist or Science Officer in-charge. 		

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>		
Category	Surveillance		
Test Method	Second-line Drug susceptibility testing for MTBC (phenotypic method)		
Sample type	Culture isolates on solid medium	Culture isolates in liquid medium	
Sample Volume	Visible growth on the egg-based slope (> 20 colonies)	Pure growth in liquid culture	
Container/ Transport media	Screw capped container	Screw capped container eg.: MGIT tube	
Sample Transportation	Ambient temperature		
Type of form	TBIS 20C or PER PAT 301		
LTAT	31 days form detection of RR-TB and MDR-TB (internal)		
Frequency of Test	1x/week		
Cost/test (RM)	250.00	250.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	50.00	50.00
	KELAS 2	25.00	25.00
	KELAS 3	12.00	12.00
	RUJUKAN	<i>KUMPULAN C: ANTIBIOTIC ASSAY DAN UJIAN STERILITY</i>	
Laboratory Name	TB		
Tel No: 03-61261200 Ext. No.	1327/1328		
PHL	MKAK	√	√
	MKA Ipoh		
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Outsource			
Remarks	<ol style="list-style-type: none"> Suitable for testing of culture isolates from RR-TB or MDR-TB case. For other cases, please consult NPHL's Clinical Microbiologist or Science Officer in-charge. 		

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>		
Category	Surveillance		
Test Method	Detection of MTB and assess resistance to fluoroquinolone (FQ) and secondline injectable drugs (SLID)		
Sample type	Culture isolates on solid medium	Culture isolates in liquid medium	
Sample Volume	Visible growth on the egg-based slope (> 20 colonies)	Pure growth in liquid culture	
Container/ Transport media	Screw capped container	Screw capped container eg: MGIT tube	
Sample Transportation	Ambient temperature		
Type of form	TBIS 20C or PER PAT 301		
LTAT	7 days (external samples) 7 days from date of RR-TB or MDR-TB detection (internal samples)		
Frequency of Test	1x/week		
Cost/test (RM)	156.00	156.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	350.00	350.00
	KELAS 2	350.00	350.00
	KELAS 3	350.00	350.00
	RUJUKAN BAYARAN	<i>Memo Bertulis Ujian Molekular Bakteriologi</i>	
Laboratory Name	TB		
Tel No: 03-61261200 Ext. No.	1327/1328	1327/1328	
PHL	MKAK	√	√
	MKA Ipoh		
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Outsource			
Remarks	1. Suitable for testing of culture isolates from RR-TB or MDR-TB case. 2. For other cases, please consult NPHL's Clinical Microbiologist or Science Officer in-charge.		

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>	
Category	Diagnostic & Surveillance	
Test Method	Interferon gamma release assay (IGRA) for diagnosis latent TB infection (LTBI) (blood test)	
Sample type	Whole blood in dedicated blood collection tubes. Please contact MKAK for the details.	
Sample Volume	1 ml per tube	
Container/ Transport media	QuantiFERON-QTB Gold collection tubes	
Sample Transportation	<p>First condition: Incubate tubes at collection site (upright at 37°C for 16-24 hours) then ship to NPHL at 4-27°C. Record as "incubated".</p> <p style="text-align: center;">OR</p> <p>Second condition: Ship to NPHL at room temperature in vertical within 10 hours after blood collection.</p>	
Type of form	TBIS 20C or PER PAT 301	
LTAT	Within 10 days or after 22 samples per batch are reached	
Frequency of Test	Depending on number of samples (22 samples / batch)	
Cost/test (RM)	133.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	30.00
	KELAS 2	15.00
	KELAS 3	7.00
	RUJUKAN BAYARAN	<i>KUMPULAN E: ELISA</i>
Laboratory Name	TB	
Tel No: 03-61261200 Ext. No.	1327/1328	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	√
Outsource		
Remarks	<ol style="list-style-type: none"> 1. Special collection, incubation, and centrifugation procedures must be followed. Please contact NPHL for QuantiFERON-Gold collection tubes and special instruction. 2. For clinical cases, this test is by appointment ONLY through NPHL's Clinical Microbiologist. 	

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>	
Category	Outbreak/ Cluster	
Test Method	MIRU-VNTR Typing	
Sample type	Culture isolates on solid medium	Culture isolates in liquid medium
Sample Volume	Visible growth on the egg-based slope (> 20 colonies)	Pure growth in liquid culture
Container/ Transport media	Screw capped container	
Sample Transportation	Ambient temperature	
Type of form	TBIS 20C or PER PAT 301	
LTAT	-	
Frequency of Test	As necessary	
Cost/test (RM)	300.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	350.00
	KELAS 2	350.00
	KELAS 3	350.00
	RUJUKAN BAYARAN	<i>Memo Bertulis Ujian Molekular Bakteriologi</i>
Laboratory Name	TB	
Tel No: 03-61261200 Ext. No.	1327/1328	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks	1. Please consult Science Officer in-charge. 2. All the request must be accompanied by a complete clinical notes or details of cluster/outbreak report.	

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>	
Category	Surveillance	
Test Method	MTBC speciation	
Sample type	Culture isolates on solid medium	Culture isolates in liquid medium
Sample Volume	Visible growth on the egg-based slope (> 20 colonies)	Pure growth in liquid culture
Container/ Transport media	Screw capped container	
Sample Transportation	Ambient temperature	
Type of form	TBIS 20C or PER PAT 301	
LTAT	7 days after request	
Frequency of Test	1x/week	
Cost/test (RM)	200	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	350.00
	KELAS 2	350.00
	KELAS 3	350.00
	RUJUKAN BAYARAN	<i>Memo Bertulis Ujian Molekular Bakteriologi</i>
Laboratory Name	TB	
Tel No: 03-61261200 Ext. No.	1327	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks		

Pathogen	<i>Neisseriae meningitidis</i>														
Category	Outbreak or Diagnostic											Surveillance	Outbreak	Surveillance	
Test Method	Culture & Sensitivity							PCR				Serotyping	PFGE	MLST	
Sample type	Throat swab (contact) or	Nasopharyngeal swab (contact) or	Nasopharyngeal Aspirate (in-patient)	Sputum or	Tracheal Aspirate (in-patient) or	Bronchoalveolar lavage (BAL) (in-patient)	CSF (in-patient)	CSF	Pleural Fluid	Serum	Plasma	Isolate	Isolate	Isolate	
Sample Volume	NA	NA	1-3 ML				1-3 ML	1-3 ML	1-3 ML	3 ML	3 ML	NA	NA	NA	
Container/Transport media	Amies Charcoal	Amies Charcoal	Sterile container				Sterile container	Sterile container		Plain Tube	EDTA Tube	Blood Agar	Blood Agar	Blood Agar	
Sample Transportation	Send immediately after collection at ambient temperature		Send immediately after collection at 2°C – 8°C.				Send within 1 hour after collection at 2°C – 8°C.	Send immediately after collection at 2°C – 8°C.				Send at 2°C – 8°C.			
Type of form	MKAK-BPU-U01/Rev2018														
LTAT	7 days							5 days				5 working days	30 days	30 working days	
Frequency of Test	Daily							Daily				Daily	By appointment	By appointment	
Cost/test (RM)	RM 70.00							RM 350.00				RM 20.00	RM 350.00	RM 350.00	
Laboratory Name	Bacteriology														
Tel No: 03-61261200 Ext. No.	1329/1330														
PHL	MKAK	√	√	√	√	√	√	√	√	√	√	√	√	√	
	MKA Ipoh	√	√	√	√	√	√	√							
	MKA Johor Bahru	√	√	√	√	√	√	√							

Pathogen		<i>Neisseriae meningitidis</i>														
Category		Outbreak or Diagnostic											Surveillance	Outbreak	Surveillance	
Test Method		Culture & Sensitivity							PCR				Serotyping	PFGE	MLST	
Sample type		Throat swab (contact) or	Nasopharyngeal swab (contact) or	Nasopharyngeal Aspirate (in-patient)	Sputum or	Tracheal Aspirate (in-patient) or	Bronchoalveolar lavage (BAL) (in-patient)	CSF (in-patient)	CSF	Pleural Fluid	Serum	Plasma	Isolate	Isolate	Isolate	
	MKA Kota Bharu	√	√	√	√	√	√	√								
	MKA Kota Kinabalu															
Outsource		Not applicable														
Remarks		<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the viability of the bacteria. 						CSF which is received more than 1 hour will be rejected because it is no longer suitable for culturing	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the quality of the sample. 				Inoculate pure single colony onto Chocolate Agar.	Test will be done for outbreak investigation and epidemiological linkage only.		

Pathogen	<i>Neisseria gonorrhoeae</i>					
Category	Outbreak or Surveillance					
Test Method	Culture & Sensitivity					
Sample type	Cervical Swab	High Vaginal Swab	Urethral Swab	Pharyngeal Sawb	Conjunctivae Swab	
Sample Volume	NA	NA	NA	NA	NA	
Container/ Transport media	Amies Charcoal	Amies Charcoal	Amies Charcoal	Amies Charcoal	Amies Charcoal	
Sample Transportation	Send within 6 hours after collection at ambient temperature					
Type of form	MKAK-BPU-U01/Rev2018					
LTAT	7 days					
Frequency of Test	Daily					
Cost/test (RM)	RM 70.00					
Laboratory Name	Bacteriology					
Tel No: 03-61261200 Ext. No.	1329/1330					
PHL	MKAK	√	√	√	√	√
	MKA Ipoh	√	√	√	√	√
	MKA Johor Bahru	√	√	√	√	√
	MKA Kota Bharu	√	√	√	√	√
	MKA Kota Kinabalu	√				
Outsource	Not applicable					
Remarks	<ol style="list-style-type: none"> 1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the viability of the bacteria. 					

Pathogen	<i>Nipah virus</i>				
Category	Outbreak				
Test Method	qRT-PCR				
Sample type (Preference of sample is in sequence. Sent either one only)	CSF	Serum	Urine	Throat swab	Tissue biopsy / autopsy
Sample Volume	1-3 ml	2-4 ml	10 ml of urine (Early morning first void)	-	1.5 cm ³ in a few drops of VTM
Container/Transport Media	Sterile screw capped container	Plain tube with serum separator	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile Screw capped container
Sample Transportation	2-8°C				
Type of form	MKAK-BPU-U01				
LTAT	qRT-PCR - 3 days				
Frequency of test	qRT-PCR - Daily				
Cost/test (RM)	qRT-PCR - RM257.00				
Laboratory name	Virology				
Tel No. 03-61261200 Ext. No	Molecular Unit 1321				
PHL	MKAK	√			
	MKA Ipoh				
	MKA Johor Bahru				
	MKA Kota Bharu				
	MKA Kota Kinabalu				
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 				

Pathogen		Non-tuberculous Mycobacterium (NTM)	
Category		Diagnostic & Surveillance	
Test Method		Culture Identification	
Sample type		Culture isolates on solid medium	
Sample Volume		Visible growth on the egg-based slope (> 20 colonies)	Pure colonies on solid medium
Container/ Transport media		Screw capped container	
Sample Transportation		Ambient temperature	
Type of form		TBIS 20C or PER PAT 301	
LTAT		35 working days (NTM Runyon Group)	
Frequency of Test		2x/week for conventional method	
Cost/test (RM)			
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	50.00	
	KELAS 2	25.00	
	KELAS 3	12.00	
	RUJUKAN BAYARAN	<i>KUMPULAN C: ANALISA MIKROBIOLOGICAL BAHAN-BAHAN MAKANAN DAN LAIN-LAIN</i>	
Laboratory Name		NTM	
Tel No: 03-61261200 Ext. No.		1288	
PHL	MKAK	√	
	MKA Ipoh		
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Outsource			
Remarks		Insufficient and contaminated/mixed growth will need additional procedure. This procedure will take another 2-8 weeks and will be excluded from LTAT criteria.	

Pathogen		Non-tuberculous Mycobacterium (NTM)
Category		Diagnostic & Surveillance
Test Method		Culture Identification
Sample type		Culture isolates in liquid medium
Sample Volume		Pure growth in liquid culture
Container/ Transport media		Screw capped container eg: MGIT tube
Sample Transportation		Ambient temperature
Type of form		TBIS 20C or PER PAT 301
LTAT		10 days (NTM speciation)
Frequency of Test		1x/week
Cost/test (RM)		70.00
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	350.00
	KELAS 2	350.00
	KELAS 3	350.00
	RUJUKAN BAYARAN	<i>Memo Bertulis Ujian Molekular Bakteriologi</i>
Laboratory Name		TB
Tel No: 03-61261200 Ext. No.		1327
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks		

Pathogen	Non-tuberculous Mycobacterium (NTM)	
Category	Diagnostic & Surveillance	
Test Method	Drug susceptibility testing for NTM	
Sample type	Culture isolates on solid medium	
Sample Volume	Visible growth on the egg-based slope (> 20 colonies)	
Container/ Transport media	Screw capped container	
Sample Transportation	Ambient temperature	
Type of form	TBIS 20C or PER PAT 301	
LTAT	7 working days for rapid grower NTM from date of request. 21 working days for slow grower NTM from date of request.	
Frequency of Test	1x/week	
Cost/test (RM)	160.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	50.00
	KELAS 2	25.00
	KELAS 3	12.00
	RUJUKAN BAYARAN	<i>KUMPULAN C: ANTIBIOTIC ASSAY DAN UJIAN STERILITY</i>
Laboratory Name	NTM	
Tel No: 03-61261200 Ext. No.	1288	
PHL	MKAK	√
	MKA Ipoh	
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Outsource		
Remarks	By request ONLY through NPHL's Clinical Microbiologist or Science Officer in charge.	

Pathogen		Norovirus	
Category		Outbreak	
Test Method		RTK/RT-PCR	RT-PCR
Sample type (Preference of sample is in sequence. Sent either one only)		Fresh stool	Rectal Swab
Sample Volume		5 ml / 1.5 cm cube	-
Container/Transport Media		Sterile Screw capped container	Sterile container with 2.0-2.5 ml of VTM
Sample Transportation		2-8°C	
Type of form		MKAK-BPU-U01	
LTAT		RTK - 24 hours RT-PCR - 5 days	
Frequency of test		RTK- Daily RT-PCR -Daily	
Cost/test (RM)		RTK-RM30.00 RT-PCR -RM214.30	
Laboratory name		Virology	
Tel No. 03-61261200 Ext. No		VI Unit 1315/1325 Molecular Unit 1321	
PHL	MKAK	√	
	MKA Ipoh	√ (RTK only)	
	MKA Johor Bahru	√ (RTK only)	
	MKA Kota Bharu	√ (RTK only)	
	MKA Kota Kinabalu	√ (RTK only)	
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	Parainfluenza virus 1/2/3							
Category	Outbreak							
Test Method	IFAT / Virus Isolation (VI)			Virus Isolation (VI)				
	Sputum	Nasopharangeal Aspirate	Throat swab	Nasal Pharangeal Swab	Nasal Swab	Tracheal / endotracheal tube Aspirate	Bronchoalveolar lavage	Lungs tissue biopsy / autopsy
Sample type (Preference of sample is in sequence. Sent either one only)								
Sample Volume	1-3 ml	1-3 ml	-	-	-	1-3 ml	1-3 ml	1.5cm cube in a few drops of VTM
Container/Transport Media	Sterile screw capped	Sterile screw capped	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped	Sterile screw capped	Sterile screw capped
Sample Transportation	2-8°C							
Type of form	MKAK-BPU-U01							
LTAT	IFAT - 7 VI - 21 days							
Frequency of test	IFAT - Daily VI - Daily							
Cost/test (RM)	IFAT - RM 35.00 VI - RM 75.00							
Laboratory name	Virology							
Tel No. 03-61261200 Ext. No	VI Unit 1315/1325							
PHL	MKAK	√						
	MKA Ipoh	√						
	MKA Johor Bahru	√ (IFAT only)						
	MKA Kota Bharu							
	MKA Kota Kinabalu	√ (IFAT only)						
Remark(s)	<ol style="list-style-type: none"> Sample should be collected within 5 days from onset of illness. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 							

Pathogen		Parvovirus B19		
Category		Outbreak		
Test Method		qPCR		
Sample type (Preference of sample is in sequence. Sent either one only)		Serum	Bone marrow aspirate	CSF
Sample Volume		1-3 ml	1-3ml	1 ml
Container/Transport Media		Plain tube with serum separator	Sterile screw capped container	Sterile screw capped container
Sample Transportation		2-8°C		
Type of form		MKAK-BPU-U01/Rev2018		
LTAT		qPCR - 3 days		
Frequency of test		qPCR- Daily		
Cost/test (RM)		qPCR-RM210.20		
Laboratory name		Virology		
Tel No. 03-61261200 Ext. No		Molecular Unit 1321		
PHL	MKAK	√		
	MKA Ipoh			
	MKA Johor Bahru			
	MKA Kota Bharu			
	MKA Kota Kinabalu			
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 		

Pathogen	<i>Plesiomonas shigelloides</i>			
Category	Outbreak			
Test Method	Culture & Sensitivity			
Sample type	Fresh stool or	Fresh stool or	Rectal swab	
Sample Volume	3-5 gm	NA	NA	
Container/ Transport media	Sterile container	Cary Blair	Cary Blair	
Sample Transportation	Send within 2 hours after collection at 2°C – 8°C.	Send immediately after collection at ambient temperature	Send immediately after collection at ambient temperature	
Type of form	MKAK-BPU-U01/Rev2018			
LTAT	7 days			
Frequency of Test	Daily			
Cost/test (RM)	RM 70.00			
Laboratory Name	Bacteriology			
Tel No: 03-61261200 Ext. No.	1329/1330			
PHL	MKAK	√	√	√
	MKA Ipoh	√	√	√
	MKA Johor Bahru	√	√	√
	MKA Kota Bharu	√	√	√
	MKA Kota Kinabalu	√	√	√
Outsource	Not applicable			
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Samples which are received more than 2 hours, will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 		

Pathogen	<i>Pseudomonas aeruginosa</i>				
Category	Outbreak			Surveillance	
Test Method	Culture & Sensitivity			PFGE	
Sample type	Sputum or	Tracheal Aspirates (in-patient)	Bronchoalveolar lavage (BAL) (in-patient)	Pure isolates	
Sample Volume	1-3 ML	1-3 ML	1-3 ML	NA	
Container/Transport media	Sterile container	Sterile container	Sterile container	Blood agar or Nutrient agar slant	
Sample Transportation	Send immediately after collection at 2°C – 8°C.			Send in ambient temperature	
Type of form	MKAK-BPU-U01/Rev2018				
LTAT	7 days			30 days	
Frequency of Test	Daily			By appointment	
Cost/test (RM)	RM 70.00			RM350.00	
Laboratory Name	Bacteriology				
Tel No: 03-61261200 Ext. No.	1329/1330				
PHL	MKAK	√	√	√	√
	MKA Ipoh	√	√	√	
	MKA Johor Bahru	√	√	√	
	MKA Kota Bharu	√	√	√	
	MKA Kota Kinabalu	√	√	√	
Outsource	Not applicable				
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the viability of the sample. <i>P. aeruginosa</i> can also be isolated from other clinical specimen types eg. wound, pus, faecal from immunocompromised patients, eye, ear and environmental samples. 			Test will be done for outbreak investigation and epidemiological linkage only.	

Pathogen		Rabies virus		
Category		Outbreak		
Test Method		qRT-PCR		
Sample type (Preference of sample is in sequence. Sent either one only)		Saliva	Skin biopsy of the hair follicles (at the nap of the neck)	Brain autopsy
Sample Volume		1-3 ml	1-3 ml	1.5cm cube in a few drops of VTM
Container/Transport Media		Sterile Screw capped container	Sterile Screw capped container	Sterile Screw capped container
Sample Transportation		2-8°C		
Type of form		MKAK-BPU-U01		
LTAT		qRT-PCR - 3 days		
Frequency of test		qRT-PCR -Daily		
Cost/test (RM)		qRT-PCR -RM257.00		
Laboratory name		Virology		
Tel No. 03-61261200 Ext. No		Molecular Unit 1321		
PHL	MKAK	√		
	MKA Ipoh	√		
	MKA Johor Bahru			
	MKA Kota Bharu			
	MKA Kota Kinabalu			
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 		

Pathogen	Respiratory syncytial virus								
Category	Outbreak								
Test Method	qRT-PCR								
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharyngeal Aspirate	Tracheal Aspirate	Endotracheal tube aspirate	Bronchoalveolar lavage	Throat swab	Nasal Pharyngeal Swab	Nasal Swab	Lung tissue
Sample Volume	1-3 ml	1-3 ml	1-3 ml	1-3 ml	1-3 ml	-	-	-	1.5cm ³ in a few drops of VTM
Container/Transport Media	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container
Sample Transportation	2-8°C								
Type of form	MKAK-BPU-U01								
LTAT	qRT-PCR - 3 days								
Frequency of test	qRT-PCR - Daily								
Cost/test (RM)	qRT-PCR - RM214.30								
Laboratory name	Virology								
Tel No. 03-61261200 Ext. No	VI Unit 1315/1325 Molecular Unit 1321								
PHL	MKAK	√							
	MKA Ipoh	√							
	MKA Johor Bahru	√							
	MKA Kota Bharu	√ (IFAT Only)							
	MKA Kota Kinabalu	√ (IFAT Only)							
Remark(s)	<ol style="list-style-type: none"> Sample should be collected within 5 days from onset of illness. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 								

Pathogen	Rhinovirus							
Category	Outbreak							
Test Method	Virus Isolation (VI) / qRT-PCR							
Sample type (Preference of sample is in sequence. Sent either one only)	Sputum	Nasopharangeal Aspirate	Throat swab	Nasal Pharangeal Swab	Nasal Swab	Tracheal / endotracheal tube Aspirate	Bronchoalveolar lavage	Lungs tissue biopsy / autopsy
Sample Volume	1-3 ml	1-3 ml	-	-	-	1-3 ml	1-3 ml	1.5cm cube in a few drops of VTM
Container/Transport Media	Sterile screw capped	Sterile screw capped	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped	Sterile screw capped	Sterile screw capped
Sample Transportation	2-8°C							
Type of form	MKAK-BPU-U01							
LTAT	VI - 21 days qRT-PCR – 3 days							
Frequency of test	VI – Daily qRT-PCR - Daily							
Cost/test (RM)	VI – RM100.00 qRT-PCR – RM277.20							
Laboratory name	Virology							
Tel No. 03-61261200 Ext. No	VI Unit 1315/1325							
PHL	MKAK		√					
	MKA Ipoh		√					
	MKA Johor Bahru		√ (IFAT Only)					
	MKA Kota Bharu		√ (IFAT Only)					
	MKA Kota Kinabalu		√ (IFAT Only)					
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 							

Pathogen		Rubella virus				
Category		Outbreak / Surveillance				
Test Method		Serology / qRT-PCR	qRT-PCR			
Sample type (Preference of sample is in sequence. Sent either one only)		Serum	Urine	Throat swab	Nasopharyngeal secretion	Tracheal aspirate
Sample Volume		1-3 ml	10 ml of urine (Early morning first void)	-	1-3 ml	1-3 ml
Container/Transport Media		Plain tube with serum separator	Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM	Sterile screw capped container	Sterile screw capped container
Sample Transportation		2-8°C				
Type of form		MSLF:01/2004				
LTAT		Serology- Outbreak 3 days, Surveillance 7 days qRT-PCR - Outbreak 3 days, Surveillance 14 days				
Frequency of test		Serology - Daily qRT-PCR - Daily				
Cost/test (RM)		Serology -RM61.34 qPCR-RM257.00				
Laboratory name		Virology				
Tel No. 03-61261200 Ext. No		Serology Unit 4027 Molecular Unit 1321 VI Unit 1315/1325				
PHL	MKAK	√				
	MKA Ipoh	√ (Serology only)				
	MKA Johor Bahru	√ (Serology only)				
	MKA Kota Bharu	√ (Serology only)				
	MKA Kota Kinabalu	√ (Serology only)				
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 				

Pathogen		Rotavirus	
Category		Outbreak	
Test Method		RTK / qRT-PCR	qRT-PCR
Sample type (Preference of sample is in sequence. Sent either one only)		Fresh stool	Rectal Swab
Sample Volume		5 ml / 1.5 cm cube	-
Container/Transport Media		Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM
Sample Transportation		2-8°C	
Type of form		MKAK-BPU-U01	
LTAT		RTK - 24 hours qRT-PCR - 5 days	
Frequency of test		RTK - Daily qRT-PCR-Daily	
Cost/test (RM)		RTK - RM30.00 qRT-PCR - RM214.30	
Laboratory name		Virology	
Tel No. 03-61261200 Ext. No		VI Unit 1315/1325 Molecular Unit 1321	
PHL	MKAK	√	
	MKA Ipoh	√	
	MKA Johor Bahru	√ (RTK only)	
	MKA Kota Bharu	√ (RTK only)	
	MKA Kota Kinabalu	√ (RTK only)	
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	Salmonella Typhi									
Category	Outbreak			Outbreak or Surveillance			Outbreak		Surveillance	
Test Method	Culture & Sensitivity			Real-Time PCR			PFGE	MLST	Full Serotyping	
Sample type	Fresh stool or	Fresh stool or	Rectal swab	Fresh stool or	Fresh stool or	Rectal Swab	Bacterial Culture	Bacterial Culture	Isolate	
Sample Volume	3-5 gm	NA	NA	3-5 gm	NA	NA	Pure isolate	Pure isolate	NA	
Container/ Transport media	Sterile container	Cary Blair	Cary Blair	Sterile Container	Cary Blair	Cary Blair	Nutrient agar slant	Nutrient agar slant	Nutrient agar slant	
Sample Transportation	Send within 2 hours after collection at 2°C - 8°C.	Send immediately after collection at ambient temperature	Send immediately after collection at ambient temperature	Send within 2 hours after collection at 2°C - 8°C.	Send immediately after collection at 2°C - 8°C.	Send immediately after collection at 2°C - 8°C.	Send at ambient temperature			
Type of form	MKAK-BPU-U01/Rev2018									
LTAT	7 days			5 days			30 days	30 working days	21 working days	
Frequency of Test	Daily						By appointment	By appointment	Daily	
Cost/test (RM)	RM 70.00			RM 350.00			RM 350.00	RM 350.00	RM 70.00	
Laboratory Name	Bacteriology									
Tel No: 03-61261200 Ext. No.	1329/1330									
PHL	MKAK	√	√	√	√	√	√	√	√	√
	MKA Ipoh	√	√	√	√					√
	MKA Johor Bahru	√	√	√	√					
	MKA Kota Bharu	√	√	√	√					

Pathogen		Salmonella Typhi								
Category		Outbreak			Outbreak or Surveillance			Outbreak		Surveillance
Test Method		Culture & Sensitivity			Real-Time PCR			PFGE	MLST	Full Serotyping
Sample type		Fresh stool or		Rectal swab	Fresh stool or		Rectal Swab	Bacterial Culture	Bacterial Culture	Isolate
	MKA Kota Kinabalu	√	√	√	√					
Outsource		Not applicable								
Remarks		<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is not stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	<p>Test will be done for outbreak investigation and epidemiological linkage only.</p>	<p>Inoculate pure single colony onto Nutrient Agar.</p>			

Pathogen	<i>Salmonella spp.</i>					
Category	Outbreak and Surveillance					
Test Method	Culture & Sensitivity			Full Serotyping	PFGE	MLST
Sample type	Fresh stool	Fresh stool or	Rectal Swab	Bacterial Culture	Bacterial Culture	Bacterial Culture
Sample Volume	3-5 gm	NA	NA	Pure isolate	Pure isolate	Pure isolate
Container/ Transport media	Sterile container	Cary Blair	Cary Blair	Nutrient Agar slant		
Sample Transportation	Send within 2 hours after collection at 2°C – 8°C.	Send immediately after collection at ambient temperature				
Type of form	MKAK-BPU-U01/Rev2018					
LTAT	7 days			21 working days	30 days	30 working days
Frequency of Test	Daily			Daily	By appointment	By appointment
Cost/test (RM)	RM 70			RM 200.00	RM 350.00	RM 350.00
Laboratory Name	Bacteriology					
Tel No: 03-61261200 Ext. No.	1329/1330					
PHL	MKAK	√		√	√	√
	MKA Ipoh	√		√		
	MKA Johor Bahru	√				
	MKA Kota Bharu	√				
	MKA Kota Kinabalu	√				
Outsource	Not applicable					
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours, will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	Inoculate pure single colony onto Nutrient Agar.	Test will be done for outbreak investigation and epidemiological linkage only.		

Pathogen		Sapovirus	
Category		Outbreak	
Test Method		qRT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)		Fresh stool	Rectal Swab
Sample Volume		5 ml / 1.5 cm cube	-
Container/Transport Media		Sterile screw capped container	Sterile container with 2.0-2.5 ml of VTM
Sample Transportation		2-8°C	
Type of form		MKAK-BPU-U01	
LTAT		qRT-PCR - 3 days	
Frequency of test		qRT-PCR - Daily	
Cost/test (RM)		qRT-PCR - RM214.30	
Laboratory name		Virology	
Tel No. 03-61261200 Ext. No		Molecular Unit 132	
PHL	MKAK	√	
	MKA Ipoh	√	
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	SARS-CoV-2	
Category	Outbreak	
Test Method	qRT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)	Combined Nasopharyngeal and Oropharyngeal Swab	Saliva
Sample Volume	-	
Container/Transport Media	Sterile container with 2.0-2.5 ml of VTM	Sterile plain container
Sample Transportation	2-8°C	
Type of form	MKAK-BPU-U01	
LTAT	qRT-PCR – Outbreak 3 days	
Frequency of test	qRT-PCR - Daily	
Cost/test (RM)	qRT-PCR - RM258.20	
Laboratory name	Virology	
Tel No. 03-61261200 Ext. No	Molecular Unit 1321	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	√
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 14 days after exposure. 2. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	<i>Shigella spp.</i>			
Category	Outbreak			
Test Method	Culture & Sensitivity			Serotyping
Sample type	Fresh stool or	Fresh stool or	Rectal Swab	Bacterial Culture
Sample Volume	3-5 gm	NA	NA	Pure isolate
Container/ Transport media	Sterile container	Cary Blair	Cary Blair	Nutrient agar slant
Sample Transportation	Send within 2 hours after collection at 2°C – 8°C.	Send immediately after collection at ambient temperature		
Type of form	MKAK-BPU-U01/Rev2018			MKAK-BPU-U01/Rev2018
LTAT	7 days			14 working days
Frequency of Test	Daily			Daily
Cost/test (RM)	RM 70.00			
Laboratory Name	Bacteriology			
Tel No: 03-61261200 Ext. No.	1329/1330			
PHL	MKAK	√	√	√
	MKA Ipoh	√	√	√
	MKA Johor Bahru	√	√	√
	MKA Kota Bharu	√	√	√
	MKA Kota Kinabalu	√	√	√
Outsource	Not applicable			
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours, will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	Inoculate pure single colony onto Nutrient Agar.	

Pathogen	<i>Staphylococcus aureus</i> (Enteric Pathogen)					
Category	Outbreak					
Test Method	Culture & Sensitivity			Toxin Detection	PFGE	
Sample type	Fresh stool or	Fresh stool or	Rectal Swab	Bacterial Culture	Bacterial Culture	
Sample Volume	3-5 gm	NA	NA	Pure isolate	Pure isolate	
Container/ Transport media	Sterile container	Cary Blair		Nutrient agar slant		
Sample Transportation	Send within 2 hours after collection at 2°C – 8°C.	Send immediately after collection at ambient temperature				
Type of form	MKAK-BPU-U01/Rev2018					
LTAT	7 days			7 working days	30 days	
Frequency of Test	Daily				By appointment	
Cost/test (RM)	RM 70.00			RM 100.40	RM 350.00	
Laboratory Name	Bacteriology					
Tel No: 03-61261200 Ext. No.	1329/1330					
PHL	MKAK	√	√	√	√	√
	MKA Ipoh	√	√	√		
	MKA Johor Bahru	√	√	√		
	MKA Kota Bharu	√	√	√		
	MKA Kota Kinabalu	√	√	√		
Outsource	Not applicable					
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours, will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	Inoculate pure single colony onto Nutrient Agar.	Test will be done for outbreak investigation and epidemiological linkage only.		

Pathogen	<i>Staphylococcus aureus</i> (Respiratory Pathogen)							
Category	Outbreak							
Test Method	Culture & Sensitivity							PFGE
Sample type	Nasal swab (MRSA contact screening)	Throat swab or	Nasopharyngeal swab or	Nasopharyngeal Aspirates (in-patient)	Sputum	Tracheal Aspirates	Bronchoalveolar lavage (BAL)	Bacterial Culture
Sample Volume	NA	NA	NA	1-3 ML	1-3 ML	1-3 ML	1-3 ML	Pure isolate
Container/Transport media	Amies clear	Amies clear	Amies clear	Amies clear	Sterile container	Sterile container	Sterile container	Nutrient agar slant
Sample Transportation	Send immediately after collection at ambient temperature			Send immediately after collection at 2°C – 8°C				Send at 2°C – 8°C
Type of form	MKAK-BPU-U01/Rev2018							
LTAT	7 days							30 days
Frequency of Test	Daily							Special Requirement
Cost/test (RM)	RM 70.00							RM 350.00
Laboratory Name	Bacteriology							
Tel No: 03-61261200 Ext. No.	1329/1330							
PHL	MKAK	√	√	√	√	√	√	√
	MKA Ipoh	√	√	√	√	√	√	√
	MKA Johor Bahru	√	√	√	√	√	√	√
	MKA Kota Bharu	√	√	√	√	√	√	√
	MKA Kota Kinabalu							
Outsource	Not applicable							
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the viability of the sample. 							Test will be done for outbreak investigation and epidemiological linkage only.

Pathogen	<i>Stenotrophomonas maltophilia</i>				
Category	Outbreak				
Test Method	Culture & Sensitivity			PFGE	
Sample type	Sputum or	Tracheal Aspirates or	Bronchoalveolar lavage (BAL) (in-patient)	Bacterial culture	
Sample Volume	1-3 ML	1-3 ML	1-3 ML	Pure Isolate	
Container/ Transport media	Sterile container	Sterile container	Sterile container	Nutrient agar slant	
Sample Transportation	Send immediately after collection at 2°C – 8°C			Send immediately after collection at ambient temperature	
Type of form	MKAK-BPU-U01/Rev2018			MKAK-BPU-U01/Rev2018	
LTAT	7 days			30 days	
Frequency of Test	Daily			Special requirement	
Cost/test (RM)	RM 70.00			RM 350.00	
Laboratory Name	Bacteriology				
Tel No: 03-61261200 Ext. No.	1329/1330				
PHL	MKAK	√	√	√	√
	MKA Ipoh	√	√	√	
	MKA Johor Bahru	√	√	√	
	MKA Kota Bharu	√	√	√	
	MKA Kota Kinabalu				
Outsource	Not applicable				
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Delay in transportation will affect the viability of the sample. 			Test will be done for outbreak investigation and epidemiological linkage only.	

Pathogen	<i>Streptococcus spp. (Beta Haemolytic)</i>			
Category	Outbreak			
Test Method	Culture & Sensitivity			
Sample type	Throat swab or	Nasopharyngeal swab or	Nasopharyngeal Aspirates	Sputum
Sample Volume	NA	NA	1-3 ML	1-3 ML
Container/ Transport media	Amies Charcoal	Amies Charcoal	Sterile Container	Sterile Container
Sample Transportation	Send immediately after collection at ambient temperature		Send immediately after collection at 2°C – 8°C	
Type of form	MKAK-BPU-U01/Rev2018			
LTAT	7 days			
Frequency of Test	Daily			
Cost/test (RM)	RM 70.00			
Laboratory Name	Bacteriology			
Tel No: 03-61261200 Ext. No.	1329/1330			
PHL	MKAK	√		
	MKA Ipoh	√		
	MKA Johor Bahru	√		
	MKA Kota Bharu	√		
	MKA Kota Kinabalu			
Outsource	Not applicable			
Remarks	<ol style="list-style-type: none"> 1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the viability of the sample. 			

Pathogen	<i>Treponema pallidum (Syphilis)</i>			
Category	Interlaboratory Comparison (ILC)			
Test Method	Flocculation Test		TPPA	
Sample type	Serum	Plasma	Serum	Plasma
Sample Volume	3 ML	3 ML	3 ML	3 ML
Container/ Transport media	Plain Tube	Plain Tube	Plain Tube	Plain Tube
Sample Transportation	Send immediately after collection at 2°C – 8°C		Send immediately after collection at 2°C – 8°C	
Type of form	MKAK-BPU-U01/Rev2018			
LTAT	2 months			
Frequency of Test	Daily			
Cost/test (RM)	RM 30.00		RM 30.00	
Laboratory Name	Bacteriology			
Tel No: 03-61261200 Ext. No.	1329/1330			
PHL	MKAK	√	√	
	MKA Ipoh	√	√	
	MKA Johor Bahru	√	√	
	MKA Kota Bharu	√	√	
	MKA Kota Kinabalu			
Outsource	Not applicable			
Remarks	<ol style="list-style-type: none"> 1. Please refer to Specimen Collection Procedures for Clinical Samples. 2. Delay in transportation will affect the quality of the sample. 3. Haemolysed sample shall be rejected. 			

Pathogen		West Nile virus	
Category		Outbreak	
Test Method		qRT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)		Serum	CSF
Sample Volume		2-4 ml	1 ml
Container/Transport Media		Plain tube with serum separator	Sterile screw capped container
Sample Transportation		2-8°C	
Type of form		MKAK-BPU-U01/Rev2018	
LTAT		qRT-PCR - 3 days	
Frequency of test		qRT-PCR - Daily	
Cost/test (RM)		qRT-PCR - RM257.00	
Laboratory name		Virology	
Tel No. 03-61261200 Ext. No		Molecular Unit 1321	
PHL	MKAK	√	
	MKA Ipoh	√	
	MKA Johor Bahru		
	MKA Kota Bharu		
	MKA Kota Kinabalu		
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C 	

Pathogen		Varicella Zoster		
Category		Outbreak		
Test Method		qPCR		
Sample type (Preference of sample is in sequence. Sent either one only)		Vesicular fluid (collect with polyester swab)	Maculopapular lesions or crusts from lesions	CSF
Sample Volume		-	-	1-3 ml
Container/Transport Media		Do not place transport medium into the tube; the specimen MUST be kept dry	Sterile screw capped container	Sterile screw capped container
Sample Transportation		2-8°C		
Type of form		MKAK-BPU-U01/Rev2018		
LTAT		qPCR - 3 days		
Frequency of test		qPCR - Daily		
Cost/test (RM)		qPCR - RM210.20		
Laboratory name		Virology		
Tel No. 03-61261200 Ext. No		Molecular Unit 1321		
PHL	MKAK	√		
	MKA Ipoh	√		
	MKA Johor Bahru			
	MKA Kota Bharu			
	MKA Kota Kinabalu			
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 		

Pathogen	<i>Vibrio cholerae/ Vibrio spp.</i>				
Category	Outbreak or Diagnostic or Surveillance				
Test Method	Culture & Sensitivity			Serotyping and Biotyping	PFGE
Sample type	Fresh stool or	Fresh stool or	Rectal swab	Bacterial Culture	Bacterial Culture
Sample Volume	3-5 ml	NA	NA	Pure isolate	Pure isolate
Container/ Transport media	Sterile container	Cary Blair		Nutrient agar slant	
Sample Transportation	Send within 2 hours after collection at 2°C - 8°C	Send immediately after collection at ambient temperature.			
Type of form	MKAK-BPU-U01/Rev2018				
LTAT	7 days			5 working days	30 days
Frequency of Test	Daily				By appointment
Cost/test (RM)	RM 70.00			RM 20.00	RM 350.00
Laboratory Name	Bacteriology				
Tel No: 03-61261200 Ext. No.	1329/1330				
PHL	MKAK	√		√	√
	MKA Ipoh	√		√	
	MKA Johor Bahru	√		√	
	MKA Kota Bharu	√		√	
	MKA Kota Kinabalu	√		√	
Outsource	Not applicable				
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	Inoculate pure single colony onto Nutrient Agar.	Test will be done for outbreak investigation and epidemiological linkage only.	

Pathogen	Yellow fever virus	
Category	Outbreak	
Test Method	qRT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)	Serum	CSF
Sample Volume	2-4 ml	1 ml
Container/Transport Media	Plain tube with serum separator	Sterile screw capped container
Sample Transportation	2-8°C	
Type of form	MKAK-BPU-U01/Rev2018	
LTAT	qRT-PCR - 3 days	
Frequency of test	qRT-PCR - Daily	
Cost/test (RM)	qRT-PCR - RM257.00	
Laboratory name	Virology	
Tel No. 03-61261200 Ext. No	Molecular Unit 1321	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	
	MKA Kota Bharu	
	MKA Kota Kinabalu	
Remark(s)	<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

Pathogen	<i>Yersinia enterocolitica</i>		
Category	Outbreak or Diagnostic		
Test Method	Culture & Sensitivity		
Sample type	Fresh stool or	Fresh stool or	Rectal swab
Sample Volume	3-5 gm	NA	NA
Container/ Transport media	Sterile container	Cary Blair	Cary Blair
Sample Transportation	Send within 2 hours after collection at 2°C – 8°C	Send immediately after collection at ambient temperature	
Type of form	MKAK-BPU-U01/Rev2018		
LTAT	7 days		
Frequency of Test	Daily		
Cost/test (RM)	RM 70.00		
Laboratory Name	Bacteriology		
Tel No: 03-61261200 Ext. No.	1329/1330		
PHL	MKAK	√	
	MKA Ipoh	√	
	MKA Johor Bahru	√	
	MKA Kota Bharu	√	
	MKA Kota Kinabalu	√	
Outsource			
Remarks	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Sample which is received more than 2 hours will be rejected. 	<ol style="list-style-type: none"> Please refer to Specimen Collection Procedures for Clinical Samples. Ensure the swab shows some faecal staining to avoid low quality of sampling. If there is no stool stain on the swab, the sample will be rejected. Delay in transportation will affect the viability of the bacteria. 	

Pathogen		Zika virus	
Category		Outbreak	
Test Method		qRT-PCR	
Sample type (Preference of sample is in sequence. Sent either one only)		Serum	CSF
Sample Volume		2-4 ml	1 ml
Container/Transport Media		Plain tube with serum separator	Sterile screw capped container
Sample Transportation		2-8°C	
Type of form		MKAK-BPU-U01/Rev2018	
LTAT		qRT-PCR - 3 days	
Frequency of test		qRT-PCR - Daily	
Cost/test (RM)		qRT-PCR - RM257.01	
Laboratory name		Virology	
Tel No. 03-61261200 Ext. No		Molecular Unit 1321	
PHL	MKAK	√	
	MKA Ipoh	√	
	MKA Johor Bahru	√	
	MKA Kota Bharu	√	
	MKA Kota Kinabalu	√	
Remark(s)		<ol style="list-style-type: none"> 1. Sample should be collected within 5 days from onset of illness. 2. A brief concise history of illness and physical findings is required especially the date of onset of illness and date of sample collection. 3. After sample is collected, immediately send the sample to the laboratory. If there is any delay, keep the sample at 2-8°C up to 48 hours. If exceeding 48 hours, the sample should be stored at -70°C. 	

B. The Comprehensive List of Biochemistry Tests in NPHL

IMPORTANT POINT TO NOTE:

The Cost Per Tests listed in this directory are **NOT the actual payment charges for the tests**. The costs included in this directory are for user reference and understanding/appreciation of the costs involved to run tests which can be very expensive. For actual payment charges per tests, please refer to the **PERINTAH FI (PERUBATAN) (KOS PERKHIDMATAN) pua_20141231_P.U. (A) 363**.

Profile / Module	Full blood count							
Analyte	RBC	WBC	PLT	HGB	HCT	LYM%,	MXD%,	NEUT%
Category	Surveillance							
Test Method	Direct Current (DC) detection method	DC detection method	Direct Current (DC) detection method	Non-cyanide method	Cumulative pulse height detection method	Automatic floating discriminators	Automatic floating discriminators	Automatic floating discriminators
Sample type	Whole blood	Whole blood	Whole blood	Whole blood	Whole blood	Whole blood	Whole blood	Whole blood
Sample Volume	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml
Container/ Transport media	EDTA tube	EDTA tube	EDTA tube	EDTA tube	EDTA tube	EDTA tube	EDTA tube	EDTA tube
Sample Transportation	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C
Type of form	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	3							
Reference Range	3.5 - 5.5 x 10 ⁶ / uL	4.0 - 10.0 x 10 ³ / uL	150 - 450 10 ³ / uL	11.0 - 16.0 g / dL	37.0 - 54.0 %	20-40 %	3.0-15 %	50-70 %
Laboratory Name	BIOCHEMISTRY							
Tel No: 03-61261200 Ext. No.	1287							
MKAK	√	√	√	√	√	√	√	√
MKA IPOH	x	x	x	x	x	x	x	x
MKA JOHOR BAHRU	x	x	x	x	x	x	x	x
MKA KOTA BAHRU	x	x	x	x	x	x	x	x
MKA KOTA KINABALU	x	x	x	x	x	x	x	x
Remarks	Result could be obtained manual or by post							
Cost	RM15							

Profile / Module	Heavy Metal
Analyte	Mercury
Category	Surveillance
Test Method	AAS
Sample type	Random urine
Sample Volume	20 ml
Container/ Transpot media	Urine container
Sample Transportation	4 - 8 °C
Type of form	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	7
Reference Range	<10 ug/L
Laboratory Name	HEAVY METAL
Tel No: 03-61261200 Ext. No.	1333
MKAK	√
MKA IPOH	×
MKA JOHOR BAHRU	×
MKA KOTA BAHRU	×
MKA KOTA KINABALU	×
Remarks	Appointment by requestor.
Cost	RM 60

Profile / Module	Lipid Profile		
Analyte	Cholesterol	HDL- Cholesterol	Triglyceride
Category	Surveillance		
Test Method	Cholesterol Oxidase	Immunological inhibition	Lipase/GPO-PAP colorimetric without glycerol correction
Sample type	Serum/plasma	Serum/plasma	Serum/plasma
Sample Volume	5 ml	5 ml	5ml
Container/ Transpot media	Plain/Heparin	Plain/Heparin	Plain/Heparin
Sample Transportation	4 - 8 °C	4 - 8 °C	4 - 8 °C
Type of form	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	3		
Reference Range	< 5.2 mmol/L	> 1.0 mmol/L (Male) > 1.2 mmol/L (Female)	< 1.7 mmol/L
Laboratory Name	BIOCHEMISTRY		
Tel No: 03-61261200 Ext. No.	1287		
MKAK	√	√	√
MKA IPOH	√	√	√
MKA JOHOR BAHRU	√	√	√
MKA KOTA BAHRU	√	√	√
MKA KOTA KINABALU	×	×	×
Remarks	For Fasting Lipid Profile, blood should be collected after an overnight fasting for at least 8 hours with no intake of food or drinks except water		
Cost	RM 75		

Profile / Module	Liver Function Test					
Analyte	Albumin	ALP	ALT	AST	Total Bilirubin	Total Protein
Category	Surveillance					
Test Method	Bromocresol green (BCG)	AMP, Optimised to IFCC	Rate UV, Tris buffer without Pyridoxal phosphate, IFCC/SFBC	Rate UV, Tris buffer without Pyridoxal phosphate, IFCC/SFBC	Dichlorophenyl Diazonium	Biuret reaction, end point
Sample type	Serum/plasma	Serum/plasma	Serum/plasma	Serum/plasma	Serum/plasma	Serum/plasma
Sample Volume	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml
Container/ Transpot media	Plain/Heparin	Plain/Heparin	Plain/Heparin	Plain/Heparin	Plain/Heparin	Plain/Heparin
Sample Transportation	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C
Type of form	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	3					
Reference Range	35 - 52 g/L	30 - 120 U/L	♀ - 0-35 U/L ♂ - 0-50 U/L	♀ - 0-35 U/L ♂ - 0-50 U/L	5.0 - 21.0 umol/L	66 - 83 g/L
Laboratory Name	BIOCHEMISTRY					
Tel No: 03-61261200 Ext. No.	1287					
MKAK	√	√	√	√	√	√
MKA IPOH	√	√	√	√	√	√
MKA JOHOR BAHRU	√	√	√	√	√	√
MKA KOTA BAHRU	√	√	√	√	√	√
MKA KOTA KINABALU	x	x	x	x	x	x
Remarks	Result could be obtained manually or by post					
Cost	RM 75					

Profile / Module	Miscellaneous Tests		
Analyte	Calcium	Glucose	Inorganic phosphate
Category	Surveillance		
Test Method	Cresolphthalein complexone	Hexokinase	Phosphomolybdate formation
Sample type	Serum/plasma	Plasma	Serum/plasma
Sample Volume	5 ml	3 ml	5 ml
Container/ Transpot media	Plain/Heparin	Fluoride tube	Plain/Heparin
Sample Transportation	4 - 8 °C	4 - 8 °C	4 - 8 °C
Type of form	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	3	3	3
Reference Range	2.20 - 2.65 mmol/L	Fasting Normal : 4.1 - 6.1 mmol/L Pre-diabetic: 6.1 - 6.9 mmol/L Diabetes: > 7.0 mmol/L Random Normal < 7.8 mmol/L Pre-diabetic: 7.8 - 11.0 mmol/L Diabetes: > 11.1 mmol/L	0.81 - 1.45 mmol/L
Laboratory Name	BIOCHEMISTRY		
Tel No: 03-61261200 Ext. No.	1287		
MKAK	√	√	√
MKA IPOH	√	√	√
MKA JOHOR BAHRU	√	√	√
MKA KOTA BAHRU	√	√	√
MKA KOTA KINABALU	×	×	×
Remarks	Result could be obtained manually or by post	For Fasting Glucose, blood should be collected after an overnight fasting for at least 8 hours with no intake of food or drinks except water	Result could be obtained manually or by post
Cost	RM30	RM30	RM30

Profile / Module	Nutritional related diseases	
Analyte	Urinary Iodine	Vitamin B1
Category	Surveillance	Surveillance and diagnostic
Test Method	Ammonium Persulfate Digestion with Spectrophotometric Detection of the Sandell-Kolthoff Reaction, Modified Microplate Method	HPLC
Sample type	Urine	Whole Blood
Sample Volume	10 ml	4ml
Container/ Transpot media	Urine container	EDTA Tube
Sample Transportation	4 - 8 °C (< 7 days) -20°C (> 7 days)	2 - 8 °C (24Hr) -18°C (6 months)
Type of form	MKAK-BPU-U01	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	25	10 (for outbreak cases) 20 (for surveillance)
Reference Range	<p>1. School-age children (6 years or older):</p> <p>a) <20 Insufficient - Severe iodine deficiency</p> <p>b) 20–49 Insufficient - Moderate iodine deficiency</p> <p>c) 50–99 Insufficient - Mild iodine deficiency</p> <p>d) 100–199 Adequate - Adequate iodine nutrition</p> <p>e) 200–299 Above requirements - May pose a slight risk of more than adequate iodine intake in these populations</p> <p>f) ≥300 Excessive - Risk of adverse health consequences (iodine-induced hyperthyroidism, autoimmune thyroid disease)</p> <p>2. Pregnant women:</p> <p>a) <150 Insufficient</p> <p>b) 150–249 Adequate</p> <p>c) 250–499 Above requirements</p> <p>d) ≥500 Excessive</p> <p>4. Lactating mother:</p> <p>a) <100 Insufficient</p> <p>b) ≥100 Adequate</p>	70 – 180 nmol/L (23 – 61 µg/L)
Laboratory Name	BIOCHEMISTRY	BIOCHEMISTRY
Tel No: 03-61261200 Ext. No.	1287	1287
MKAK	√	√
MKA IPOH	√	×
MKA JOHOR BAHRU	×	×
MKA KOTA BAHRU	√	×
MKA KOTA KINABALU	√	×
Remarks	Result could be obtained by post	Result could be obtained by post
Cost	RM 60	RM300

Profile / Module	Renal Profile					
Analyte	Chloride	Creatinine	Potassium	Sodium	Urea	Uric Acid
Category	Surveillance					
Test Method	ISE indirect	Alkaline picrate	ISE indirect	ISE indirect	Urease kinetic	Uricase
Sample type	Serum/plasma	Serum/plasma	Serum/plasma	Serum/plasma	Serum/plasma	Serum/plasma
Sample Volume	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml
Container/ Transpot media	Plain/Heparin	Plain/Heparin	Plain/Heparin	Plain/Heparin	Plain/Heparin	Plain/Heparin
Sample Transportation	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C	4 - 8 °C
Type of form	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01	MKAK-BPU-U01
Laboratory Turn- Around-Time (LTAT) working days	3					
Reference Range	101 - 109 mmol/L	♀ - 58 - 96 mmol/L ♂ - 74 - 110 mmol/L	3.5 - 5.1 mmol/L	136 - 146 mmol/L	2.8 - 7.2 mmol/L	♀ -154.7 - 357.0 mmol/L ♂ -208.3 - 428.4 mmol/L
Laboratory Name	BIOCHEMISTRY					
Tel No: 03- 61261200 Ext. No.	1287					
MKAK	√	√	√	√	√	√
MKA IPOH	√	√	√	√	√	√
MKA JOHOR BAHRU	√	√	√	√	√	√
MKA KOTA BAHRU	√	√	√	√	√	√
MKA KOTA KINABALU	×	×	×	×	×	×
Remarks	Result could be obtained manually or by post					
Cost	RM 75					

Profile / Module	TB Screening Test
Analyte	Adenosine Deaminase (ADA)
Category	Diagnostic
Test Method	Colorimetric assay
Sample type	Pleural fluid
Sample Volume	3 ml
Container/ Transpot media	Plain container (Red/Gold cap)
Sample Transportation	2 - 8 °C
Type of form	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	7 days
Reference Range	Negative up to 29.6 U/L (For TPE cases)
Laboratory Name	BIOCHEMISTRY
Tel No: 03-61261200 Ext. No.	1287
MKAK	√
MKA IPOH	×
MKA JOHOR BAHRU	×
MKA KOTA BAHRU	×
MKA KOTA KINABALU	√
Remarks	Transfer sample into Plain tube container (preferable) prior shipment to the lab
Cost	RM 60

Profile / Module	Thyroid Function Test	
Analyte	Thyroid Stimulating Hormone	Free T4
Category	Diagnostic	
Test Method	Immunochemiluminometric (ICMA)	Luminescent Immunoassay (LIA)
Sample type	Serum / Cord Blood	Serum / Cord Blood
Sample Volume	5 ml	5 ml
Container/ Transpot media	Plain tube	Plain tube
Sample Transportation	4 - 8 °C	4 - 8 °C
Type of form	MKAK-BPU-U01	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	2	2
Reference Range	1. 1 - 23 months (Infants)* 0.87 - 6.15* 2. 2 to < 12 (Pediatrics) 0.64 - 6.27 3. 12 to < 18 (Adolescents) 0.51 - 4.94 4. ≥18 (Adults) 0.55 - 4.78	1. Infants (01 - 23 months)* 12.1 - 18.6* 2. Eurothyroid 11.5 - 22.7 3. Hypothyroid less than 11.5 4. Hyperthyroid greater than 22.7
Laboratory Name	BIOCHEMISTRY	
Tel No: 03-61261200 Ext. No.	1287	
MKAK	√	√
MKA IPOH	√	√
MKA JOHOR BAHRU	√	√
MKA KOTA BAHRU	√	√
MKA KOTA KINABALU	×	×
Remarks	Result could be obtained manually or by post	
Cost	RM 60	

Profile / Module	Tobacco Control				
Analyte	Carbon Monoxide	Nicotine	Tar	Enantiomeric nicotine	Nicotine Content
Category	Surveillance/Diagnostics			Enforcement	Surveillance /Diagnostics
Test Method	ISO 8454	ISO 10315	ISO 4387	Enantiomeric Method	Determination of Nicotine in Cigarette Tobacco Filler
Sample type	Cigarettes	Cigarettes	Cigarettes	E-liquid & cotton in electronic cigarette	Cigarette filler
Sample Volume	200 sticks / brand / lot	200 sticks / brand / lot	200 sticks / brand / lot	3 ml	200 sticks / brand / lot
Container/ Transpot media	Original packaging, (unopened box)	Original packaging, (unopened box)	Original packaging, (unopened box)	Universal container	Original packaging, (unopened box)
Sample Transportation	Room Temperature	Room Temperature	Room Temperature	Room Temperature	Room Temperature
Type of form	Borang 2 (Peraturan 19) Permintaan Bagi Analisis Sampel Hasil Tembakau				Cigarette Product Testing Request Form
Laboratory Turn-Around-Time (LTAT) working days	Screening - 14 Confirmation - 25	Screening - 14 Confirmation - 25	Screening - 14 Confirmation - 25	45	30
Reference Range	Maximum Allowable Level for Nicotine: 1.0 mg/cig	Maximum Allowable Level for Tar: 10 mg/cig	Maximum Allowable Level for CO: 10 mg/cig	Qualitative (nicotine from tobacco product or synthetic)	NA
Laboratory Name	TAR & NIKOTIN UNIT				
Tel No: 03-61261200 Ext. No.	1268				
MKAK	√	√	√	√	√
MKA IPOH	x	x	x	x	x
MKA JOHOR BAHRU	x	x	x	x	x
MKA KOTA BAHRU	x	x	x	x	x
MKA KOTA KINABALU	x	x	x	x	x
Remarks	For monitoring program under Control of Tobacco Product Regulations 2004, Food Act 1983. This may include surveillance and enforcement.				
Cost	RM 350			RM480	

Profile / Module	Toxicology and Substance Abuse	
Analyte	Cholinesterase	Methanol
Category	Surveillance	Surveillance and diagnostic
Test Method	GSCC 1994	HS GCFID
Sample type	Serum	Serum/Urine
Sample Volume	5 ml	3ml
Container/ Transpot media	Plain tube	Fluoride tube
Sample Transportation	4 - 8 °C	4 - 8 °C
Type of form	MKAK/BKM/Cholin-01	MKAK-BPU-U01
Laboratory Turn-Around-Time (LTAT) working days	7	14
Reference Range	♀ - 3.93 - 10.8 kU/L ♂ - 4.62 - 11.5 kU/L	< 3.2 mg/dL
Laboratory Name	BIOCHEMISTRY	BIOCHEMISTRY
Tel No: 03-61261200 Ext. No.	1287	1287
MKAK	√	√
MKA IPOH	√	×
MKA JOHOR BAHRU	√	×
MKA KOTA BAHRU	√	×
MKA KOTA KINABALU	√	×
Remarks	Result could be obtained by post	Result could be obtained by post
Cost	RM 60	RM 320

C. The Comprehensive List of Food Division Tests in NPHL

IMPORTANT POINTS TO NOTE:

Details of Food testing services provided by the other Public Health Laboratories and Food Safety and Quality Laboratories under MOH can be found at fsq.moh.gov.my/v5/ms/category/perkhidmatan/

Abbreviations	Explanations
NA	Not Applicable
LOD	Limit of Detection
LOQ	Limit of Quantification
MRL	Maximum Residual Limit
HPLC	High Performance Liquid Chromatography
UHPLC	Ultra High Performance Liquid Chromatography
GC	Gas Chromatography
ELISA	Enzyme-linked immunosorbent assay
PCR	Polymerase Chain Reaction
qPCR	Real Time Polymerase Chain Reaction
ICPMS	Inductively Coupled Plasma Mass Spectrometry
LC ICP MS	Liquid Chromatography Inductively Coupled Plasma Mass Spectrometry
AAS	Atomic Absorption Spectrometry
ICP-OES	Inductively Coupled Plasma Optical Emission Spectroscopy
NA	Not Applicable
LOD	Limit of Detection
LOQ	Limit of Quantification
MRL	Maximum Residual Limit
HPLC	High Performance Liquid Chromatography
UHPLC	Ultra High Performance Liquid Chromatography
GC	Gas Chromatography
ELISA	Enzyme-linked immunosorbent assay
PCR	Polymerase Chain Reaction
qPCR	Real Time Polymerase Chain Reaction

1. Food Microbiology (Mikrobiologi Makanan)

Microorganism		<i>Bacillus cereus</i>			<i>Bacillus cereus</i> *		
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Water	Swab Samples	
LOD (Unit)		NA			NA	NA	
LOQ (Unit)		1.0 X 10E2 CFU/g			0.03 MPN/ml	1.0 x 10E2 CFU/swab	
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable		
	Sample weight	250 g				1 unit	
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C	1°C to 4°C	
	Packaging	Sterile packaging/Original Container				Original Container	
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box	Reference sample must be included in the ice box	
Test Method		MOH K03-107			MOH K03-107(2)	MOH K03- 107	
Reference		ISO 7932:2004(E)			ISO 21871:2006	ISO 7932:2004(E)	
Method Technique		Culture					
Instrument		NA					
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations				Nil	

Note: * No SAMM Accreditation

Microorganism	<i>Brucella spp.</i>	
Food Matrix	Goat and cow milk	
LOD (Unit)	0.04 CFU/g	
LOQ (Unit)	NA	
Sample condition	Perishable / Non-perishable	Perishable
	Sample weight	250 g
	Temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container
	Other Information	Reference sample must be included in the ice box
Test Method	MOH K03-624	
Reference	Patel, T.J, 2007. Serological, Cultural and Molecular Detection of <i>Brucella</i> Infection in Bovines Including Quantification in Milk by Real-Time PCR. Thesis submitted to the School of Graduate Studies, Anand Agricultural University India.	
Method Technique	Culture	
Instrument	NA	
Regulatory Limit	Absent (regulation 39) Food Act 1983 (Act 281) & Regulations	

Microorganism		<i>Campylobacter spp.</i>		
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products
LOD (Unit)		0.04 CFU/g		
LOQ (Unit)		NA		
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable
	Sample weight	250 g		
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature
	Packaging	Sterile packaging/Original Container		
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat
Test Method		MOH K03-314		
Reference		AS 5013.6 - 2004		
Method Technique		Culture		
Instrument		NA		
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations		

Microorganism		<i>Clostridium perfringens</i> *			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Water
LOD (Unit)		NA			
LOQ (Unit)		1.0 X 10E2 CFU/g			1.0 CFU/100 ml
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250 g		250 g or min 3 packs	250 g
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Sterile packaging/Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH K03-317			MOH K03-117(2)
Reference		AS 1766.2.8 - 1991			ISO 14189:2013
Method Technique		Culture			
Instrument		NA			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			

Note: * No SAMM Accreditation

Microorganism		<i>Coagulase positive Staphylococci</i>			Coagulase positive Staphylococci*
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Water
LOD (Unit)		NA			
LOQ (Unit)		1.0 X 10E2 CFU/g			1.0 X 10E1 CFU/ml
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250 g			
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Sterile packaging/Original Container
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH K03-105			
Reference		ISO 6888-1:1999(E)			
Method Technique		Culture			
Instrument		NA			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Absent (regulation 39) Food Act 1983 (Act 281) & Regulations

Note: * No SAMM Accreditation

Microorganism	Coliform						Coliform*	Coliform	
Food Matrix	Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples	Water/ Ice	
LOD (Unit)	NA								
LOQ (Unit)	1.0 X 10E1CFU/g			0.3 MPN/g			1.0 X 10E1 CFU/swab	1.0 CFU/100 ml	
Sample condition	Perishable / Non-perishable	Perishable	Non-perishable	Perishable	Non-perishable	Perishable			
	Sample weight	250 g					1 unit	250 g	
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	1°C to 4°C	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container					Original Container	Sterile packaging/Original Container	
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box	Reference sample must be included in the ice box
Test Method	MOH K03-203			MOH K03-121 (1)			MOH K03-203	MOH K03-103	
Reference	AOAC Official Method 991.14 3M™ Petrifilm™			ISO 4831:2006(E)			AOAC Official Method 991.14 3M™ Petrifilm™	ISO 9308-1:2014 (E)	
Method Technique	Culture								
Instrument	NA								
Regulatory Limit	Fifteenth schedule (regulation 39) Food Act 1983 (Act 281) & Regulations						Nil	Twenty-fifth, Twenty-fifth A and Twenty-sixth Schedule Food Act 1983 (Act 281) & Regulations	

Note: * No SAMM Accreditation

Microorganism	<i>Cronobacter sakazakii</i>	
Food Matrix	Milk and milk products	
LOD (Unit)	0.04 CFU/g	
LOQ (Unit)	NA	
Sample condition	Perishable / Non-perishable	Perishable
	Sample weight	250 g
	Temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container
	Other Information	Reference samples must be included in the ice box
Test Method	MOH K03-115	
Reference	ISO/TS 22964:2006(E) IDF/RM 210:2006(E)	
Method Technique	Culture	
Instrument	NA	
Regulatory Limit	Absent (regulation 39) Food Act 1983 (Act 281) & Regulations	

Microorganism		<i>Escherichia coli</i>						<i>Escherichia coli</i> *	<i>Escherichia coli</i>		
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples	Water/ Ice		
LOD (Unit)		NA									
LOQ (Unit)		0.3 MPN/g			1.0 X 10E1CFU/g			1.0 X 10E1 CFU/swab	1.0 CFU/100 ml		
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable		Perishable		Non-perishable		Perishable	
	Sample weight	250 g						1 unit	250 g		
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature		0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature		1°C to 4°C	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container						Original Container	Sterile packaging/Original Container		
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat		Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat		Reference sample must be included in the ice box	Reference sample must be included in the ice box
Test Method		MOH K03-122(1)			MOH K03-203				MOH K03-103		
Reference		ISO 7251:2005 Microbiology of food and animal feeding stuffs -- Horizontal method for the detection and enumeration of presumptive <i>Escherichia coli</i> -- Most probable number technique			AOAC Official Method 991.14 3M™ Petrifilm™			AOAC Official Method 991.14 3M™ Petrifilm™	ISO 9308-1:2014 (E)		
Method Technique		Culture									
Instrument		NA									
Regulatory Limit		Fifteenth schedule (regulation 39) Food Act 1983 (Act 281) & Regulations						Nil	Twenty-fifth, Twenty-fifth A and Twenty-sixth Schedule Food Act 1983 (Act 281) & Regulations		

Note: * No SAMM Accreditation

Microorganism		<i>Escherichia coli</i> O157			<i>Escherichia coli</i> O157*
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		0.04 CFU/g			1.0 CFU/swab
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250 g		250 g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	1°C to 4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH K03-112			
Reference		ISO 16654:2001 (E)			
Method Technique		Culture			
Instrument		NA			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		<i>Lactic Acid Bacteria</i>		
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products
LOD (Unit)		NA		
LOQ (Unit)		1.0 X 10E2 CFU/g		
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable
	Sample weight	250 g		250 g or min 3 packs
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature
	Packaging	Sterile packaging/Original Container		
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat
Test Method		MOH K03-116(1)		
Reference		ISO 15214:1998		
Method Technique		Culture		
Instrument		NA		
Regulatory Limit		Regulation 113 Food Act 1983 (Act 281) & Regulations		

Note: * No SAMM Accreditation

Microorganism		<i>Listeria monocytogenes</i>			<i>Listeria monocytogenes</i>		
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products
LOD (Unit)		0.36 CFU/g			NA		
LOQ (Unit)		NA			1.0 X 10E2 CFU/g		
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable		Non-perishable
	Sample weight	250 g		250 g or min 3 packs	250 g		250g or min 3 packs
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature
	Packaging	Sterile packaging/Original Container					
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat
Test Method		MOH K03-113(1)-i					
Reference		ISO 11290-1:2017					
Method Technique		Culture					
Instrument		NA					
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations					

Note: * No SAMM Accreditation

Microorganism	<i>Pseudomonas aeruginosa</i>	
Food Matrix	Water	
LOD (Unit)	NA	
LOQ (Unit)	1CFU/100ml	
Sample condition	Perishable / Non-perishable	Perishable
	Sample weight	250 g
	Temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container
	Other Information	Reference sample must be included in the ice box
Test Method	MOH K03-128	
Reference	ISO 16266:2006 (E)	
Method Technique	Culture	
Instrument	NA	
Regulatory Limit	Twenty-fifth and Twenty-fifth A Schedule Food Act 1983 (Act 281) & Regulations	

Microorganism		<i>Salmonella spp.</i>			<i>Salmonella spp.*</i>		
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Water	Swab Samples	
LOD (Unit)		0.08 CFU/g			1.0 CFU/100 ml	1.0 CFU/swab	
LOQ (Unit)		NA					
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable		
	Sample weight	250 g				1 unit	
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C	1°C to 4°C	
	Packaging	Sterile packaging/Original Container				Original Container	
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box	Reference sample must be included in the ice box	
Test Method		MOH K03-108(1)-i			MOH K03-108(2)	MOH K03-108(1)-i	
Reference		ISO 6579-1:2017 (E)			ISO 19250:2010	ISO 6579-1:2017 (E)	
Method Technique		Culture					
Instrument		NA					
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations				Nil	

Note: * No SAMM Accreditation

Microorganism		<i>Staphylococcus aureus</i>			<i>Staphylococcus aureus</i> *
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		NA			
LOQ (Unit)		1.0 X 10E1 CFU/g			1.0 X 10E1 CFU/swab
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250 g		250 g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	1°C to 4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference samples must be included in the ice box
Test Method		MOH K03-205			
Reference		AOAC Official Method 2003.07 3M™ Petrifilm™			
Method Technique		Culture			
Instrument		NA			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		Total plate count			Total plate count*	
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples	Water
LOD (Unit)		NA				
LOQ (Unit)		1.0 X 10E1 CFU/g			1.0 X 10E1 CFU/swab	1.0 CFU/ml
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable	
	Sample weight	250 g		250 g or min 3 packs	1 unit	250 g
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	1°C to 4°C	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container	Sterile packaging/Original Container
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box	Reference sample must be included in the ice box
Test Method		MOH K03-201				
Reference		AOAC Official Method 990.12 3M™ Petrifilm™				
Method Technique		Culture				
Instrument		NA				
Regulatory Limit		Fifteenth schedule (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil	

Note: * No SAMM Accreditation

Microorganism		<i>Vibrio cholerae</i>				<i>Vibrio cholerae</i> *
Food Matrix	Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Water	Swab Samples	
LOD (Unit)	0.04 CFU/g				1.0 CFU/swab	
LOQ (Unit)	NA					
Sample condition	Perishable / Non-perishable	Perishable	Non-perishable	Perishable		
	Sample weight	250 g			1 unit	
	Temperature	7.0°C to 10.0°C	-18°C to 0°C	Not exceeding ambient temperature	7.0°C to 10.0°C	7.0°C to 10.0°C
	Packaging	Sterile packaging/Original Container			Original Container	
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box	Reference sample must be included in the ice box
Test Method	MOH K03-111(1)-i					
Reference	ISO 21872-1:2017 (E)					
Method Technique	Culture					
Instrument	NA					
Regulatory Limit	Absent (regulation 39) Food Act 1983 (Act 281) & Regulations				Nil	

Note: * No SAMM Accreditation

Microorganism		<i>Vibrio parahaemolyticus</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products	Water
LOD (Unit)		0.12 CFU/g			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250 g			
	Temperature	7.0°C to 10.0°C	-18°C to 0°C	Not exceeding ambient temperature	7.0°C to 10.0°C
	Packaging	Sterile packaging/Original Container			Sterile packaging/Original Container
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH K03-111(1)-i			
Reference		ISO 21872-1:2017 (E)			
Method Technique		Culture			
Instrument		NA			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			

Microorganism		<i>Yeast and Mould Count</i>		
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products and RTE	Frozen Samples	Samples of shelf stable packaged products & dried products
LOD (Unit)		NA		
LOQ (Unit)		1.0 X 10E1 CFU/g		
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable
	Sample weight	250 g		250 g or min 3 packs
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature
	Packaging	Sterile packaging/Original Container		
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat
Test Method		MOH K03-602		
Reference		Compact Dry "Nissui" YM brochure.		
Method Technique		Culture		
Instrument		NA		
Regulatory Limit		Nil		

2. Food Molecular (Molekular Makanan)

Microorganism		<i>Adenovirus</i>
Food Matrix		Potable Water
LOD (Unit)		6.0x10E-7 ng/μL
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable
	Sample weight	500g
	Temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container
	Other Information	Reference samples must be included in the ice box
Test Method		MOH R03-403
Reference		S.A. Feeney, V.J. Armstrong, S.J. Mitchell, L. Crawford, C. McCaughey and P.V. Coyle. Development and Clinical Validation of Multiplex TaqMan R Assays for Rapid Diagnosis of Viral Gastroenteritis. Journal of Medical Virology 83: 1650-1656 (2011).
Method Technique		qPCR
Instrument		Real Time PCR
Regulatory Limit		Nil

Microorganism	<i>Brucella spp.</i>	
Food Matrix	Goat and Cow Milk	
LOD (Unit)	1.0 x 10E-3 ng/μL	
LOQ (Unit)	NA	
Sample condition	Perishable / Non-perishable	Perishable
	Sample weight	250g
	Temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container
	Other Information	Reference sample must be included in the ice box
Test Method	MOH R03-304	
Reference	Sanjay, G., Ashish R., D.N. Rank and Bharat B.B, 2010. Identification of <i>Brucella</i> spp. from Animals with Reproductive Disorders by Polymerase Chain Reaction Assay. B. Bulletin Vol. 29 No. 2	
Method Technique	PCR	
Instrument	Gel Electrophoresis	
Regulatory Limit	Absent (regulation 39) Food Act 1983 (Act 281) & Regulations	

Microorganism		<i>*Cronobacter sakazakii</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		NA			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-319			
Reference		Xianghe, Y., et al. 2011. Comprehensive Approaches to Molecular Biomarker Discovery for Detection and Identification of <i>Cronobacter spp. (Enterobacter sakazakii)</i> and <i>Salmonella spp.</i> Appl. Environ. Microbiol. 77:1833-1843.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		<i>*Escherichia coli O157:H7</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		NA			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-306			
Reference		P. Feng and S.R. Monday., 2000. Multiplex PCR for Detection of Trait and Virulence Factors in Enterohemorrhagic Escherichia coli Serotypes. Molecular and Cellular Probes, Vol. 14 p. 333 - 337.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		<i>*Enteroinvasive Escherichia coli (EIEC)</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		NA			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-308			
Reference		Vilchez, S., Reyes, D., Paniagua, M., Bucardo, F., Möllby, R. and Weintraub, A., 2009. Prevalence of Diarrhoeagenic <i>Escherichia coli</i> in Children from León, Nicaragua. J. Med Microbiology (2009), 58, 630 - 637.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		*Enterotoxigenic <i>Escherichia coli</i> (ETEC)			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		NA			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference sample must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-311			
Reference		Vilchez, S., Reyes, D., Paniagua, M., Bucardo, F., Möllby, R. and Weintraub, A., 2009. Prevalence of Diarrhoeagenic <i>Escherichia coli</i> in Children from León, Nicaragua. J. Med Microbiology (2009), 58, 630 - 637.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism	Hepatitis A Virus	
Food Matrix	Bivalve Molluscs Shellfish (BMS), fresh vegetables (salad or <i>ulam</i>), soft fruits (berries) and potable water	
LOD (Unit)	100 RT-PCR unit/ μ L	
LOQ (Unit)	NA	
Sample condition	Perishable / Non-perishable	Perishable
	Sample weight	500g
	Temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container
	Other Information	Reference samples must be included in the ice box
Test Method	MOH R03-402	
Reference	Wan Norhana, M. N., Masazurah, A. R., Nor Ainy, M. and Ismail, I. 2011. Reverse Transcriptase PCR detection of Hepatitis A Virus (HAV) in cultured and wild shellfish from the Peninsular of Malaysia. International Food Research Journal 18: 411-415.	
Method Technique	PCR	
Instrument	Gel Electrophoresis	
Regulatory Limit	Nil	

Microorganism		<i>Listeria monocytogenes</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	*Swab Samples
LOD (Unit)		0.04 CFU/g			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-305			
Reference		Yeon, S.P., Sang, R.L. and Young, G.K. 2005. Detection of <i>Escherichia coli</i> O157:H7, <i>Salmonella spp.</i> , <i>Staphylococcus aureus</i> and <i>Listeria monocytogenes</i> in Kimchi by Multiplex Polymerase Chain Reaction (mPCR). Journal of Microbiology, Vol. 44. p. 92 - 97.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism	Rotavirus A	
Food Matrix	Bivalve Molluscans Shellfish (BMS), fresh vegetables (salad or <i>ulam</i>), soft fruits (berries) and potable water	
LOD (Unit)	1.0 x 10E2 copies/ μ L	
LOQ (Unit)	NA	
Sample condition	Perishable / Non-perishable	Perishable
	Sample weight	500g
	Temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container
	Other Information	Reference samples must be included in the ice box
Test Method	MOH R03-404	
Reference	Yasmon. A et al., 2010. Detection of Human Group A and C Rotavirus in Pediatric Patients with Acute Gastroenteritis by Real time RT-PCR Assay	
Method Technique	qPCR	
Instrument	Real Time PCR	
Regulatory Limit	Nil	

Microorganism		<i>Salmonella spp.</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	*Swab Samples
LOD (Unit)		0.04 CFU/g			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-301			
Reference		Miyamoto, T., Trevanich, S., Honjoh, K. and Hatano, S., 1999. Rapid Detection of <i>Salmonella spp.</i> By PCR Amplification of <i>Salmonella</i> Specific Region in <i>gatD</i> gene. Jpn. J. Food Microbiol., 16(2), 99 – 109.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		<i>Salmonella Typhi</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	*Swab Samples
LOD (Unit)		1.0 x 10E-1 ng/μL			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-322			
Reference		Chai, F.P. et al., 2010. Multiplex PCR for the Concurrent Detection and Differentiation of <i>Salmonella</i> spp., <i>Salmonella</i> Typhi and <i>Salmonella</i> Typhimurium			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		<i>Salmonella Typhimurium</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	*Swab Samples
LOD (Unit)		3.0 x 10E-1 ng/μL			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-323			
Reference		Chai, F.P. et al., 2010. Multiplex PCR for the Concurrent Detection and Differentiation of <i>Salmonella</i> spp., <i>Salmonella</i> Typhi and <i>Salmonella</i> Typhimurium			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		*SARS-CoV-2 (COVID-19)	
Food Matrix		Swab from Food Surface	Swab from Food Contact Surface
LOD (Unit)		20 ng/μL	
LOQ (Unit)		NA	
Sample condition	Perishable / Non-perishable	Non-perishable	
	Sample weight	1 unit	
	Temperature	0.0°C to 4.4°C	
	Packaging	Three-layer packaging	
	Other Information	NA	
Test Method		MOH R03-405	
Reference		<ol style="list-style-type: none"> Berlin Protocol, 13.01.2020 U.S. Department of Health and Human Services. Policy for Coronavirus Disease-2019 Tests During the Public Health Emergency (Revised). Immediately in Effect Guidance for Clinical Laboratories, Commercial Manufacturers, and Food and Drug Administration Staff. 2020 	
Method Technique		qPCR	
Instrument		Real Time PCR	
Regulatory Limit		Nil	

Note: * No SAMM Accreditation

Microorganism		<i>*Staphylococcus aureus</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		NA			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	0.0°C to 4.4°C	-18°C to 0°C	Not exceeding ambient temperature	0.0°C to 4.4°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-317			
Reference		Hirotaki, S., Sasaki, T., Kuwahara-Arai, K. and Hiramatsu, K., 2011. Rapid and Accurate Identification of Human-Associated Staphylococcus aureus by Use of Multiplex PCR. J. Clin. Microbiol. 2011, 49(10):3627			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		<i>*Vibrio cholerae</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		5.0 x 10E-1 ng/μL			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	7.0°C to 10.0°C	-18°C to 0°C	Not exceeding ambient temperature	7.0°C to 10.0°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-302			
Reference		Fukushima, H., Tsunomori, Y. and Seki, R., 2003. Duplex Real-Time SYBR Green PCR Assays for Detection of 17 Species of Food- or Waterborne Pathogens in Stools. J. Clin. Microbiol. 2003, p. 5134 - 5146.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		<i>*Vibrio parahaemolyticus toxR</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		1.0 x 10E-1 ng/μL			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	7.0°C to 10.0°C	-18°C to 0°C	Not exceeding ambient temperature	7.0°C to 10.0°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-312			
Reference		Zainazor.T. C. 2006. Prevalence and molecular characterization of <i>Vibrio parahaemolyticus</i> isolated from cultured tiger prawns (<i>Penaeus monodon</i>) from Malacca. Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

Microorganism		<i>*Vibrio parahaemolyticus tdh and trh</i>			
Food Matrix		Samples of fresh, perishable, refrigerated, food poisoning products, semi-preserved products, RTE, water and ice	Frozen Samples	Samples of shelf stable packaged products & dried products	Swab Samples
LOD (Unit)		NA			
LOQ (Unit)		NA			
Sample condition	Perishable / Non-perishable	Perishable		Non-perishable	Perishable
	Sample weight	250g		250g or min 3 packs	1 unit
	Temperature	7.0°C to 10.0°C	-18°C to 0°C	Not exceeding ambient temperature	7.0°C to 10.0°C
	Packaging	Sterile packaging/Original Container			Original Container
	Other Information	Reference samples must be included in the ice box	Sample in frozen condition	Protected from direct sunlight or from other sources of heat	Reference sample must be included in the ice box
Test Method		MOH R03-313			
Reference		Fukushima, H., Tsunomori, Y. and Seki, R., 2003. Duplex Real-Time SYBR Green PCR Assays for Detection of 17 Species of Food- or Waterborne Pathogens in Stools. J. Clin. Microbiol. 2003, p. 5134 - 5146.			
Method Technique		PCR			
Instrument		Gel Electrophoresis			
Regulatory Limit		Absent (regulation 39) Food Act 1983 (Act 281) & Regulations			Nil

Note: * No SAMM Accreditation

3. GMO and Food Speciation (GMO dan Penspesisan Makanan)

Parameter		<i>Agrobacterium tumefaciens</i> nos 3' Terminator gene (GMO)
Food Matrix		Food (Cereal & cereal product, vegetables & vegetable product and fruit & fruit product)
LOD (Unit)		0.1%
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03 -131 (2)
Reference		MS ISO 21569:2005(E) Annex B.3
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Bovine DNA
Food Matrix		Raw meat & semi processed food
LOD (Unit)		0.0001 ng/ μ L
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 500 gm (edible portion without bones) Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-245 (1)
Reference		Soichi Tanabe, Makiko Hase, Takeo Yano, Masahiko Sato, tatsuya Fujimura, Hiroshi Akiyama (7 December 2007); Biosci. Biotechnol. Biochem, 71 (12) Pg. 3131-3135; A Real-Time Quantitative PCR Detection Method for Pork, Chicken, Beef, Mutton and Horseflesh in Food.
Method Technique		qPCR
Instrument		Real Time PCR
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		<i>*Bubalus bubalis</i> DNA
Food Matrix		Animal tissue and food products
LOD (Unit)		10 ng/μL
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 500 gm (edible portion without bones) Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-243 (2)
Reference		Buffalo bulletin, Identification and differentiation of Cattle and Buffalo processed meat by duplex PCR (Rohita Gupta, D.N. Rank & C.G. Joshi). Vol 31 No 1 March 2012.
Method Technique		qPCR
Instrument		Real Time PCR
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Note: * No SAMM Accreditation

Parameter		<i>Gallus gallus domesticus</i> DNA
Food Matrix		Raw meat, semi-processed, processed & highly processed food
LOD (Unit)		0.0355 ng/μL
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 500 gm (edible portion without bones) products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-244 (1)
Reference		Goren, A.C., 2013. Halal Food and Metrology; International 2nd Halal and Healthy Food Congress; 97-107
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter	GMO			
	*Bar gene	*Pat gene	*Cry1Ab/1Ac gene	*CTP2:CP4 EPSPS gene
Food Matrix	Food (Cereal & cereal product, vegetables & vegetable product and fruit & fruit product)			
LOD (Unit)	0.1 ng/μL		0.1%	0.01 ng/μL
LOQ (Unit)	NA			
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable		
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack		
	Temperature	Frozen/Chilled/Room Temperature		
	Packaging	Any suitable packaging		
	Other Information	None		
Test Method	MOH G03-131			
Reference	SureFood® GMO SCREEN 4plex BAR/PAT/Cry1Ab/1Ac/CTP2:CP4 EPSPS User Manual			
Method Technique	qPCR			
Instrument	Real Time PCR			
Regulatory Limit	Part IV Labelling under Food Act 1983 (ACT 281) & Regulations			

Note: * No SAMM Accreditation

Parameter		CaMV 35S Promoter gene (GMO)
Food Matrix		Food (Cereal & cereal product, vegetables & vegetable product and fruit & fruit product)
LOD (Unit)		0.1%
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-131 (1)
Reference		MS ISO 21569:2005(E) Annex B.1
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		npt II gene (GMO)
Food Matrix		Food (Cereal & cereal product, vegetables & vegetable product and fruit & fruit product)
LOD (Unit)		0.01 ng/ μ L
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-131 (3)
Reference		MS ISO 21569:2005(E) Annex B.4
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Maize Bt 11 gene (GMO)
Food Matrix		Corn kernels and Corn Products
LOD (Unit)		0.1%
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G04-143 (1)
Reference		MS ISO 21569:2005(E) Annex C.3
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Maize Bt 176 gene (GMO)
Food Matrix		Corn kernels and Corn Products
LOD (Unit)		0.1%
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-143 (2)
Reference		MS ISO 21569:2005(E) Annex C.4
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Maize GA 21 gene (GMO)
Food Matrix		Corn kernels and Corn Products
LOD (Unit)		0.1%
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-143 (5)
Reference		Testing for Food Produced by Recombinant DNA Techniques; Provisional Translation by MHLV; Page 3 - 19.
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Maize MON 810 gene (GMO)
Food Matrix		Corn kernels and Corn Products
LOD (Unit)		0.1%
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		G03-143 (3)
Reference		MS ISO 21569:2005(E) Annex D.1
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Maize T25 gene (GMO)
Food Matrix		Corn kernels and Corn Products
LOD (Unit)		0.1%
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-143 (4)
Reference		MS ISO 21569:2005(E) Annex C.5
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		* MON 89788 (GMO)
Food Matrix		Soybean Kernels and soybean products
LOD (Unit)		0.001 ng/μL
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-142 (2)
Reference		JRC Compendium of Reference Method for GMO Analysis, QT-EVE-GM-Quantitative PCR Method for Detection of Soybean Event MON 89788 2011.
Method Technique		qPCR
Instrument		Real Time PCR
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Note: * No SAMM Accreditation

Parameter		Maize gene (GMO)
Food Matrix		Corn kernels and Corn Products
LOD (Unit)		0.1 ng/μL
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-123 (1)
Reference		MS ISO 21569:2005(E) Annex A.4
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Lectin gene (GMO)
Food Matrix		Soybean Kernels and soybean products
LOD (Unit)		0.1 ng/μL
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-122 (1)
Reference		MS ISO 21569:2005(E) Annex A.1
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Patatain gene (GMO)
Food Matrix		Potato and potato products
LOD (Unit)		0.1 ng/μL
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-126 (1)
Reference		In house method based on testing for food produced by recombinant DNA techniques; Provisional Translation by MHLV; Page 3-19
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Plant gene (GMO)
Food Matrix		Food (Cereal & cereal product, vegetables & vegetable product and fruit & fruit product)
LOD (Unit)		0.00001 ng/ μ L
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-121 (1)
Reference		Ref: MS ISO 21569:2005(E) Annex A.2
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Polygalacturonase gene (GMO)
Food Matrix		Raw Tomato
LOD (Unit)		0.1 ng/ μ L
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable
	Sample weight	Raw - min 1 kg
	Temperature	Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-124 (1)
Reference		MS ISO 21569:2005(E) Annex A.3
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

Parameter		Roundup Ready® Soybean (RRS) (GMO)
Food Matrix		Soybean kernels & soybean products
LOD (Unit)		0.1%
LOQ (Unit)		NA
Sample condition	Perishable / Non-perishable	Perishable / Non-perishable
	Sample weight	Raw - min 1 kg Products - 2 packs of commercial packaging; min 200 gm/pack
	Temperature	Frozen/Chilled/Room Temperature
	Packaging	Any suitable packaging
	Other Information	None
Test Method		MOH G03-142 (1)
Reference		MS ISO 21569:2005(E) Annex C.1
Method Technique		PCR
Instrument		Gel Electrophoresis
Regulatory Limit		Part IV Labelling under Food Act 1983 (ACT 281) & Regulations

4. Mycotoxin

Analyte Group		Aflatoxins		
Analytes		Aflatoxins (Sum B1, B2, G1 and G2)	Aflatoxins (Sum B1, B2, G1 and G2)	Aflatoxins (Sum B1, B2, G1 and G2)
Food Matrix		Cereal and cereal products	Nuts and nuts product	Spices (processed and non-processed)
LOD (µg/kg)		1.2	1.2	1.2
LOQ (µg/kg)		2.4	2.4	2.4
Sample condition	Sample weight	1kg	1.5 kg (with shell/null) 1.0kg (without shell/null)	0.5kg
	Perishable / Non perishable	Non-perishable/Perishable		
	Temperature	Room temperature/Chilled/ Frozen		
	Packaging	Paper / Plastic bag or container / Original packaging		
	Other Information	Sample must be stored in dry and clean storage condition. If samples are bought in chilled/ frozen form, sample must be packed in ice box with dry ice and send to lab within 24 hours.		
Test Method		MOH L03-001	MOH L03-001	MOH L03-002
Reference		AOAC Official Method 991.31, Aflatoxins in Corn, Raw Peanuts and Peanut Butter		VICAM AflaTest Instruction Manual Method Aflatest HPLC Procedure for Black Pepper and Tumeric
Technique	Extraction	Solvent extraction with immunoaffinity column clean up		
	Instrumentation	HPLC with Fluorescent Detector		
	Back up Instrumentation	Nil		
Regulatory Limit		<ol style="list-style-type: none"> (Regulation 39 -Fifteenth Schedule/ Table II) Food Act 1983 (Act 281) & Regulations; General Standard for Contaminants and Toxins in Food and Feed - CXS 193-1995 		No regulation stated in the Food Act 1983 & Regulations and Codex Alimentarius

Analyte Group		<i>Aflatoxins</i>		
Analytes		Aflatoxin M1	Aflatoxin M1	Aflatoxin M1
Food Matrix		Milk – Liquid (not inclusive infant and special formula)	Milk – Powder (not inclusive infant and special formula)	Cheese
LOD (µg/kg)		0.02	0.07	0.05
LOQ (µg/kg)		0.05	0.25	0.08
Sample condition	Sample weight	1L	1kg	1kg
	Perishable / Non perishable	Non-perishable/Perishable		
	Temperature	Room temperature/Chilled/ Frozen		
	Packaging	Paper / Plastic bag or container / Original packaging		
	Other Information	Sample must be stored in dry and clean storage condition. If samples are bought in chilled/ frozen form, sample must be packed in ice box with dry ice and send to lab within 24 hours.		
Test Method		MOH L03-007	MOH L03-014	MOH L03-018
Reference		VICAM AflaM1 HPLC Instruction Manual, Method 5.1 AflaM1 HPLC Procedure For Fluid Milk	R-Biopharm Application notes of AflaPrep M 2010 HPLC Instruction manual, Ref. No: A1-P04.V3.Food Act 1983	Romer Labs Application Brief of Rapid Quantitation of Aflatoxin M1 in Cheese HPLC-FLD with Kobra Cell Derivatization
Technique	Extraction	Solvent extraction with immunoaffinity column clean up		
	Instrumentation	HPLC with Fluorescent Detector		
	Back up Instrumentation	Nil		
Regulatory Limit		<ol style="list-style-type: none"> (Regulation 39 -Fifteenth Schedule/ Table II) Food Act 1983 (Act 281) & Regulations; General Standard for Contaminants and Toxins in Food and Feed - CXS 193-1995 		No regulation stated in the Food Act 1983 & Regulations and Codex Alimentarius

Analyte Group		Citrinin
Analytes		Citrinin
Food Matrix		Cereal and Cereal Products
LOD (µg/kg)		30
LOQ (µg/kg)		100
Sample condition	Sample weight	1kg
	Perishable / Non-Perishable	Non-Perishable/Perishable
	Temperature	Room temperature/ Chilled/ Frozen
	Packaging	Paper / Plastic bag or container / Original packaging
	Other Information	Sample must be stored in dry and clean storage condition. If samples are bought in chilled/ frozen form, sample must be packed in ice box with dry ice and send to lab within 24 hours.
Test Method		MOH L03-015
Reference		Instruction Manual, Method 5.3 CitriTest HPLC Procedure For Corn
Technique	Extraction	Solvent extraction with immunoaffinity column clean up
	Instrumentation	HPLC with Fluorescent Detector
	Back up Instrumentation	Nil
Regulatory Limit		No regulation stated in the Food Act 1983 (Act 281) & Regulations and Codex Alimentarius

Analyte Group		Deoxynivalenol
Analytes		Deoxynivalenol
Food Matrix		Cereal & Cereal Products
LOD (µg/kg)		25
LOQ (µg/kg)		75
Sample condition	Sample weight	1kg
	Perishable / Non perishable	Non-perishable/ Perishable
	Temperature	Room temperature/ Chilled/ Frozen
	Packaging	Paper / Plastic bag or container / Original packaging
	Other Information	Sample must be stored in dry and clean storage condition. If samples are bought in chilled/ frozen form, sample must be packed in ice box with dry ice and send to lab within 24 hours.
Test Method		MOH L03-008
Reference		VICAM DONTest HPLC Instruction Manual (Procedure 4.1 DONTest HPLC Procedure for Wheat)
Technique	Extraction	Solvent extraction with immunoaffinity column clean up
	Instrumentation	HPLC with Photo Diode Array Detector
	Back up Instrumentation	Nil
Regulatory Limit		General Standard for Contaminants and Toxins in Food and Feed - CXS 193-1995

Analyte Group		Ochratoxin A	
Analytes		Ochratoxin A	Ochratoxin A
Food Matrix		Cereal & Cereal Products	Coffee
LOD (µg/kg)		0.2	0.2
LOQ (µg/kg)		0.5	0.5
Sample condition	Sample weight	1kg	
	Perishable / Non perishable	Non-perishable/ Perishable	
	Temperature	Room temperature/ Chilled/ Frozen	
	Packaging	Paper / Plastic bag or container / Original packaging	
	Other Information	Sample must be stored in dry and clean storage condition. If samples are brought in chilled/ frozen form, sample must be packed in ice box with dry ice and send to lab within 24 hours.	
Test Method		MOH L03-005	MOH L03-006
Reference		VICAM OchraTest Instruction Manual Method (Procedure 4.4 OchraTest Procedure for Wheat)	VICAM OchraTest Instruction Manual (Procedure 4.7 OchraTest Procedure for Roasted and Soluble Coffee)
Technique	Extraction	Solvent extraction with immunoaffinity column clean up	
	Instrumentation	HPLC with Fluorescent Detector	
	Back up Instrumentation	Nil	
Regulatory Limit		<ol style="list-style-type: none"> (Regulation 39 -Fifteenth Schedule/ Table II) Food Act 1983 (Act 281) & Regulations General Standard for Contaminants and Toxins in Food and Feed - CXS 193-1995 	

Analyte Group		Zearalenone
Analytes		Zearalenone
Food Matrix		Cereal and Cereal Products
LOD (µg/kg)		5
LOQ (µg/kg)		18
Sample condition	Sample weight	1kg
	Perishable / Non perishable	Non-perishable/ Perishable
	Temperature	Room temperature/ Chilled/ Frozen
	Packaging	Paper / Plastic bag or container / Original packaging
	Other Information	Sample must be stored in dry and clean storage condition. If samples are bought in chilled/ frozen form, sample must be packed in ice box with dry ice and send to lab within 24 hours.
Test Method		MOH L03-004
Reference		VICAM ZearalaTest Instruction Manual Method No. 3.3 ZearalaTest HPLC Procedure for Corn
Technique	Extraction	Solvent extraction with immunoaffinity column clean up
	Instrumentation	HPLC with Photo Diode Array Detector
	Back up Instrumentation	Nil
Regulatory Limit		No regulation stated in the Food Act 1983 (Act 281) & Regulations and Codex Alimentarius

5. Industrial and Environmental Food Pollutant (Pencemaran Industri dan Persekitaran Makanan, PIPM)

Analyte Group		Antimony
Analytes		Antimony
Food Matrix		Soft Drink
LOD (mg/kg)		0.02
LOQ (mg/kg)		0.05
Sample condition	Type of Samples/ Parameter	Perishable/Non-Perishable
	Sample weight	500g or 500mL
	Temperature	Room Temperature
	Packaging	Plastic/ Tetrapack/ Original Packaging
	Other Information	Any samples for Heavy Metals analysis should not have direct contact with any metal container or apparatus
Test Method		MOH H03-011
Reference		In house Method, Ref. No. MOH H03-011, based on AOAC 999.10, 1999. Microwave Digestion, ICPMS
Technique	Extraction	Microwave Digestion
	Instrumentation	ICPMS
	Back up Instrumentation	Nil
Regulatory Limit		(Regulation 38 - 14th Schedule/Table 1) Food Act 1983 (Act 281) and Regulations

Analyte Group		Arsenic (As)	
Analytes		Arsenic	
Food Matrix		Food	
LOD (mg/kg)		0.003	
LOQ (mg/kg)		0.01	
Sample condition	Type of Samples/ Parameter	Perishable	Non-Perishable
	Sample weight	1 kg or 1 L	500g or 500mL
	Temperature	Chilled/frozen	Room Temperature
	Packaging	Plastic/ Paper/ Original Packaging	Plastic / Original Packaging
	Other Information	Any samples for Heavy Metals analysis should not have direct contact with any metal container or apparatus	
Test Method		MOH H03-006	
Reference		In house Method, Ref. No. MOH H03-006, based on AOAC 999.10, 1999. Microwave Digestion, ICPMS	
Technique	Extraction	Microwave Digestion	
	Instrumentation	ICPMS	
	Back up Instrumentation	Nil	
Regulatory Limit		<ol style="list-style-type: none"> (Regulation 38 - 14th Schedule/Table 1 & 1E) Food Act 1983 (Act 281) and Regulations Commission Regulation (EC) No. 1881/2006 	

Analyte Group		Cadmium (Cd)	
Analytes		Cadmium	
Food Matrix		Fish & Fish products	
LOD (mg/kg)		0.003	
LOQ (mg/kg)		0.01	
Sample condition	Type of Samples/ Parameter	Perishable	Non-Perishable
	Sample weight	1 kg or 1 L	500g or 500mL
	Temperature	Chilled/frozen	Room Temperature
	Packaging	Plastic/ Paper/ Original Packaging	Plastic / Original Packaging
	Other Information	Any samples for Heavy Metals analysis should not have direct contact with any metal container or apparatus	
Test Method		MOH H03-006	
Reference		In house Method, Ref. No. MOH H03-006, based on AOAC 999.10, 1999. Microwave Digestion, ICPMS	
Technique	Extraction	Microwave Digestion	
	Instrumentation	ICPMS	
	Back up Instrumentation	Nil	
Regulatory Limit		<ol style="list-style-type: none"> (Regulation 38 - 14th Schedule/Table 1 & 1E) Food Act 1983 (Act 281) and Regulations Commission Regulation (EC) No. 1881/2006 	

Analyte Group		Mercury (Hg)						
Analytes		Methyl Mercury	Total Mercury					
Food Matrix		Fish	Fish & fish product	Vegetable & veg. product		Rice		
LOD (mg/kg)		0.03	0.01	0.01		0.01		
LOQ (mg/kg)		0.1	0.04	0.04		0.04		
Sample condition	Type of Samples/Parameter	Perishable	Perishable	Non-Perishable	Perishable	Non-Perishable	Perishable	Non-Perishable
	Sample weight	1 kg or 1 L	1 kg or 1 L	500g or 500mL	1 kg or 1 L	500g or 500mL	1 kg or 1 L	500g or 500mL
	Temperature	Chilled/frozen	Chilled/frozen	Room Temperature	Chilled/frozen	Room Temperature	Chilled/frozen	Room Temperature
	Packaging	Plastic / Original Packaging	Plastic/Paper/Original Packaging	Plastic / Original Packaging	Plastic/Paper/Original Packaging	Plastic / Original Packaging	Plastic/Paper/Original Packaging	Plastic / Original Packaging
	Other Information	Any samples for Heavy Metals analysis should not have direct contact with any metal container or apparatus						
Test Method		MOH H03-008	MOH H03-001					
Reference		In house Method, Ref. No. MOH H03-008, Based on AOAC 988.11 Mercury (Methyl) in fish and shellfish, 2000.	In house Method, Ref. No. MOH H03-001, based on MS 954, Part 13-1989, AAS-FIAS					
Technique	Extraction	Liquid-liquid Extraction	Block Digestion					
	Instrumentation	LC ICP MS	AAS – Flow Injection for Atomic Spectroscopy					
	Back up Instrumentation	Nil	ICPMS					
Regulatory Limit		(Regulation 38 - 14th Schedule/Table 1D) Food Act 1983 (Act 281) and Regulations	Commission Regulation (EC) No. 1881/2006	(Regulation 38 - 14th Schedule/Table 1 & 1D) Food Act 1983 (Act 281) and Regulations				

Analyte Group		Stanum (Sn)
Analytes		Stanum
Food Matrix		Fish & Fish products
LOD (mg/kg)		0.2
LOQ (mg/kg)		10
Sample condition	Type of Samples/ Parameter	Perishable
	Sample weight	1 kg or 1 L
	Temperature	Chilled/frozen
	Packaging	Plastic / Original Packaging
	Other Information	Any samples for Heavy Metals analysis should not have direct contact with any metal container or apparatus
Test Method		MOH H03-012
Reference		In house Method, Ref. No. MOH H03-012. Based on Journal of Microchemical 94 (2010), page 171-174, Microwave Digestion, ICP-OES.
Technique	Extraction	Microwave Digestion
	Instrumentation	ICP-OES
	Back up Instrumentation	Nil
Regulatory Limit		<ol style="list-style-type: none"> (Regulation 38 - 14th Schedule/Table 1C) Food Act 1983 (Act 281) and Regulations Commission Regulation (EC) No. 1881/2006

6. Natural Contaminant (Pencemaran Semulajadi)

Analyte Group		<i>4-methylimidazole</i>
Analytes		4-methylimidazole
Food Matrix		Drinks
LOD (mg/kg)		0.02
LOQ (mg/kg)		0.06
Sample Condition	Sample weight	500 mL
	Perishable/ Non-Perishable	Non-Perishable
	Temperature	Room temperature
	Packaging	Original container/suitable packages
	Other Information	NA
Test Method		MOH N03-009
Reference		Klejdus B., J. Moravkova, L. Lojkova, et al., (2006) Solid-phase extraction of 4(5)-methylimidazole (4Mei) and 2-acetyl-4(5) (1,2,3,4-tetrahydroxybutyl)-imidazole (THI) from foods and beverages with subsequent liquid chromatographic-electrospray mass spectrometric quantification. J. Sep. Sci. 29, 378-384
Technique	Extraction	Solvent extraction
	Instrumentation	LCMSMS
	Back up Instrumentation	Nil
Regulatory Limit		<ol style="list-style-type: none"> 1. European Comission (2008) 2. No regulation stated in the Food Act 1983 (Act 281) & Regulation

Analyte Group		Allergens				
Analytes		Egg	Gliadin	Milk	Peanut	Soy
Food Matrix		All foods except food contain egg	All foods except food contain gliadin/gluten	All foods except food contain milk	All foods except food contain peanut	All foods except food contain soy
LOD (ppm)		2.5	5	2.5	2.5	2.5
LOQ (Unit)		NA	NA	NA	NA	NA
Sample Condition	Sample weight	500 g/500 ml				
	Perishable/Non-Perishable	Perishable/Non-Perishable				
	Temperature	Frozen or chilled/Room temperature				
	Packaging	Original container/suitable packages				
	Other Information	Please ensure eggs are not listed as ingredients on the packaging.	Please ensure gliadin/gluten are not listed as ingredients on the packaging.	Please ensure milk are not listed as ingredients on the packaging.	Please ensure peanut are not listed as ingredients on the packaging.	Please ensure soy are not listed as ingredients on the packaging.
Test Method		MOH N03-005	MOH N03-006	MOH N03-004	MOH N03-003	MOH N03-008
Reference		Veratox ® Quantitative Egg Allergen Test. Neogen Corporation 2007	Veratox ® Quantitative Gliadin Test. Neogen Corporation 2007	Veratox ® Total Milk Allergen Quantitative Test. Neogen Corporation 2007	Veratox ® Quantitative Peanut Allergen Test. Neogen Corporation 2007	Veratox ® for Soy Allergen Quantitative Test. Neogen Corporation 2012
Technique	Extraction	ELISA Test Kit				
	Instrumentation	Microplate Reader				
	Back up Instrumentation	Nil				
Regulatory Limit		(Regulation 11(5) Part IV) Food Act 1983 (Act 281) & Regulations				

Analyte Group		Biogenic Amines						
Analytes		Cadaverine	Histamine	2-phenylethylamine	Putrescine	Spermidine	Spermine	Tryptamine
Food Matrix		Fish						
LOD (mg/kg)		20	20	20	20	20	20	20
LOQ (mg/kg)		50	50	50	50	50	50	50
Sample Condition	Sample weight	500 g						
	Perishable/ Non-Perishable	Perishable						
	Temperature	Frozen or chilled where applicable						
	Packaging	Plastic/ commercial pack						
	Other Information	NA						
Test Method		MOH N03-012						
Reference		Hwang D.F, Chang, S.H, Shiua, C.Y, et al., High-performance liquid chromatographic determination of biogenic amines in fish implicated in food poisoning. J. Chromatography B, 693 (1997) 23-30						
Technique	Extraction	Solvent extraction						
	Instrumentation	HPLC with Photo Diode Array Detector						
	Back up Instrumentation	Nil						
Regulatory Limit		<ol style="list-style-type: none"> 1. Commission Regulation (EC) No. 2073/2005 2. No regulation stated in the Food Act 1983 (Act 281) & Regulation 						

7. Drug Residue

Analyte Group		Anthelmintic Avermectin		
Analytes		Emamectin (EMA)	Doramectin (DORA)	Ivermectin (IVER)
Food Matrix		Fish & Fish Products		
LOD ($\mu\text{g}/\text{kg}$)		0.3	2.23	2.24
LOQ ($\mu\text{g}/\text{kg}$)		1	10	10
Sample condition	Perishable / Non-Perishable	Perishable		
	Sample weight	1000 g		
	Temperature	Chilled / Frozen		
	Packaging	Clean, chemically inert and light-proof container		
	Other Information	Sample should be sent to the laboratory as soon as possible		
Test Method		MOH D03-028		
Reference		14.1 Rafidah, I., Ghanthimathi, S., Fatimah, A. B. Mahyudin, N. A. (2013). <i>Analytical Methods</i> . 5 (16), 4172-4178.		
Technique	Extraction	Solvent extraction		
	Instrumentation	LCMSMS		
	Back up Instrumentation	NIL		
Regulatory Limit		<ol style="list-style-type: none"> 1. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 2. No regulation stated in the Food Act 1983 (Act 281) & Regulation (Emamectin) 		

Analyte Group		Antibacterial						
Analytes		Danofloxacin (DANO)	Tilmicosin (TIL)	Difloxacin (DIFLO)	Trimetoprim (TMP)	Sulphadiazine (SDZ)	Sulphamono methoxine (SMM)	Sulphadimidine (SDD)
Food Matrix		Fish and Fish Product & Meat and Meat Products						
LOD (µg/kg)		0.23	3.4	0.9	1.0	0.7	0.7	0.7
LOQ (µg/kg)		10	10	5	5	2	2	2
Sample condition	Perishable / Non-Perishable	Perishable						
	Sample weight	Meat : 500g Fish : 1000g						
	Temperature	Chilled / Frozen / Room Temperature (products)						
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)						
	Other Information	Sample should be sent to the laboratory as soon as possible						
Test Method		MOH D03-030						
Reference		Stubbing, G., Bigwood, T., "The Development and Validation of a Multiclass Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS) procedure for the determination of veterinary Drug Residues in Animal Tissue Using A QuEChERS (Quick, Eacy, Cheap, Effective, Rugged and Safe) Approach". <i>Analytica Chimica Acta</i> , no 637 (2009) 68-78.						
Technique	Extraction	Solvent extraction						
	Instrumentation	LCMSMS						
	Back up Instrumentation	NIL						
Regulatory Limit		<ol style="list-style-type: none"> 1. Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations 2. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 3. Table #A-5. FDA & EPA safety levels in regulations and guidance. 4. No regulation stated in the Food Act 1983 (Act 281) & Regulations (Difloxacin, Oxolinic Acid and Ormetoprim) 						

Analyte Group		Antibacterial						
Analytes		Sulphathiozole (STZ)	Sulphadimethoxine (SDM)	Sulphaquinoxaline (SQX)	Sulphapyridine (SPD)	Sulphamerazine (SMR)	Oxolinic acid (OXA)	Ormetoprim (OMP)
Food Matrix		Fish and Fish Product & Meat and Meat Products						
LOD (µg/kg)		0.3	0.2	0.3	0.2	0.3	-	-
LOQ (µg/kg)		1	1	1	1	1	10	1
Sample condition	Perishable / Non-Perishable	Perishable						
	Sample weight	Meat : 500g Fish : 1000g						
	Temperature	Chilled / Frozen / Room Temperature (products)						
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)						
	Other Information	Sample should be sent to the laboratory as soon as possible						
Test Method		MOH D03-030						
Reference		Stubbing, G., Bigwood, T., "The Development and Validation of a Multiclass Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS) procedure for the determination of veterinary Drug Residues in Animal Tissue Using A QuEChERS (Quick, Easy, Cheap, Effective, Rugged and Safe) Approach". <i>Analytica Chimica Acta</i> , no 637 (2009) 68-78.						
Technique	Extraction	Solvent extraction						
	Instrumentation	LCMSMS						
	Back up Instrumentation	NIL						
Regulatory Limit		<ol style="list-style-type: none"> 1. Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations 2. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 3. Table #A-5. FDA & EPA safety levels in regulations and guidance. 4. No regulation stated in the Food Act 1983 (Act 281) & Regulations (Difloxacin, Oxolinic Acid and Ormetoprim) 						

Analyte Group		*Antibacterial / Sulfonamides in Egg							
Analytes		Sulphadiazine (SDZ)	Sulphathiazole (STZ)	Sulphapyridine (SPD)	Sulphamerazine (SMR)	Sulphadimidine (SDD)	Sulphamonomethoxine (SMM)	Sulphadimethoxine (SDM)	Sulphaquinoxaline (SQX)
Food Matrix		Egg							
LOD (µg/kg)		40	40	40	40	20	40	20	40
LOQ (µg/kg)		40	40	40	40	20	40	20	40
Sample condition	Perishable / Non-Perishable	Non-Perishable							
	Sample weight	500g / 500 mL							
	Temperature	Room Temperature / Chilled / Frozen (products)							
	Packaging	Clean, chemically inert and light-proof container / commercial packing							
	Other Information	Quantity needed do not include the packaging or inedible portion							
Test Method		MOH D03-008							
Reference		12.1 Heller. D.N., Ngoh. M.A., Donogue. D., Podhorniak. L., Righter H., Thomas M.H. Journal of Chromatography B, 774 (2002) 39-52.							
Technique	Extraction	Solid Phase Extraction (SPE)							
	Instrumentation	HPLC, LCMSMS							
	Back up Instrumentation	NIL							
Regulatory Limit		<ol style="list-style-type: none"> 1. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1991. 2. No regulation stated in the Food Act 1983 (Act 281) & Regulations 							

Note: * No SAMM Accreditation

Analyte Group		*Antibacterial/Sulfonamides in Honey							
Analytes		Sulphadiazine (SDZ)	Sulphamonomethoxine (SMM)	Sulphadimidine (SDD)	Sulphathiazole (STZ)	Sulphadimethoxine (SDM)	Sulphaquinoxaline (SQX)	Sulphapyridine (SPD)	Sulphamerazine (SMR)
Food Matrix		Egg							
LOD (µg/kg)		2.5	1.2	1.6	1.7	0.5	1.3	1.8	1.1
LOQ (µg/kg)		5	5	5	5	5	5	5	5
Sample condition	Perishable / Non-Perishable	Non-Perishable							
	Sample weight	250 mL / 250 g							
	Temperature	Room Temperature							
	Packaging	Amber bottle / Commercial packing							
	Other Information	Quantity needed do not include the packaging or inedible portion							
Test Method		MOH D03-022							
Reference		Pan, C., Zhang, H., Chen, S., Xu, Y., & Jiang, S. (2006). <i>Acta Chromatographica</i> , 17, 320.							
Technique	Extraction	Solvent extraction							
	Instrumentation	LCMSMS							
	Back up Instrumentation	NIL							
Regulatory Limit		No regulation stated in the Food Act 1983 (Act 281) & Regulations							

Analyte Group		Benzimidazole / Anthelmintics									
Analytes		2-amino-albendazole sulfone (2AA)	Albendazole (ALB)	Albendazole sulfone (ASF)	Albendazole Sulfoxide (ASOX)	Febantel (FEBAN)	Fenbendazole (FEN)	Flubendazole (FLUB)	Mebendazole (MEB)	Oxfendazole (OXFEN)	Thiabendazole (TBZ)
Food Matrix		Fish & Fish Products									
LOD (µg/kg)		0.29	0.22	0.32	0.38	0.83	0.76	0.47	0.21	0.70	0.48
LOQ (µg/kg)		1	1	1	1	1	1	1	1	1	1
Sample condition	Perishable / Non-Perishable	Perishable									
	Sample weight	1000g									
	Temperature	Chilled / Frozen / Room Temperature (products)									
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)									
	Other Information	Sample should be sent to the laboratory as soon as possible									
Test Method		D04-022 MOH D03-017									
Reference		Brandšteterová, E., Kubalec, P. & Bovanová, L. (2000). HPLC Ed. Nollet, L. M. L. in Food Analysis by HPLC. 2 nd Edition. Marcel Dekker Inc. New York.									
Technique	Extraction	Solvent extraction									
	Instrumentation	LCMSMS									
	Back up Instrumentation	NIL									
Regulatory Limit		<ol style="list-style-type: none"> 1. Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations 2. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 3. No regulation stated in the Food Act 1983 (Act 281) & Regulations (Mebendazole) 									

Analyte Group		Beta-agonist					
Analytes		Cimaterol (CIMA)	Clenbuterol (CLEN)	Mabuterol (MABU)	Terbutaline (TERB)	Ractopamine (RACTO)	Salbutamol (SAL)
Food Matrix		Meat and Meat Products					
LOD (µg/kg)		0.1	0.1	0.2	0.4	0.1	0.4
LOQ (µg/kg)		0.5	0.5	0.5	1	0.5	1
Sample condition	Perishable / Non-Perishable	Perishable					
	Sample weight	500 g					
	Temperature	Chilled / Frozen / Room Temperature (products)					
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)					
	Other Information	Sample should be sent to the laboratory as soon as possible					
Test Method		MOH D03-027					
Reference		Training Material from AFRL for VDR Workshop 2013: Analytical Method for β Agonist, 13 th – 16 th August 2013 (ref" VPHL_DR_W5.4_T05 based on method no. BETA_012 EURL berlin).					
Technique	Extraction	Solid Phase Extraction (SPE)					
	Instrumentation	LCMSMS					
	Back up Instrumentation	NIL					
Regulatory Limit		Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations					

Analyte Group		Chloramphenicol
Analytes		Chloramphenicol (CAP)
Food Matrix		Honey
LOD (µg/kg)		0.05
LOQ (µg/kg)		0.2
Sample condition	Perishable / Non-Perishable	Non-Perishable
	Sample weight	250 mL / 250 g
	Temperature	Room Temperature
	Packaging	Amber bottle / Commercial packing
	Other Information	Quantity needed do not include the packaging or inedible portion
Test Method		MOH D03-009
Reference		Xu, J., Ding, T., Wu, Z., Shen, C., Wu, B., Jiang, Y., Liu, F. and Wang, K. 2006. Poster B105, 5 th International Symposium on Hormone and Veterinary Drug Residue Analysis, Antwerp, Belgium, May 16-19, 2006.
Technique	Extraction	Solvent extraction
	Instrumentation	LCMSMS
	Back up Instrumentation	NIL
Regulatory Limit		Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations

Analyte Group		Multi residue of Veterinary Drug in milk							
Analytes		Albendazole (ALB)	Oxfendazole (OXFEN)	Thiabendazole (TBZ)	Chloramphenicol (CAP)	Thiamphenicol (TAP)	Florfenicol (FF)	Sulphadimidine (SDD)	Sulphadimethoxine (SDM)
Food Matrix		Milk							
LOD (µg/kg)		5.60	2.30	1.80	0.08	0.26	0.37	5.30	3.40
LOQ (µg/kg)		50	50	50	0.2	0.5	0.5	10	5
Sample condition	Perishable / Non-Perishable	Perishable							
	Sample weight	500 mL / 500 g							
	Temperature	Room Temperature / Chilled							
	Packaging	Clean, chemically inert and light-proof container / Commercial packing							
	Other Information	Sample should be sent to the laboratory as soon as possible							
Test Method		MOH D03-013							
Reference		12.1 Aguilera-Luiz. M.M., Jose Luis. M.V., Roberto R.G., Antonia G.F., Journal of Chromatography A, 1205 (2008) 10-16							
Technique	Extraction	Solvent extraction							
	Instrumentation	LCMS, LCMSMS							
	Back up Instrumentation	NIL							
Regulatory Limit		<ol style="list-style-type: none"> 1. Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations 2. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 3. No regulation stated in the Food Act 1983 (Act 281) & Regulations (Thiamphenicol and Florfenicol) 							

Analyte Group		Nitrofuran			
Analytes		Furaltadone Metabolite (AMTZ)	Furazolidone Metabolite (AOZ)	*Nitrofurantoin Metabolite (AHD)	Nitrofurazone Metabolite (SEM)
Food Matrix		Meat & Meat Products, Fish & Fish Products			
LOD (µg/kg)		0.2	0.3	-	0.5
LOQ (µg/kg)		0.5	0.5	-	1
Sample condition	Perishable / Non-Perishable	Perishable			
	Sample weight	Meat: 500g Fish: 1000g			
	Temperature	Chilled / Frozen / Room Temperature (products)			
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)			
	Other Information	Sample should be sent to the laboratory as soon as possible			
Test Method		MOH D03-006			
Reference		7.1 Leitner, Alexander, Peter Zöllner, and Wolfgang Lindner. <i>Journal of Chromatography A</i> 939, no. 1 (2001): 49-58.			
Technique	Extraction	Solid Phase Extraction (SPE)			
	Instrumentation	LCMSMS			
	Back up Instrumentation	NIL			
Regulatory Limit		<ol style="list-style-type: none"> 1. Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations 2. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 			

Analyte Group		Nitroimidazole			
Analytes		Dimetridazole metabolites (HMMNI)	Metronidazole (MNZ)	Ronidazole (RNZ)	Metronidazole Hydroxy (MNZ-OH)
Food Matrix		Meat & Meat Products, Fish & Fish Products			
LOD (µg/kg)		0.20	0.20	0.05	0.20
LOQ (µg/kg)		1.0	0.5	0.2	0.5
Sample condition	Perishable / Non-Perishable	Perishable			
	Sample weight	Meat : 500g Fish : 1000g			
	Temperature	Chilled / Frozen / Room Temperature (products)			
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)			
	Other Information	Sample should be sent to the laboratory as soon as possible			
Test Method		MOH D03-018			
Reference		Hurtaud-Pessel. D., Delepine B., Laurentie M. Journal of Chromatography A, 882 (2000) 89-98.			
Technique	Extraction	Solid Phase Extraction (SPE)			
	Instrumentation	LCMSMS			
	Back up Instrumentation	NIL			
Regulatory Limit		<ol style="list-style-type: none"> 1. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 2. No regulation stated in the Food Act 1983 (Act 281) & Regulations 			

Analyte Group		Phenicol		
Analytes		Chloramphenicol (CAP)	Thiamphenicol (TAP)	Florfenicol (FF)
Food Matrix		Meat & Meat Products, Fish & Fish Products		
LOD (µg/kg)		0.1	0.2	0.2
LOQ (µg/kg)		0.2	0.5	0.5
Sample condition	Perishable / Non-Perishable	Perishable		
	Sample weight	Meat : 500g Fish : 1000g		
	Temperature	Chilled / Frozen / Room Temperature (products)		
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)		
	Other Information	Sample should be sent to the laboratory as soon as possible		
Test Method		MOH D03-021		
Reference		S. Zhang, Z. Liu, X. Guo, L. Cheng, Z. Wang, J. Shen. Journal of Chromatography B, 875 (2008) 399-404.		
Technique	Extraction	Solid Phase Extraction (SPE)		
	Instrumentation	LCMSMS		
	Back up Instrumentation	NIL		
Regulatory Limit		<ol style="list-style-type: none"> 1. Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations 2. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 3. No regulation stated in the Food Act 1983 (Act 281) & Regulations (Thiamphenicol) 		

Analyte Group		Quinolone						
Analytes		Ciprofloxacin (CIPRO)	Enrofloxacin (ENRO)	Danofloxacin (DANO)	Sarafloxacin (SARA)	Marbofloxacin (MARBO)	Norfloxacin (NORFLO)	*Difloxacin (DIFLO)
Food Matrix		Fish and Fish Product & Meat and Meat Products						
LOD (µg/kg)		2.6	2.6	2.3	2.0	2.7	1.7	3.0
LOQ (µg/kg)		5	5	5	5	5	5	10
Sample condition	Perishable / Non-Perishable	Perishable						
	Sample weight	Meat: 500g Fish: 1000g						
	Temperature	Chilled / Frozen / Room Temperature (products)						
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)						
	Other Information	Sample should be sent to the laboratory as soon as possible						
Test Method		MOH D03-020						
Reference		8.1 Marni Sapar. Master thesis. U Malaya. 2010 pg 26-84.						
Technique	Extraction	Solid Phase Extraction (SPE)						
	Instrumentation	LCMSMS						
	Back up Instrumentation	NIL						
Regulatory Limit		<ol style="list-style-type: none"> 1. Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations 2. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1990 3. No regulation stated in the Food Act 1983 (Act 281) & Regulations (Ciprofloxacin, Marbofloxacin and Norfloxacin) 						

Analyte Group		Tetracycline			
Analytes		Tetracycline (TC)	Oxytetracycline (OTC)	Doxycycline (DC)	Chlortetracycline (CTC)
Food Matrix		Meat & Meat Products, Fish & Fish Products			
LOD (µg/kg)		9	8	8	6
LOQ (µg/kg)		30	30	30	30
Sample condition	Perishable / Non-Perishable	Perishable			
	Sample weight	Meat : 500g Fish : 1000g			
	Temperature	Chilled / Frozen / Room Temperature (products)			
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)			
	Other Information	Sample should be sent to the laboratory as soon as possible			
Test Method		MOH D03-003			
Reference		14.1 AOAC Official Method of Analysis No. 995.09 (2000). Chapter 23, p. 20.			
Technique	Extraction	Solid Phase Extraction (SPE)			
	Instrumentation	HPLC, LCMSMS			
	Back up Instrumentation	NIL			
Regulatory Limit		<ol style="list-style-type: none"> 1. Fifteenth A Schedule (Regulation 40) Food Act 1983 (Act 281) & Regulations 2. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1991 3. Table #A-5. FDA & EPA safety levels in regulations and guidance. <ol style="list-style-type: none"> 1. No regulation stated in the Food Act 1983 & Regulation (Chlortetracycline) 			

Analyte Group		Triphenylmethane Dyes			
Analytes		Crystal Violet (CV)	Leucrytal Violet (LCV)	Malachite Green (MG)	Leucomalachite Green (LMG)
Food Matrix		Fish & Fish Products			
LOD (µg/kg)		0.17	0.19	0.15	0.23
LOQ (µg/kg)		0.5	0.5	0.5	0.5
Sample condition	Perishable / Non-Perishable	Perishable			
	Sample weight	1000 g			
	Temperature	Chilled / Frozen / Room Temperature (products)			
	Packaging	Clean, chemically inert and light-proof container / Commercial packing (products)			
	Other Information	Sample should be sent to the laboratory as soon as possible			
Test Method		MOH D03-029			
Reference		Hurtaud-Pessel D., Couedor P., Verdon E. (2011), <i>Journal of Chromatography A</i> , 1218(2011)1632-1645			
Technique	Extraction	Solvent extraction			
	Instrumentation	LCMSMS			
	Back up Instrumentation	NIL			
Regulatory Limit		<ol style="list-style-type: none"> 1. COUNCIL REGULATION (EEC) No 2377/90 of 26 June 1991 2. No regulation stated in the Food Act 1983 (Act 281) & Regulations 			

8. Pesticide Residue

Analyte Group		Carbamates					
Analytes		Bendiocarb	Carbaryl	Carbendazim	Fenobucarb	Pirimicarb	Propamocarb
Food Matrix		Fruit and Vegetables					
LOD (mg/kg)		0.001	0.001	0.001	0.003	0.001	0.003
LOQ (mg/kg)		0.002	0.002	0.002	0.01	0.002	0.01
Sample condition	Sample weight	1kg					
	Perishable/ Non-Perishable	Perishable					
	Temperature	Room Temperature					
	Packaging	Brown paper/ plastic bags with ventilation hole					
	Other Information	None					
Test Method		MOH F03-011					
Reference		Hiemstra et al., 2002. Journal of Chromatography A, 972(2), 231-239.					
Technique	Extraction	Solvent Extraction					
	Instrumentation	LC-MS/MS					
	Back up Instrumentation	NA					
MRL (Reference) /Guideline (Reference)		1. (Regulation 41-16 th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/					

Analyte Group		Dithiocarbamates
Analytes		<i>Dithiocarbamates, express as CS₂</i>
Food Matrix		Fruit and Vegetables
LOD (mg/kg)		0.02
LOQ (mg/kg)		0.05
Sample condition	Sample weight	1kg
	Perishable/ Non-Perishable	Perishable
	Temperature	Room Temperature
	Packaging	Brown paper/ plastic bags with ventilation hole
	Other Information	None
Test Method		MOH F03-005
Reference		Jongen et al., 1991. Journal of Chromatographic Science, 29:292-297
Technique	Extraction	Solvent Extraction
	Instrumentation	GCMS
	Back up Instrumentation	NA
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/

Analyte Group		Organophosphorus							
Analytes		Chlorpyrifos	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenthion	Malathion	Parathion Ethyl
Food Matrix		Milk							
LOD (mg/kg)		0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
LOQ (mg/kg)		0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Sample condition	Sample weight	500g							
	Perishable/ Non-Perishable	Perishable							
	Temperature	Room Temperature / Chilled							
	Packaging	Clean and chemically inert container/ Commercial packaging							
	Other Information	None							
Test Method		MOH F03-009							
Reference		Salas, J.H., et al. 2003, Journal of Agricultural and Food Chemistry, 51:4468-4471.							
Technique	Extraction	QuEChERS							
	Instrumentation	GC-FPD, GC-MS/MS							
	Back up Instrumentation	NA							
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> 1. (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 							

Analyte Group		Organophosphorus								
Analytes		Acephate	Azinphos-methyl	Bromophos-methyl	Chlorfenvinphos	Coumaphos	Demeton-s-methyl	Dichlofenthion	Dimethoate	Ethoprophos
Food Matrix		Pome Fruit								
LOD (mg/kg)		0.041	0.078	0.022	0.013	0.023	0.03	0.01	0.007	0.008
LOQ (mg/kg)		0.10	0.30	0.07	0.04	0.08	0.10	0.04	0.02	0.03
Sample condition	Sample weight	1kg								
	Perishable/ Non-Perishable	Perishable								
	Temperature	Room Temperature								
	Packaging	Brown paper/ plastic bags with ventilation hole								
	Other Information	None								
Test Method		MOH F03-010								
Reference		Lian-Kuet Chai, Nur-Dzaina Zaidel and Hans Christian Brunn Hansen, 2011. Journal of Food Chemistry, 131 (2012): 611-616.								
Technique	Extraction	QuEChERS								
	Instrumentation	GC-FPD, GC-ECD, GC-MS/MS								
	Back up Instrumentation	GC-MS/MS								
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 								

Analyte Group		Organophosphorus									
Analytes		Fenamiphos	Fenclorphos	Methamidophos	Monocrotophos	Omethoate	Phorate	Phosmet	Pirimiphos-ethyl	Triazophos	Trichlorfon
Food Matrix		Pome Fruit (continued)									
LOD (mg/kg)		0.014	0.005	0.027	0.039	0.095	0.012	0.035	0.02	0.007	0.02
LOQ (mg/kg)		0.05	0.02	0.09	0.10	0.30	0.04	0.10	0.07	0.03	0.07
LOQ (mg/kg)	Sample weight	1kg									
	Perishable/ Non-Perishable	Perishable									
	Temperature	Room Temperature									
	Packaging	Brown paper/ plastic bags with ventilation hole									
	Other Information	None									
Test Method		MOH F03-010									
Reference		Lian-Kuet Chai, Nur-Dzaina Zaidel and Hans Christian Brunn Hansen, 2011. Journal of Food Chemistry, 131 (2012): 611-616.									
Technique	Extraction	QuEChERS									
	Instrumentation	GC-FPD, GC-ECD, GC-MS/MS									
	Back up Instrumentation	GC-MS/MS									
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 									

Analyte Group		Organophosphorus								
Analytes		Acephate	Azinphos-methyl	Bromophos-methyl	Chlorfenvinphos	Coumaphos	Demeton-s-methyl	Dichlofenthion	Dimethoate	Ethoprophos
Food Matrix		Brassica (cole) vegetables								
LOD (mg/kg)		0.12	0.17	0.01	0.05	0.12	0.3	0.005	0.01	0.01
LOQ (mg/kg)		0.40	0.60	0.03	0.20	0.40	1.00	0.02	0.03	0.02
Sample condition	Sample weight	1kg								
	Perishable/ Non-Perishable	Perishable								
	Temperature	Room Temperature								
	Packaging	Brown paper/ plastic bags with ventilation hole								
	Other Information	None								
Test Method		MOH F03-010								
Reference		Lian-Kuet Chai, Nur-Dzaina Zaidel and Hans Christian Brunn Hansen, 2011. Journal of Food Chemistry, 131 (2012): 611-616.								
Technique	Extraction	QuEChERS								
	Instrumentation	GC-FPD, GC-ECD, GC-MS/MS								
	Back up Instrumentation	GC-MS/MS								
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 								

Analyte Group		Organophosphorus									
Analytes		Fenamiphos	Fenclorphos	Methamidophos	Monocrotophos	Omethoate	Phorate	Phosmet	Pirimiphos-ethyl	Triazophos	Trichlorfon
Food Matrix		Brassica (cole) vegetables (continued)									
LOD (mg/kg)		0.01	0.003	0.02	0.21	0.12	0.004	0.08	0.01	0.03	0.01
LOQ (mg/kg)		0.05	0.02	0.06	1.00	0.40	0.02	0.30	0.04	0.10	0.04
Sample condition	Sample weight	1kg									
	Perishable/Non-Perishable	Perishable									
	Temperature	Room Temperature									
	Packaging	Brown paper/ plastic bags with ventilation hole									
	Other Information	None									
Test Method		MOH F03-010									
Reference		Lian-Kuet Chai, Nur-Dzaina Zaidel and Hans Christian Brunn Hansen, 2011. Journal of Food Chemistry, 131 (2012): 611-616.									
Technique	Extraction	QuEChERS									
	Instrumentation	GC-FPD, GC-ECD, GC-MS/MS									
	Back up Instrumentation	GC-MS/MS									
MRL (Reference) /Guideline (Reference)		1. (Regulation 41-16 th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/									

Analyte Group		Organophosphorus										
Analytes		Azinphos-ethyl	Carbofenthion	Chlorpyrifos	Chlorpyrifos-methyl	Cyanofenphos	Diazinon	Dichlorvos	Ethion	Fenitrothion	Fensulfothion	Fenthion
Food Matrix		Leafy Vegetables										
LOD (mg/kg)		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LOQ (mg/kg)		0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
Sample condition	Sample weight	1kg										
	Perishable/ Non-Perishable	Perishable										
	Temperature	Room Temperature										
	Packaging	Brown paper/ plastic bags with ventilation hole										
	Other Information	None										
Test Method		MOH F03-010										
Reference		Lian-Kuet Chai, Nur-Dzaina Zaidel and Hans Christian Brunn Hansen, 2011. A rapid multi-residue method for determination of pesticide residues in choy sum, yardlong beans and aubergines. Journal of Food Chemistry, 131 (2012): 611-616.										
Technique	Extraction	QuEChERS										
	Instrumentation	GC-FPD, GC-ECD										
	Back up Instrumentation	GC-MS/MS										
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 										

Analyte Group		Organophosphorus											
Analytes		Formothion	Malathion	Methidathion	Parathion-ethyl	Parathion-methyl	Phenthoate	Phosalone	Pirimiphos-methyl	Profenophos	Protiofos	Quinalphos	Tolclophos-methyl
Food Matrix		Leafy Vegetables (continued)											
LOD (mg/kg)		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LOQ (mg/kg)		0.01	0.01	0.01	0.03	0.04	0.02	0.03	0.01	0.01	0.01	0.01	0.02
Sample condition	Sample weight	1kg											
	Perishable/ Non-Perishable	Perishable											
	Temperature	Room Temperature											
	Packaging	Brown paper/ plastic bags with ventilation hole											
	Other Information	None											
Test Method		MOH F03-010											
Reference		Lian-Kuet Chai, Nur-Dzaina Zaidel and Hans Christian Brunn Hansen, 2011. A rapid multi-residue method for determination of pesticide residues in choy sum, yardlong beans and aubergines. Journal of Food Chemistry, 131 (2012) : 611-616.											
Technique	Extraction	QuEChERS											
	Instrumentation	GC-FPD, GC-ECD, GC-MS/MS											
	Back up Instrumentation	GC-MS/MS											
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 											

Analyte Group		Organophosphorus								
Analytes		Azinphos-ethyl	Chlorfenvinphos	Diazinon	Methidathion	Parathion-ethyl	Parathion-methyl	Pirimiphos-methyl	Profenofos	Triazophos
Food Matrix		Cooking Oil								
LOD (mg/kg)		0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
LOQ (mg/kg)		0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Sample condition	Sample weight	1kg/ 1L								
	Perishable/ Non-Perishable	Non-Perishable								
	Temperature	Room Temperature								
	Packaging	Commercial packaging/ Plastic								
	Other Information	None								
Test Method		MOH F03-014								
Reference		Validation Data of 127 Pesticides Using a Multiresidue Method by LC-MS/MS and GC-MS/MS in Olive Oil. European Union Reference Laboratory. 2012								
Technique	Extraction	Solid Phase Extraction (SPE)								
	Instrumentation	GC-FPD, GC-ECD, GC-MS/MS								
	Back up Instrumentation	GC-MS/MS								
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 								

Analyte Group		Organophosphorus										
Analytes		Dichlorvos	Diazinon	Formothion	Parathion Methyl	Chlorpyrifos Methyl	Tolclophos Methyl	Pirimiphos Methyl	Fenitrothion	Malathion	Parathion	Phenthoate
Food Matrix		Fruits and vegetables (continued) High water content (Fruiting vegetables/cucurbits)										
LOD (mg/kg)		0.002	0.002	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.002	0.001
LOQ (mg/kg)		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sample condition	Sample weight	1kg										
	Perishable/ Non-Perishable	Perishable										
	Temperature	Room Temperature										
	Packaging	Brown paper/ plastic bags with ventilation hole										
	Other Information	None										
Test Method		MOH F03-007										
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431										
Technique	Extraction	QuEChERS										
	Instrumentation	GC-MS/MS										
	Back up Instrumentation	NA										
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> 1. (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 										

Analyte Group		<i>Organophosphorus</i>										
Analytes		Quinalphos	Methidathion	Bromophos-ethyl	Profenophos	Fensulfothion	Ethion	Carbofenthion	Cyanofenphos	Phosalone	Azinphos Ethyl	Chlorpyrifos *
Food Matrix		Fruits and vegetables (continued) High water content (Fruiting vegetables/cucurbits)										
LOD (mg/kg)		0.001	0.001	0.001	0.002	0.005	0.001	0.001	0.004	0.002	0.002	0.002
LOQ (mg/kg)		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sample condition	Sample weight	1kg										
	Perishable/ Non-Perishable	Perishable										
	Temperature	Room Temperature										
	Packaging	Brown paper/ plastic bags with ventilation hole										
	Other Information	None										
Test Method		MOH F03-007										
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431										
Technique	Extraction	QuEChERS										
	Instrumentation	GC-MS/MS										
	Back up Instrumentation	NA										
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 										

Analyte Group		Organophosphorus									
Analytes		Metamidophos	Omethoate	Demeton-S-Methyl	Dicrotophos	Monocrotophos	Dimethoate	Dichlofenthion	Fenclorphos	Bromophos	Pirimiphos-ethyl
Food Matrix		Cereal & Cereal Products									
LOD (mg/kg)		0.005	0.007	0.01	0.006	0.005	0.004	0.002	0.004	0.006	0.004
LOQ (mg/kg)		0.02	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sample condition	Sample weight	1kg									
	Perishable/ Non-Perishable	Non-Perishable									
	Temperature	Room Temperature									
	Packaging	Commercial packaging/ Plastic									
	Other Information	None									
Test Method		MOH F03-007									
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431									
Technique	Extraction	QuEChERS									
	Instrumentation	GC-MS/MS									
	Back up Instrumentation	NA									
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 									

Analyte Group		Organophosphorus									
Analytes		Chlorfenvinphos	Prothiophos	Triazophos	Phosmet	Azinphos-methyl	Coumaphos	Diazinon	Formothion	Parathion-methyl	Chlorpyrifos-methyl
Food Matrix		Cereal & Cereal Products (continued)									
LOD (mg/kg)		0.003	0.002	0.004	0.006	0.01	0.003	0.001	0.002	0.004	0.003
LOQ (mg/kg)		0.01	0.01	0.01	0.01	0.04	0.01	0.005	0.01	0.01	0.01
Sample condition	Sample weight	1kg									
	Perishable/ Non-Perishable	Non-Perishable									
	Temperature	Room Temperature									
	Packaging	Commercial packaging/ Plastic									
	Other Information	None									
Test Method		MOH F03-007									
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431									
Technique	Extraction	QuEChERS									
	Instrumentation	GC-MS/MS									
	Back up Instrumentation	NA									
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> 1. (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 									

Analyte Group		Organophosphorus									
Analytes		Tolclofos-methyl	Pirimiphos-methyl	Fenitrothion	Malathion	Chlorpyrifos	Parathion	Phenthoate	Quinalphos	Methidathion	Bromophos-ethyl
Food Matrix		Cereal & Cereal Products (continued)									
LOD (mg/kg)		0.002	0.003	0.003	0.002	0.002	0.003	0.0013	0.001	0.004	0.006
LOQ (mg/kg)		0.01	0.01	0.01	0.005	0.01	0.01	0.005	0.005	0.01	0.01
Sample condition	Sample weight	1kg									
	Perishable/ Non-Perishable	Non-Perishable									
	Temperature	Room Temperature									
	Packaging	Commercial packaging/ Plastic									
	Other Information	None									
Test Method		MOH F03-007									
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431									
Technique	Extraction	QuEChERS									
	Instrumentation	GC-MS/MS									
	Back up Instrumentation	NA									
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> 1. (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 									

Analyte Group		Organophosphorus						
Analytes		Profenofos	Fensulfothion	Ethion	Carbophenothion	Cyanofenphos	Phosalone	Azinphos-ethyl
Food Matrix		Cereal & Cereal Products (continued)						
LOD (mg/kg)		0.005	0.003	0.003	0.002	0.002	0.003	0.003
LOQ (mg/kg)		0.01	0.01	0.01	0.01	0.005	0.01	0.01
Sample condition	Sample weight	1kg						
	Perishable/ Non-Perishable	Non-Perishable						
	Temperature	Room Temperature						
	Packaging	Commercial packaging/ Plastic						
	Other Information	None						
Test Method		MOH F03-007						
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431						
Technique	Extraction	QuEChERS						
	Instrumentation	GC-MS/MS						
	Back up Instrumentation	NA						
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 						

Analyte Group		Organochlorine							
Analytes		Aldrin	Chlordane	DDT	Dieldrin	Gamma HCH	Heptachlor	Hexachlorobenzene	Metoxychlor
Food Matrix		Water							
LOD (mg/kg)		0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
LOQ (mg/kg)		0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Sample condition	Sample weight	5L							
	Perishable/ Non-Perishable	Non-Perishable							
	Temperature	4-10 ⁰ C							
	Packaging	Glass Bottle / Commercial packaging							
	Other Information	None							
Test Method		MOH F03-004							
Reference		Guideline for residues in monitoring in the European Union Second Edition (1999/ 2000). Quality Control procedure for pesticide residues analysis							
Technique	Extraction	Solid Phase Extraction (SPE)							
	Instrumentation	GC-ECD, GC-MS/MS							
	Back up Instrumentation	NA							
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 							

Analyte Group		Organochlorine							
Analytes		Aldrin	Chlordane	DDT	Dieldrin	Gamma HCH	Heptachlor	Hexachlorobenzene	Methoxychlor
Food Matrix		Water (continued)							
LOD (mg/kg)		0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
LOQ (mg/kg)		0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Sample condition	Sample weight	5L							
	Perishable/ Non-Perishable	Non-Perishable							
	Temperature	4-10 ⁰ C							
	Packaging	Glass Bottle / Commercial packaging							
	Other Information	None							
Test Method		MOH F03-004							
Reference		Guideline for residues in monitoring in the European Union Second Edition (1999/ 2000). Quality Control procedure for pesticide residues analysis							
Technique	Extraction	Solid Phase Extraction (SPE)							
	Instrumentation	GC-ECD, GC-MS/MS							
	Back up Instrumentation	NA							
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 							

Analyte Group		Organochlorine												
Analytes		2,4'-DDT	4,4'-DDD	4,4'-DDE	Alpha-endosulfan	Beta-endosulfan	Cypermethrin	Deltamethrin	Dichloran	Dieldrin	Endosulfan sulfate	Fenvalerate	Gamma-HCH	Hexachlorobenzene
Food Matrix		Tea												
LOD (mg/kg)		0.01	0.01	0.01	0.01	0.01	0.2	0.2	0.01	0.01	0.01	0.2	0.01	0.01
LOQ (mg/kg)		0.05	0.05	0.05	1	1	1	1	0.05	0.05	1	0.5	0.05	0.05
Sample condition	Sample weight	500g												
	Perishable/ Non-Perishable	Non-Perishable												
	Temperature	Room Temperature												
	Packaging	Brown paper/ Plastic/ Commercial packaging												
	Other Information	None												
Test Method		MOH F03-008												
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431												
Technique	Extraction	QuEChERS												
	Instrumentation	GC-ECD, GC-MS/MS												
	Back up Instrumentation	NA												
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 												

Analyte Group		Organochlorine													
Analytes		4,4- DDD	4,4- DDE	4,4- DDT	Aldrin	Alpha - BHC	Alpha- chlordane	Beta- BHC	Delta- BHC	Dieldrin	Endrin	Gamma- BHC	Gamma- chlordane	Heptachlor	Heptachlor- exo-epoxide
Food Matrix		Fish, Meat and Its Products													
LOD (mg/kg)		0.004	0.003	0.004	0.003	0.003	0.003	0.004	0.003	0.003	0.004	0.003	0.003	0.003	0.003
LOQ (mg/kg)		0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Sample condition	Sample weight	1kg (except fish or meat products 500g)													
	Perishable/ Non-Perishable	Perishable													
	Temperature	Frozen/Chilled													
	Packaging	Aluminium foil and plastic/ plastic													
	Other Information	None													
Test Method		MOH F03-009													
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431													
Technique	Extraction	QuEChERS													
	Instrumentation	GC-ECD, GC-MS/MS													
	Back up Instrumentation	NA													
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 													

Analyte Group		Organochlorine										
Analytes		2,4'-DDT	4,4'-DDE	4,4'-DDT	Aldrin	Dicloran	Dieldrin	Endrin	Gamma-HCH	Heptachlor	Quintozene	Triflumuron
Food Matrix		Pome Fruit										
LOD (mg/kg)		0.02	0.02	0.02	0.01	0.04	0.02	0.02	0.01	0.01	0.02	0.06
LOQ (mg/kg)		0.06	0.07	0.05	0.03	0.10	0.06	0.07	0.03	0.05	0.08	0.20
Sample condition	Sample weight	1kg										
	Perishable/ Non-Perishable	Perishable										
	Temperature	Room Temperature										
	Packaging	Brown paper/ plastic bags with ventilation hole										
	Other Information	None										
Test Method		MOH F03-010										
Reference		Lian-Kuet Chai, Nur-Dzaina Zaidel and Hans Christian Brunn Hansen, 2011. Journal of Food Chemistry, 131 (2012) : 611-616.										
Technique	Extraction	QuEChERS										
	Instrumentation	GC-ECD, GC-MS/MS										
	Back up Instrumentation	NA										
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 										

Analyte Group		Organochlorine										
Analytes		2,4'-DDT	4,4'-DDE	4,4'-DDT	Aldrin	Dicloran	Dieldrin	Endrin	Gamma-HCH	Heptachlor	Quintozene	Triflumuron
Food Matrix		Fruit and Vegetables										
LOD (mg/kg)		0.02	0.02	0.02	0.01	0.04	0.02	0.02	0.01	0.01	0.02	0.06
LOQ (mg/kg)		0.06	0.07	0.05	0.03	0.10	0.06	0.07	0.03	0.05	0.08	0.20
Sample condition	Sample weight	1kg										
	Perishable/ Non-Perishable	Perishable										
	Temperature	Room Temperature										
	Packaging	Brown paper/ plastic bags with ventilation hole										
	Other Information	None										
Test Method		MOH F03-010										
Reference		Lian-Kuet Chai, Nur-Dzaina Zaidel and Hans Christian Brunn Hansen, 2011. Journal of Food Chemistry, 131 (2012) : 611-616.										
Technique	Extraction	QuEChERS										
	Instrumentation	GC-ECD, GC-MS/MS										
	Back up Instrumentation	NA										
MRL (Reference) /Guideline (Reference)		1. (Regulation 41-16 th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/										

Analyte Group		Organochlorine										
Analytes		2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Alpha-HCH	Beta-HCH	Dieldrin	Endrin	Gamma-HCH	Heptachlor
Food Matrix		Milk										
LOD (mg/kg)		0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
LOQ (mg/kg)		0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Sample condition	Sample weight	500g										
	Perishable/ Non-Perishable	Perishable										
	Temperature	Room Temperature / Chilled										
	Packaging	Clean and chemically inert container/ Commercial packaging										
	Other Information	None										
Test Method		MOH F03-009										
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431										
Technique	Extraction	QuEChERS										
	Instrumentation	GC-ECD, GC-MS/MS										
	Back up Instrumentation	NA										
MRL (Reference) /Guideline (Reference)		1. (Regulation 41-16 th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/										

Analyte Group		Organochlorine									
Analytes		4,4'-DDE	Aldrin	Alpha-endosulfan	Beta-endosulfan	Dieldrin	Endosulfan sulfate	Endrin	Gamma-HCH	Heptachlor	Hexachlorobenzene
Food Matrix		Cooking Oil									
LOD (mg/kg)		0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
LOQ (mg/kg)		0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Sample condition	Sample weight	1kg/ 1L									
	Perishable/ Non-Perishable	Non-Perishable									
	Temperature	Room Temperature									
	Packaging	Commercial packaging/ Plastic									
	Other Information	None									
Test Method		MOH F03- 014									
Reference		Validation Data of 127 Pesticides Using a Multiresidue Method by LC-MS/MS and GC-MS/MS in Olive Oil. European Union Reference Laboratory.2012									
Technique	Extraction	Solid Phase Extraction									
	Instrumentation	GC-ECD, GC-MS/MS									
	Back up Instrumentation	NA									
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 									

Analyte Group		Organochlorine							
Analytes		Hexachlorobenzene	Beta-BHC	Delta-BHC	Propanil	Triadimefon	Heptachlor endo-epoxide	Chlordane-trans (gamma)	Alpha-endosulfan
Food Matrix		Fruits and vegetables High water content (Fruiting vegetables/cucurbits)							
LOD (mg/kg)		0.005	0.002	0.002	0.002	0.001	0.001	0.001	0.016
LOQ (mg/kg)		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.10
Sample condition	Sample weight	1kg							
	Perishable/ Non-Perishable	Perishable							
	Temperature	Room Temperature							
	Packaging	Brown paper/ plastic bags with ventilation hole							
	Other Information	None							
Test Method		MOH F03- 007							
Reference		Anastassiades, M., J.Lehotay, S. 2003. Fast and easy multiresidue method employing acetonitrile extraction/partitioning and "dispersive solid-phase extraction" for the determination of pesticide residues in produce. <i>Journal of AOAC International</i> Vol. 86, No. 2 : 412-431.							
Technique	Extraction	QuEChERS							
	Instrumentation	GC-MS/MS							
	Back up Instrumentation	NA							
MRL (Reference) /Guideline (Reference)		1. (Regulation 41-16 th Schedule) Food Act 1983 (Act 281) and Regulations 2. CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/							

Analyte Group		Organochlorine							
Analytes		Alpha-BHC	Beta-BHC	Delta-BHC	Hexachlorobenzene	Dicloran	Gamma-BHC	Quintozene	Propanil
Food Matrix		Cereal & Cereal Products							
LOD (mg/kg)		0.004	0.001	0.006	0.004	0.003	0.004	0.003	0.002
LOQ (mg/kg)		0.01	0.005	0.01	0.01	0.01	0.01	0.01	0.01
Sample condition	Sample weight	1kg							
	Perishable/ Non-Perishable	Non-Perishable							
	Temperature	Room Temperature							
	Packaging	Commercial packaging/ Plastic							
	Other Information	None							
Test Method		MOH F03-007							
Reference		Anastassiades, M., J.Lehotay, S. 2003. Fast and easy multiresidue method employing acetonitrile extraction/partitioning and "dispersive solid-phase extraction" for the determination of pesticide residues in produce. <i>Journal of AOAC International</i> Vol. 86, No. 2 : 412-431.							
Technique	Extraction	QuEChERS							
	Instrumentation	GC-MS/MS							
	Back up Instrumentation	NA							
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 							

Analyte Group		Organochlorine							
Analytes		Heptachlor	Aldrin	Triadimefon	Heptachlor endo-epoxide	Chlordane-trans (gamma)	Chlordane-cis (alpha)	2,4-DDD	4,4-DDE
Food Matrix		Cereal & Cereal Products (continued)							
LOD (mg/kg)		0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.002
LOQ (mg/kg)		0.005	0.005	0.01	0.005	0.005	0.005	0.005	0.01
Sample condition	Sample weight	1kg							
	Perishable/ Non-Perishable	Non-Perishable							
	Temperature	Room Temperature							
	Packaging	Commercial packaging/ Plastic							
	Other Information	None							
Test Method		MOH F03-007							
Reference		Anastassiades, M., J.Lehotay, S. 2003. Fast and easy multiresidue method employing acetonitrile extraction/partitioning and "dispersive solid-phase extraction" for the determination of pesticide residues in produce. <i>Journal of AOAC International</i> Vol. 86, No. 2 : 412-431.							
Technique	Extraction	QuEChERS							
	Instrumentation	GC-MS/MS							
	Back up Instrumentation	NA							
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 							

Analyte Group		Organochlorine								
Analytes		Dieldrin	Endrin	Beta-endosulfan	4,4- DDD	2,4- DDT	Endosulfan sulfate	Methoxychlor	Tetradifon	Mirex
Food Matrix		Cereal & Cereal Products (continue)								
LOD (mg/kg)		0.001	0.003	0.003	0.003	0.003	0.002	0.002	0.001	0.001
LOQ (mg/kg)		0.005	0.01	0.01	0.01	0.01	0.01	0.01	0.005	0.005
Sample condition	Sample weight	1kg								
	Perishable/ Non-Perishable	Non-Perishable								
	Temperature	Room Temperature								
	Packaging	Commercial packaging/ Plastic								
	Other Information	None								
Test Method		MOH F03-007								
Reference		Anastassiades, M., J.Lehotay, S. 2003. Fast and easy multiresidue method employing acetonitrile extraction/partitioning and "dispersive solid-phase extraction" for the determination of pesticide residues in produce. <i>Journal of AOAC International</i> Vol. 86, No. 2 : 412-431.								
Technique	Extraction	QuEChERS								
	Instrumentation	GC-MS/MS								
	Back up Instrumentation	NA								
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 								

Analyte Group		Synthetic Pyrethroid										
Analytes		Cypermethrin	Deltamethrin	Fenvalerate	Cyfluthrin	Cypermethrin	Fenvalerate	Permethrin	Cyfluthrin	Cypermethrin	Fenvalerate	Permethrin
Food Matrix		Tea			Pome Fruit			Fruit and Vegetables				
LOD (mg/kg)		0.3	0.2	0.2	0.02	0.03	0.06	0.04	0.02	0.03	0.06	0.06
LOQ (mg/kg)		1	1	0.5	0.08	0.09	0.2	0.14	0.08	0.09	0.2	0.2
Sample condition	Sample weight	500g			1kg			1kg				
	Perishable/ Non-Perishable	Non-Perishable										
	Temperature	Room Temperature										
	Packaging	Brown paper/ Plastic/ Commercial packaging										
	Other Information	None										
Test Method		MOH F03-008			MOH F03-010			MOH F03-010				
Reference		Anastassiades, M., J. Lehotay, S. 2003. Journal of AOAC International Vol. 86, No. 2 : 412-431										
Technique	Extraction	QuEChERS										
	Instrumentation	GV-ECD, GC-MS/MS										
	Back up Instrumentation	NA										
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 										

Analyte Group		Synthetic Pyrethroid										
Analytes		Permethrin	Cyfluthrin	Cypermethrin	Fenvalerate	Deltamethrin	Permethrin	Cyfluthrin	Cypermethrin	Fenvalerate	Deltamethrin	
Food Matrix		<i>Fruits and vegetables</i> High water content (Fruiting vegetables/cucurbits)				<i>Cereal & Cereal Products</i>						
LOD (mg/kg)		0.001	0.003	0.009	0.004	0.004	0.002	0.003	0.004	0.002	0.004	
LOQ (mg/kg)		0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Sample condition	Sample weight	1kg										
	Perishable/ Non-Perishable	Perishable					Non-Perishable					
	Temperature	Room Temperature										
	Packaging	Brown paper/ plastic bags with ventilation hole					Commercial packaging/ Plastic					
	Other Information	None										
Test Method		MOH F03-007					MOH F03-007					
Reference		Anastassiades, M., J.Lehotay, S. 2003. Fast and easy multiresidue method employing acetonitrile extraction/partitioning and "dispersive solid-phase extraction" for the determination of pesticide residues in produce. <i>Journal of AOAC International</i> Vol. 86, No. 2 : 412-431.					Validation Data of 127 Pesticides Using a Multiresidue Method by LC-MS/MS and GC-MS/MS in Olive Oil. European Union Reference Laboratory.2012					
Technique	Extraction	QuEChERS										
	Instrumentation	GC-MS/MS										
	Back up Instrumentation	NA										
MRL (Reference) /Guideline (Reference)		<ol style="list-style-type: none"> (Regulation 41-16th Schedule) Food Act 1983 (Act 281) and Regulations CODEX Alimentarius https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/ 										

9. Standard and Nutritional Labelling (Standard dan Pelabelan Pemakanan)

Analyte Group		Alcohol
Analytes		Methanol
Food Matrix		Alcoholic beverage
LOD (mg/L)		0.2
LOQ (mg/L)		0.6
Sample condition	Sample weight	250 mL
	Perishable / Non-Perishable	Non-Perishable
	Temperature	Room Temperature
	Packaging	Original Container / Commercial Packaging
	Other Information	None
Test Method		MOH J03-032
Reference		Fat and oils derivatives – Fatty Acid Methyl Esters (FAME) - Determination of Methanol Content. European Standard EN14110:2003, ICS67.200.10, April 2003.
Technique	Extraction	NA
	Instrumentation	GC with Flame Ionization Detector
	Back up Instrumentation	Nil
Regulatory Limit		No regulation stated in the Food Act 1983 (Act 281) & Regulations

Analyte Group		Caffeine	
Analytes		Caffeine	Caffeine
Food Matrix		Coffee products	Beverages
LOD (Unit)		0.02 %	2 mg/L
LOQ (Unit)		0.02 %	2 mg/L
Sample condition	Sample weight	250 g	250 mL
	Perishable / Non-Perishable	Non-Perishable	
	Temperature	Room Temperature	
	Packaging	Original Container / Commercial Packaging	
	Other Information	None	
Test Method		MOH J03-016	
Reference		1) DiNunzio, J.E. (1985), Journal of Chemical Education, 62, 5, p 446. 2) Galasko, G.F. et al (1989), Fd Chem Tox, 27, 1, p 49	
Technique	Extraction	Solvent Extraction	
	Instrumentation	HPLC with Photo Diode Array Detector	
	Back up Instrumentation	Nil	
Regulatory Limit		(Regulation 262, 266, 267& 268) Food Act 1983 (Act 281) & Regulations	(Regulation 354) Food Act 1983 (Act 281) & Regulations

Analyte Group		Melamine	
Analytes		Melamine	
Food Matrix		Biscuit	Milk powder
LOD (mg/kg)		0.01	0.003
LOQ (mg/kg)		0.01	0.01
Sample condition	Sample weight	250 g	
	Perishable / Non-Perishable	Non-Perishable	
	Temperature	Room Temperature	
	Packaging	Original Container / Commercial Packaging	
	Other Information	None	
Test Method		MOH J03-025	
Reference		2007. Wendy C. Andersen, Sherri B. Turnipseed, Christine M. Karbiwnyk, and Mark R. Madson. Determination of Melamine Residues in Catfish Tissue by Triple Quadrupole LC-MS-MS with HILIC Chromatography. USDA/CFSAN. Laboratory Information Bulletin No. 4396, Volume 23.	
Technique	Extraction	Solid Phase Extraction	
	Instrumentation	LCMSMS	
	Back up Instrumentation	Nil	
Regulatory Limit		Commission Regulation (EU) No 594/2012	

Analyte Group		Proximate Analysis		
Analytes		Moisture	Ash	Protein
Food Matrix		All types of food	All types of food	All types of food
LOD (Unit)		NA	NA	NA
LOQ (Unit)		NA	NA	NA
Sample condition	Sample weight	250 g or 250 mL	250 g or 250 mL	250 g or 250 mL
	Perishable / Non-Perishable	Perishable / Non-Perishable		
	Temperature	Frozen / Chilled / Room Temperature		
	Packaging	Plastic / Original Packaging		
	Other Information	None		
Test Method		MOH J03-001	MOH J03-002	MOH J03-003
Reference		1) Training Material Provided by JICA's Expert (2004) extracted from Analytical Manual for Standard Tables of Food Composition in Japan, 5th Revised Edition (2000) 2) AOAC Method		
Technique	Extraction	Drying	Ashing	Kjeldahl Method
	Instrumentation	Oven	Furnace	Protein Analyser (Kjeltec System)
	Back up Instrumentation	Nil		
Regulatory Limit		Food Act 1983 (Act 281) & Regulations		

Analyte Group		Proximate Analysis		
Analytes		Nitrogen	Fat	Fat
Food Matrix		Sauce	Cereal & cereal products	Milk & milk products
LOD (Unit)		NA	NA	NA
LOQ (Unit)		NA	NA	NA
Sample condition	Sample weight	250 g or 250 mL	250 g	250 g or 250 mL
	Perishable / Non-Perishable	Non-Perishable	Non-Perishable	Perishable / Non-Perishable
	Temperature	Room Temperature	Room Temperature	Frozen / Chilled / Room Temperature
	Packaging	Plastic / Original Packaging		
	Other Information	None		
Test Method		MOH J03-003	MOH J03-004	MOH J03-005
Reference		Training Material Provided by JICA's Expert (2004) Extracted from Analytical Manual for Standard Tables of Food Composition in Japan, 5th Revised Edition, 2000.	1) Training Material Provided by JICA's Expert (2004) extracted from Analytical Manual for Standard Tables of Food Composition in Japan, 5th Revised Edition (2000). 2) Official Methods of Analysis of AOAC International, 17th Edition, Volume II, Section 32.1.14, Method 922.06	1) Training Material Provided by JICA's Expert (2004) extracted from Analytical Manual for Standard Tables of Food Composition in Japan, 5th Revised Edition (2000). 2) AOAC Official Methods 905.02, Section 33.2.25, 17th Edition, Volume II, 2000, Fat in Milk, Roese-Gotlieb Method
Technique	Extraction	Kjeldahl Method	Hydrolysis Method	Solvent extraction
	Instrumentation	Protein Analyser (Kjeltec System)	NA	NA
	Back up Instrumentation	Nil		
Regulatory Limit		(Regulation 340, 341 & 341A) Food Act 1983 (Act 281) & Regulations	1) (Regulation 62) Food Act 1983 (Act 281) & Regulations 2) Regulation 18B (Guide to Nutritional Labelling and Claim)	1) Food Act 1983 (Act 281) & Regulations 2) Regulation 18B (Guide to Nutritional Labelling and Claim)

Analyte Group		Proximate Analysis		
Analytes		Fat	Fat	Fat
Food Matrix		Dry food	Wet food	Meat & meat products
LOD (Unit)		NA	NA	NA
LOQ (Unit)		NA	NA	NA
Sample condition	Sample weight	250 g	250 g or 250 mL	250 g (edible portion without bones)
	Perishable / Non-Perishable	Non-Perishable	Non-Perishable	Perishable / Non-Perishable
	Temperature	Room Temperature	Room Temperature	Frozen / Chilled / Room Temperature
	Packaging	Plastic / Original Packaging		
	Other Information	None		
Test Method		MOH J03-006	MOH J03-007	MOH J03-014
Reference		Training Material Provided by JICA's Expert (2004) extracted from Analytical Manual for Standard Tables of Food Composition in Japan, 5th Revised Edition (2000).	1) Training Material Provided by JICA's Expert (2004) extracted from Analytical Manual for Standard Tables of Food Composition in Japan, 5th Revised Edition (2000). 2) Official Methods of Analysis of AOAC International, 17th Edition, Volume II, Section 39.1.08, Method 991.36	Official Methods of Analysis of AOAC International, 17th Edition, Volume II, Section 39.1.08, Method 991.36.
Technique	Extraction	Solvent extraction	Solvent extraction	Solvent extraction
	Instrumentation	Fat Extractor (Soxtec/Soxtherm)	Fat Extractor (Soxtec/Soxtherm)	Fat Extractor (Soxtec/Soxtherm)
	Back up Instrumentation	Nil		
Regulatory Limit		1) (Regulation 255) Food Act 1983 (Act 281) & Regulations 2) Regulation 18B (Guide to Nutritional Labelling and Claim)	1) (Regulation 185, 186 187, 253, 254 & 254A) Food Act 1983 (Act 281) & Regulations 2) Regulation 18B (Guide to Nutritional Labelling and Claim)	1) (Regulation 141, 144 & 147) Food Act 1983 (Act 281) & Regulations 2) Regulation 18B (Guide to Nutritional Labelling and Claim)

Analyte Group		Proximate Analysis				
Analytes		Carbohydrate and Energy	Total Dietary Fiber	Sulphated Ash	Total Milk Solid	pH
Food Matrix		* All type of food Milk and Milk Products	Dry food	Sweetening Substance	Milk and Mlik Products	Drinking water
LOD (Unit)		NA	NA	NA	NA	NA
LOQ (Unit)		NA	NA	NA	NA	NA
Sample condition	Sample weight	250 g or 250 mL	25 0g	250 g	250 g	250 mL
	Perishable / Non-Perishable	Perishable / Non-Perishable	Non-Perishable			
	Temperature	Frozen / Chilled / Room Temperature	Room Temperature			
	Packaging	Plastic / Original Packaging				
	Other Information	None	None	None	None	None
Test Method		MOH J03-008	MOH J03-009	MOH J03-039	MOH J03-044	MOH J03-013
Reference		1) Guide To Nutrition Labelling and Claims 2) Malaysia Food Act 1983 and Food Regulations 1985.	1) Official Methods of Analysis of AOAC International, 16th Edition, Volume II, Section 45.4.07, Method 985.29 (1997) 2) Official Methods of Analysis of AOAC International, 16th Edition, Volume I, Section 12.1.07, Method 960.52 (1997)	Official Methods of Analysis of AOAC International, 2006.17th Edition, Volume II, Section 44.1.05, Method 900.02	Official Methods of Analysis of AOAC International, 17th Edition, Volume II, Section 33.2.44, Method 990.20	Official Methods of Analysis of AOAC International, 16th Ed., Vol. I (1995), AOAC Official Method 973.41 (11.1.03), chap. 11, p.2.
Technique	Extraction	By Calculation	Solvent Extraction	Ashing	Drying	NA
	Instrumentation	NA	Fibertec	Furnace	Oven	pH Meter
	Back up Instrumentation	Nil				
Regulatory Limit		1) Food Act 1983 (Act 281) & Regulations 2) Regulation 18B (Guide to Nutritional Labelling and Claim)	1) Food Act 1983 (Act 281) & Regulations 2) Regulation 18B (Guide to Nutritional Labelling and Claim)	Food Act 1983 (Act 281) & Regulations	(Regulation 94 & 95) Food Act 1983 (Act 281) & Regulations	(Twenty Fifth Schedule (Sub regulation 360B (3) and 360c (3)) Food Act 1983 (Act 281) & Regulations

*Note : No SAMM Accreditation

Analyte Group		Sodium chloride	
Analytes		Sodium chloride	
Food Matrix		Salted food (Fish and Fish Product, Sauce)	
LOD (%)		1.0	
LOQ (%)		1.0	
Sample condition	Sample weight	250 g or 250 mL	
	Perishable / Non-Perishable	Perishable / Non-Perishable	
	Temperature	Frozen / Chilled / Room Temperature	
	Packaging	Original Container / Commercial Packaging	
	Other Information	None	None
Test Method		MOH J03-017	
Reference		Eugene A. and R. F. Muraca. 1959. Determination of Small Amounts of Chloride by Volhard Titration; Evaluation of Operator Determinate end-point Error. Anal. Chim. Acta, 23(1960) 136-144.	
Technique	Extraction	Titration	
	Instrumentation	NA	
	Back up Instrumentation	Nil	
Regulatory Limit		(Regulation 162, 163, 164, 166, 170, 340, 341 & 341A) Food Act 1983 (Act 281) & Regulations	

10. Food Additive

Analyte Group		Antioxidants	
Analytes		BHA	BHT
Food Matrix		Edible Fat and Edible Oil	
LOD (mg/kg)		3	3
LOQ (mg/kg)		10	10
Sample condition	Sample weight	Minimum 250 g	
	Perishable/ Non-Perishable	Perishable / Non-Perishable	
	Temperature	Frozen/ Chilled / Room Temperature	
	Packaging	Plastic/ Original Packaging	
	Other Information	NA	
Test Method		MOH E03-004	
Reference		AOAC Official Method 983.15, Ch.47	
Technique	Extraction	Solvent Extraction	
	Instrumentation	HPLC with Photo Diode Array detector	
	Back up Instrumentation	NA	
MRL (Reference) /Guideline (Reference)		1) Food Act 1983 (Act 281) & Regulations, Tenth Sch, Regulation 24 Table 1 2) CODEX STAN 192-1995 www.fao.org/gsfaonline/docs/CXS_192e.pdf	

Analyte Group		Benzoic Acid & Sorbic Acid					
Analytes		Benzoic Acid	Sorbic Acid	Benzoic Acid	Sorbic Acid	Benzoic Acid	Sorbic Acid
Food Matrix		Sauces, Juices, Preserved Dried Fruit, Chilli Slurry, Fish & Fish Products, Pasta Soft Drink		Flour, Bread		Cream, Coconut Milk	
LOD (mg/kg)		2	8	5	6	1	1
LOQ (mg/kg)		30	30	20	20	5	5
Sample condition	Sample weight	Minimum 500g (edible portion without bones) for fish and fish products Other food- Minimum 250 gm					
	Perishable/ Non-Perishable	Perishable / Non-Perishable					
	Temperature	Frozen/ Chilled / Room Temperature					
	Packaging	Plastic/ Original Packaging					
	Other Information	NA					
Test Method		MOH E03-002					
Reference		Food J. Assoc. Off. Anal. Chem. 70 (5)					
Technique	Extraction	Solvent Extraction					
	Instrumentation	HPLC with Photo Diode Array Detector					
	Back up Instrumentation	UHPLC with Photo Diode Array Detector					
MRL (Reference) /Guideline (Reference)		1) Food Act 1983 (Act 281) & Regulations Sixth Sch, Regulation 20 Table 1 2) CODEX STAN 192-1995 www.fao.org/gsfaonline/docs/CXS_192e.pdf 3) EU Regulation http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32011R0010					

Analyte Group		Benzoyl Peroxide
Analytes		Benzoyl Peroxide
Food Matrix		Flour
LOD (mg/kg)		5
LOQ (mg/kg)		20
Sample condition	Sample weight	Minimum 250 g/ 250 mL
	Perishable/ Non-Perishable	Non-Perishable
	Temperature	Room Temperature
	Packaging	Plastic/ Original Packaging
	Other Information	NA
Test Method		MOH E03-024
Reference		Yukiko Abe-Onishi, Chikako Yomoto, Naoki Sugimoto, Hiroki Kubota, Kenichi Tanamoto, 2004. Journal of Chromatography A, 1040 (2004), page 209 -214.
Technique	Extraction	Solvent Extraction
	Instrumentation	UHPLC with Photo Diode Array Detector
	Back up Instrumentation	NA
MRL (Reference) /Guideline (Reference)		1) Food Act 1983 (Act 281) & Regulations 2) CODEX STAN 192-1995 www.fao.org/gsfaonline/docs/CXS_192e.pdf

*Note : No SAMM Accreditation

Analyte Group		Boric Acid
Analytes		Boric Acid
Food Matrix		Pasta, Fish & Fish Product
LOD (mg/kg)		20
LOQ (Unit)		NA
Sample condition	Sample weight	Minimum 250 g
	Perishable/ Non-Perishable	Perishable / Non-Perishable
	Temperature	Frozen/ Chilled / Room Temperature
	Packaging	Plastic/ Original Packaging
	Other Information	NA
Test Method		MOH E03-001
Reference		AOAC, Vol. II (1995), Chapter 47
Technique	Extraction	Solvent Extraction
	Instrumentation	NA
	Back up Instrumentation	NA
MRL (Reference) /Guideline (Reference)		Prohibited in Food

Analyte Group		Formaldehyde
Analytes		Formaldehyde
Food Matrix		All types of food
LOD (mg/kg)		Pasta: 0.8 *Fish: 20
LOQ (mg/kg)		Pasta: 2.5 *Fish: 20
Sample condition	Sample weight	Minimum 500 g (edible portion without bones) for fish and fish products
	Perishable/ Non-Perishable	Perishable / Non-Perishable
	Temperature	Frozen/ Chilled / Room Temperature
	Packaging	Plastic/ Original Packaging
	Other Information	NA
Test Method		MOH E03- 015
Reference		Jianrong. L., Junli. Z. Asia Pacific Journal of Clinical Nutrition. Vol. 16, page 127 – 130.
Technique	Extraction	Solvent Extraction
	Instrumentation	HPLC with Photo Diode Array Detector
	Back up Instrumentation	UHPLC with Photo Diode Array Detector
MRL (Reference) /Guideline (Reference)		1) Administrative guideline BKKM PPI 5/2006 & BKKM PPI6/2006 & BKKM PPI 3/2010 2) CODEX STAN 192-1995 www.fao.org/gsfaonline/docs/CXS_192e.pdf

*Note : No SAMM Accreditation

Analyte Group		Phthalate
Analytes		DEHP
Food Matrix		All types of food except oily food
LOD (mg/kg)		0.5
LOQ (mg/kg)		2
Sample condition	Sample weight	Minimum 250 g / 250 mL
	Perishable/ Non-Perishable	Perishable / Non-Perishable
	Temperature	Frozen/ Chilled / Room Temperature
	Packaging	Plastic/ Original Packaging
	Other Information	NA
Test Method		MOH E03-021
Reference		A.K. Chaudhary, S. Ankushrao Waske, S. Yadav. T. G Chandrashekhar and Vandana Sigh. E-Journal of Chemistry 2010,7(2),501-513
Technique	Extraction	Solvent Extraction
	Instrumentation	UHPLC with Photo Diode Array detector
	Back up Instrumentation	NA
MRL (Reference) /Guideline (Reference)		EU Regulation http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32011R0010

Analyte Group		Propionic Acid
Analytes		Propionic Acid
Food Matrix		Bread and Flour Confectionery
LOD (mg/kg)		100
LOQ (mg/kg)		400
Sample condition	Sample weight	Minimum 250 g
	Perishable/ Non-Perishable	Non-Perishable
	Temperature	Room Temperature
	Packaging	Plastic/ Original Packaging
	Other Information	NA
Test Method		MOH E03-011
Reference		Isshiki et al: assoc off anal Chem Vol 64, No 2 1981. Pages 280 – 281.
Technique	Extraction	Solvent Extraction
	Instrumentation	GC- Flame Ionization Detection
	Back up Instrumentation	NA
MRL (Reference) /Guideline (Reference)		(Regulation 65) Food Act 1983 (Act 281) & Regulations

Analyte Group		Sulfur Dioxide
Analytes		Sulfur Dioxide
Food Matrix		All types of food
LOD (mg/kg)		10
LOQ (mg/kg)		10
Sample condition	Sample weight	Minimum 250 g
	Perishable/ Non-Perishable	Perishable / Non-Perishable
	Temperature	Frozen/ Chilled / Room Temperature
	Packaging	Air tight container/ original packaging
	Other Information	NA
Test Method		MOH E03- 007
Reference		AOAC Official Method 961.09. 17th edition, Vol. II. Chapter 47 & The Chemical Analysis of Foods. Pearson, D. 1976, page 30 – 31.
Technique	Extraction	Solvent Extraction
	Instrumentation	NA
	Back up Instrumentation	NA
MRL (Reference) /Guideline (Reference)		1) Food Act 1983 (Act 281) & Regulations, Sixth Sch (Reg 20) Table 1 2) CODEX STAN 192-1995 www.fao.org/gsfaonline/docs/CXS_192e.pdf 3) EU Regulation http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32011R0010

Analyte Group		Sweeteners							
Analytes		*Sacharin		*Cyclamate		*Acesulfame K	*Aspartame	*Neotame	*Sucralose
Food Matrix		All types of food							
LOD (mg/kg)		Solid matrix: 10 Liquid matrix: 20	*0.01	Solid matrix: 30 Liquid matrix: 80	*0.003	0.02	0.004	0.01	0.01
LOQ (mg/kg)		Solid matrix: 20 Liquid matrix: 20	*0.2	Solid matrix: 100 Liquid matrix: 120	*0.2	0.2	0.2	0.2	0.2
Sample condition	Sample weight	Minimum 250 g							
	Perishable/ Non-Perishable	Perishable / Non-Perishable							
	Temperature	Frozen/ Chilled / Room Temperature							
	Packaging	Plastic/ Original Packaging							
	Other Information	NA							
Test Method		MOH E03-006	MOH E03-029	MOH E03-006	MOH E03-029	MOH E03-029			
Reference		JAOAC (Lawrence et al) Vol. 71, No 5, 1988	Agata Zyglar, Andrzej Wasik, Agata Kot-Wasik, Jacek Namieśnik, 2011. Anal Bioanal Chem, 400: page. 2159-2172	JAOAC (Lawrence et al) Vol. 71, No 5, 1988	Agata Zyglar, Andrzej Wasik, Agata Kot-Wasik, Jacek Namieśnik, 2011. Anal Bioanal Chem, 400: page. 2159-2172	Agata Zyglar, Andrzej Wasik, Agata Kot-Wasik, Jacek Namieśnik, 2011. Anal Bioanal Chem, 400: page. 2159-2172			
Technique	Extraction	Solvent Extraction	Solid Phase Extraction	Solvent Extraction	Solid Phase Extraction	Solid Phase Extraction			
	Instrumentation	UHPLC with Photo Diode Array Detector	LC- Mass Spectrometry	UHPLC with Photo Diode Array Detector	LC- Mass Spectrometry	LC- Mass Spectrometry			
	Back up Instrumentation	NA							
MRL (Reference) /Guideline (Reference)		1) Food Act 1983 (Act 281) & Regulations Seventeenth Sch, Subregulation 133(2) Table 2, Regulation 133(2B), Regulation 134 2) CODEX STAN 192-1995 www.fao.org/gsfaonline/docs/CXS_192e.pdf							

Note: * No SAMM Accreditation

Analyte Group		Synthetic Water Soluble Colour									
Analytes		Acid Red 1	Auramine O	Rhodamine B	Patent Blue V	Allura Red AC	Amaranth	Brilliant Black PN	Brilliant Blue FCF	Carmoisine	Chocolate Brown HT
Food Matrix		All types of food									
LOD (mg/kg)		7	2	2	2	6	5	7	7	4	7
LOQ (mg/kg)		Solid matrix: 10 Liquid matrix: 20									
Sample condition	Sample weight	Minimum 500g (edible portion without bones) for meat and meat products Other food- Minimum 250 gm									
	Perishable/ Non-Perishable	Perishable									
	Temperature	Frozen/ Chilled where applicable									
	Packaging	Plastic/ Original Packaging									
	Other Information	NA									
Test Method		MOH E03-005									
Reference		ASTA (American Spice Trade Association) 2005 & Yoshioka (2008) - Talanta. Vol. 74									
Technique	Extraction	Solvent Extraction									
	Instrumentation	HPLC with Photo Diode Array Detector									
	Back up Instrumentation	UHPLC with Photo Diode Array Detector									
MRL (Reference) /Guideline (Reference)		Prohibited in Food				1) Food Act 1983, Food Regulations 1985, Seventh Sch, Regulation 21 Table 1 2) CODEX STAN 192-1995 www.fao.org/gsfaonline/docs/CXS_192e.pdf					

Analyte Group		<i>Synthetic Water Soluble Colour (continued)</i>						
Analytes		Erythrosine BS	Fast Green FCF	Lissamine Green	Ponceau 4R	Quinoline Yellow	Sunset Yellow FCF	Tartrazine
Food Matrix		All types of food						
LOD (mg/kg)		5	6	6	5	6	4	5
LOQ (mg/kg)		Solid matrix: 10 Liquid matrix: 20						
Sample condition	Sample weight	Minimum 500g (edible portion without bones) for meat and meat products Other food- Minimum 250 gm						
	Perishable/ Non-Perishable	Non-Perishable						
	Temperature	Room Temperature						
	Packaging	Plastic/ Original Packaging						
	Other Information	NA						
Test Method		MOH E03-005						
Reference		ASTA (American Spice Trade Association) 2005 & Yoshioka (2008) - Talanta. Vol. 74						
Technique	Extraction	Solvent Extraction						
	Instrumentation	HPLC with Photo Diode Array Detector						
	Back up Instrumentation	UHPLC with Photo Diode Array Detector						
MRL (Reference) /Guideline (Reference)		1)Food Act 1983, Food Regulations 1985, Seventh Sch, Regulation 21 Table 1 2) CODEX STAN 192-1995 www.fao.org/gsfaonline/docs/CXS_192e.pdf						

Analyte Group		<i>*Synthetic Oil Soluble Colour</i>					
Analytes		Para Red	Dimethyl Yellow	Sudan 1	Sudan 2	Sudan 3	Sudan 4
Food Matrix		All types of food					
LOD (mg/kg)		2	1	2	4	4	1
LOQ (mg/kg)		6 (spices)	3 (spices)	6 (spices)	15 (spices)	15 (spices)	3 (spices)
Sample condition	Sample weight	Minimum 500g (edible portion without bones) for meat and meat products Other food- Minimum 250 gm					
	Perishable/ Non-Perishable	Perishable / Non-Perishable					
	Temperature	Frozen/ Chilled / Room Temperature					
	Packaging	Plastic/ Original Packaging					
	Other Information	NA					
Test Method		MOH E03-005					
Reference		Katerina S. M., Christina. F. S., Nikolaos. S. T., 2007. Analytica Chimica Act.Vol. 583, page 103 – 110.					
Technique	Extraction	Solid Phase Extraction					
	Instrumentation	HPLC with Photo Diode Array Detector					
	Back up Instrumentation	UHPLC with Photo Diode Array Detector					
MRL (Reference) /Guideline (Reference)		Prohibited in Food					

Note: * No SAMM Accreditation

D. The Comprehensive List of Entomology Tests in NPHL

Patogen/ Vector/ Sample	<i>Aedes spp. (larva)</i>
Category	Surveillance
Test Method	WHO Insecticide Resistance Test on Mosquitoes of Health Importance: temephos
Sample type	Eggs
Sample Volume	More than 1000 eggs
Container/ Transport media	"Paddle" -hard board (approximate size 1 "x 6 ") 200 pieces and above
Collection method	Ovitrap in field for 14 days
Sample Transportation	Biohazard Zip Lock plastic bag place in a clean container
Type of form	KKM/BPS/001/2014, Data Kajian Ovitrap
Laboratory Turn-Around-Time (LTAT) working days	larvae F ₁ = 35 days, F ₂ = 65 days with enough samples
Frequency of Test	Daily with available samples
Cost/Test (RM)	13.85
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Eggs are reared until adults to produce progeny, F ₁ (from eggs to larvae (L3) F ₁ , takes about 45 days). Identification is made from larva phase to differentiate species (<i>Aedes aegypti</i> & <i>Aedes albopictus</i>). Tests are done separately by species using larvae F ₁ and adults F ₁ as samples, accordingly. Test will proceed with enough samples (140 larvae/female mosquitoes of the same species). Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Aedes spp. (adult)</i>							
Category	Surveillance							
Test Method	WHO Insecticide Resistance Test on Mosquitoes of Health Importance:							
	alpha-cypermethrin	cyfluthrin	deltamethrin	lambda-cyhalothrin	permethrin	fenitrothion	malathion	pirimiphos methyl
Sample type	Eggs	Eggs	Eggs	Eggs	Eggs	Eggs	Eggs	Eggs
Sample Volume	More than 1000 eggs	More than 1000 eggs	More than 1000 eggs	More than 1000 eggs	More than 1000 eggs	More than 1000 eggs	More than 1000 eggs	More than 1000 eggs
Container/ Transport media	"Paddle" –hard board (approximate size 1 "x 6 ") 200 pieces and above	"Paddle" –hard board (approximate size 1 "x 6 ") 200 pieces and above	"Paddle" –hard board (approximate size 1 "x 6 ") 200 pieces and above	"Paddle" –hard board (approximate size 1 "x 6 ") 200 pieces and above	"Paddle" –hard board (approximate size 1 "x 6 ") 200 pieces and above	"Paddle" –hard board (approximate size 1 "x 6 ") 200 pieces and above	"Paddle" –hard board (approximate size 1 "x 6 ") 200 pieces and above	"Paddle" –hard board (approximate size 1 "x 6 ") 200 pieces and above
Collection method	Ovitrap in field for 14 days	Ovitrap in field for 14 days	Ovitrap in field for 14 days	Ovitrap in field for 14 days	Ovitrap in field for 14 days	Ovitrap in field for 14 days	Ovitrap in field for 14 days	Ovitrap in field for 14 days
Sample Transportation	Biohazard Zip Lock plastic bag place in a clean container	Biohazard Zip Lock plastic bag place in a clean container	Biohazard Zip Lock plastic bag place in a clean container	Biohazard Zip Lock plastic bag place in a clean container	Biohazard Zip Lock plastic bag place in a clean container	Biohazard Zip Lock plastic bag place in a clean container	Biohazard Zip Lock plastic bag place in a clean container	Biohazard Zip Lock plastic bag place in a clean container
Type of form	KKM/BPS/001/2014, Data Kajian Ovitrap	KKM/BPS/001/2014, Data Kajian Ovitrap	KKM/BPS/001/2014, Data Kajian Ovitrap	KKM/BPS/001/2014, Data Kajian Ovitrap	KKM/BPS/001/2014, Data Kajian Ovitrap	KKM/BPS/001/2014, Data Kajian Ovitrap	KKM/BPS/001/2014, Data Kajian Ovitrap	KKM/BPS/001/2014, Data Kajian Ovitrap
Laboratory Turn-Around-Time (LTAT) working days	Female adults F0 = 10 days per insecticide, F1 = 40 days, F2 = 70 days with enough samples from F0	Female adults F0 = 10 days per insecticide, F1 = 40 days, F2 = 70 days with enough samples from F0	Female adults F0 = 10 days per insecticide, F1 = 40 days, F2 = 70 days with enough samples from F0	Female adults F0 = 10 days per insecticide, F1 = 40 days, F2 = 70 days with enough samples from F0	Female adults F0 = 10 days per insecticide, F1 = 40 days, F2 = 70 days with enough samples from F0	Female adults F0 = 10 days per insecticide, F1 = 40 days, F2 = 70 days with enough samples from F0	Female adults F0 = 10 days per insecticide, F1 = 40 days, F2 = 70 days with enough samples from F0	Female adults F0 = 10 days per insecticide, F1 = 40 days, F2 = 70 days with enough samples from F0
Frequency of Test	Daily with available samples	Daily with available samples	Daily with available samples	Daily with available samples	Daily with available samples	Daily with available samples	Daily with available samples	Daily with available samples
Cost/Test (RM)	19.28	19.28	19.28	19.28	19.28	19.28	19.28	19.28

Patogen/ Vector/ Sample	<i>Aedes spp. (adult)</i>
Laboratory Name	Entomology & Pest
Tel No: 03- 61261200 Ext No.	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Eggs are reared until adults to produce progeny, F ₁ (from eggs to larvae (L3) F ₁ , takes about 45 days). Identification is made from larva phase to differentiate species (<i>Aedes aegypti</i> & <i>Aedes albopictus</i>). Tests are done separately by species using larvae F ₁ and adults F ₁ as samples, accordingly. Test will proceed with enough samples (140 larvae/female mosquitoes of the same species). Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Aedes spp (adult)</i>	
Category	Surveillance	Lab - bred
Test Method	CDC bottle bioassay	Colonization
Sample type	Eggs	Adult mosquito aged 2-3 days
Sample Volume	More than 1000 eggs	1000 - 1500
Container/ Transport media	"Paddle" -hard board (approximate size 1 "x 6 ") 200 pieces and above	Mosquito cage
Collection method	Ovitrap in field for 14 days	Colonization
Sample Transportation	Biohazard Zip Lock plastic bag place in a clean container	Any big container with preserved relative humidity (70%± 10%)
Type of form	KKM/BPS/001/2014, Data Kajian Ovitrap	Formal request letter at least 3 months prior from collection
Laboratory Turn-Around-Time (LTAT) working days	Female adults F0 = 10 days per insecticide, F1 = 40 days with samples more than 50 but less than 120	3 months
Frequency of Test	Daily with available samples	Upon request
Cost/Test (RM)	19.28	
Laboratory Name	Entomology & Pest	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya	upon formal request
Remarks	Eggs are reared until adults to produce progeny, F ₁ (from eggs to larvae (L3) F ₁ , takes about 45 days). Identification is made from larva phase to differentiate species (<i>Aedes aegypti</i> & <i>Aedes albopictus</i>). Tests are done separately by species using adult F ₁ as samples. Test will proceed with 50 to 120 female adult mosquitoes of the same species. Based on availability of insecticide technical grade. Results can be obtained by email or manually/postage.	

Patogen/ Vector/ Sample	<i>Aedes spp.</i>
Category	<i>Colonization</i>
Test Method	WHO Insecticide Resistance Test on Mosquitoes of Health Importance: QC for targeted group of pesticide
Sample type	Eggs
Sample Volume	More than 1000 eggs
Container/ Transport media	"Paddle" -hard board (approximate size 1 "x 6 ")
Collection method	Ovitrap
Sample Transportation	Biohazard Zip Lock plastic bag place in a clean container
Type of form	KKM/BPS/001/2014, Data Kajian Ovitrap
Laboratory Turn-Around-Time (LTAT) working days	Female adults F1 = 40 days, F2 = 70 days
Frequency of Test	Upon request
Cost/Test (RM)	19.28
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Colonization done to assist State Vector without Insectarium
Remarks	Eggs are reared until adults to produce progeny, F ₁ . Identification is made from larva phase to differentiate species (<i>Aedes aegypti</i> & <i>Aedes albopictus</i>). Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Aedes spp.</i>
Category	<i>Chikungunya Virus Detection (ChikV) in Vector</i>
Test Method	Real Time RT PCR
Sample type	Wild-caught females in RNAlater
Sample Volume	20 / tube
Container/ Transport media	RNAlater in microcentrifuge tube
Collection method	Human Landing Catch (HLC), Animal-baited trap, Resting collection, Human-baited trap etc.
Sample Transportation	Microcentrifuge tube tube placed in a cold chain (2-8°C)
Type of form	KKM/BPS/001/2014
Laboratory Turn-Around-Time (LTAT) working days	10 working days
Frequency of Test	Upon request
Cost/Test (RM)	250
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Please inform of intended request 3 days earlier for preparation and plans in the laboratory
Remarks	Every request is to be accompanied by an official cover letter/ email

Patogen/ Vector/ Sample	<i>Anopheles spp. (larva)</i>
Category	Surveillance
Test Method	WHO Insecticide Resistance Test on Mosquitoes of Health Importance: temephos
Sample type	Field collection
Sample Volume	At least 140 larvae (alive specimens)
Container/ Transport media	Universal bottle
Collection method	Dipping method
Sample Transportation	Universal bottle placed in a cool box
Type of form	KKM/BPS/001
Laboratory Turn-Around-Time (LTAT) working days	5 days
Frequency of Test	Twice per year/ upon request
Cost/Test (RM)	13.85
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Anopheles spp. (adult)</i>	
Category	Surveillance	
Test Method	WHO Insecticide Resistance Test on Mosquitoes of Health Importance:	
	deltamethrin	permethrin
Sample type	Wild-caught females	Wild-caught females
Sample Volume	A least 140 female adults	A least 140 female adults
Container/ Transport media	Mosquito cage	Mosquito cage
Collection method	Human Landing Catch (HLC), Animal-baited trap, Resting collection, Human-baited trap	Human Landing Catch (HLC), Animal-baited trap, Resting collection, Human-baited trap
Sample Transportation	Any big container with preserved relative humidity (70%± 10%)	Any big container with preserved relative humidity (70%± 10%)
Type of form	KKM/BPS/001	KKM/BPS/001
Laboratory Turn-Around-Time (LTAT) working days	5 days	5 days
Frequency of Test	Twice per year/ upon request	Twice per year/ upon request
Cost/Test (RM)	19.28	19.28
Laboratory Name	Entomology & Pest	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Relative humidity of 70%± 10% can be sustained by placing ice packs in the container.	Relative humidity of 70%± 10% can be sustained by placing ice packs in the container. Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Anopheles spp.</i>
Category	Surveillance
Test Method	Identification by morphology
Sample type	Wild-caught females
Sample Volume	20-25 female adults
Container/ Transport media	Eppendorf tube
Collection method	Human Landing Catch (HLC), Animal-baited trap, Resting collection, Human-baited trap
Sample Transportation	Eppendorf tube placed in a Biohazard Zip Lock plastic bag
Type of form	KKM/BPS/005
Laboratory Turn-Around-Time (LTAT) working days	14 days
Frequency of Test	Monthly
Cost/Test (RM)	100
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Coquillettidia crassipes</i>
Category	Surveillance
Test Method	Identification by morphology
Sample type	Wild-caught females
Sample Volume	20-25 female adults
Container/ Transport media	Eppendorf tube
Collection method	Human Landing Catch (HLC), Animal-baited trap, Resting collection, Human-baited trap
Sample Transportation	Eppendorf tube placed in a Biohazard Zip Lock plastic bag
Type of form	KKM/BPS/003
Laboratory Turn-Around-Time (LTAT) working days	14 days
Frequency of Test	Monthly
Cost/Test (RM)	100
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Culex quinquefasciatus</i>
Category	Surveillance
Test Method	Identification by morphology
Sample type	Wild-caught females
Sample Volume	20-25 female adults
Container/ Transport media	Eppendorf tube
Collection method	Human Landing Catch (HLC), Animal-baited trap, Resting collection, Human-baited trap
Sample Transportation	Eppendorf tube placed in a Biohazard Zip Lock plastic bag
Type of form	KKM/BPS/004
Laboratory Turn-Around-Time (LTAT) working days	14 days
Frequency of Test	Monthly
Cost/Test (RM)	100
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Culex spp.</i>
Category	Japanese encephalitis virus detection (JEV) in Vector
Test Method	Real Time RT PCR
Sample type	Wild-caught females in RNAlater
Sample Volume	20 / tube
Container/ Transport media	RNAlater in microcentrifuge tube
Collection method	Human Landing Catch (HLC), Animal-baited trap, Resting collection, Human-baited trap etc.
Sample Transportation	Microcentrifuge tube placed in a cold chain (2-8°C)
Type of form	KKM/BPS/001/2014
Laboratory Turn-Around-Time (LTAT) working days	10 working days
Frequency of Test	Upon request
Cost/Test (RM)	250
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Please inform of intended request 3 days earlier for preparation and plans in the laboratory
Remarks	Every request is to be accompanied by an official cover letter/ email

Patogen/ Vector/ Sample	<i>Insecticide treated nets (ITN)</i>
Category	Surveillance
Test Method	Chemical analysis by GC-FID
Sample type	Net material
Sample Volume	5 surface of net measuring 25cmx25 cm each
Container/ Transport media	Each surface should be packed separately and labelled in aluminium envelope / foil.
Collection method	PKD -SPBV-NPHL with complete form
Sample Transportation	Sample in room temperature
Type of form	
Laboratory Turn-Around-Time (LTAT) working days	2 months /1 ITN
Frequency of Test	Upon request
Cost/Test (RM)	
Laboratory Name	Entomology & Pest and Biochemistry Lab
Tel No: 03-61261200 Ext No.	
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Based on availability of A.I standard

Patogen/ Vector/ Sample	<i>Mansonia spp.</i>
Category	Surveillance
Test Method	Identification by morphology
Sample type	Wild-caught females
Sample Volume	20-25 female adults
Container/ Transport media	Eppendorf tube
Collection method	Human Landing Catch (HLC), Animal-baited trap, Resting collection, Human-baited trap
Sample Transportation	Eppendorf tube placed in a Biohazard Zip Lock plastic bag
Type of form	KKM/BPS/002
Laboratory Turn-Around-Time (LTAT) working days	14 days
Frequency of Test	Monthly
Cost/Test (RM)	100
Laboratory Name	Entomology & Pest
Tel No: 03-61261200 Ext No.	1284, 2223
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Results can be obtained by email or manually/postage.

Patogen/ Vector/ Sample	<i>Pesticide</i>
Category	Surveillance
Test Method	Chemical analysis by GC-FID
Sample type	Pesticide
Sample Volume	Based on manufacturer packaging
Container/ Transport media	Based on manufacturer packaging
Collection method	PKD -SPBV-NPHL with complete form
Sample Transportation	Sample in room temperature
Type of form	
Laboratory Turn-Around-Time (LTAT) working days	25 working days
Frequency of Test	Upon request
Cost/Test (RM)	
Laboratory Name	Entomology & Pest and Biochemistry Lab
Tel No: 03-61261200 Ext No.	
Important Notes	Initiated by Vector Borne Disease Section, Disease Department, Putrajaya
Remarks	Based on availability of A.I standard

E. The Comprehensive List of Vaccine Potency Tests in NPHL

Pathogen	<i>Measles, Mumps & Rubella</i>	
Category	Surveillance / Diagnostic / Epidemiological Investigation	
Test Method	Cell Culture Infectious Dose 50 (CCID50)	
Sample type (Preference of sample is in sequence. Sent either one only)	MMR (Measles, Mumps & Rubella) Vaccine	
Sample Volume	4 vials	
Container/Transport Media	Not Applicable	
Sample Transportation	2-8°C	
Type of form	MKAK/UPV/20	
LTAT	30 working days	
Frequency of test	Upon request	
Cost/test (RM)	RM 1345.00	
Laboratory name	Vaccine Potency Lab	
Tel No. 03-61261200 Ext. No	1205	
PHL	MKAK	√
	MKA Ipoh	-
	MKA Johor Bahru	-
	MKA Kota Bharu	-
	MKA Kota Kinabalu	-
Remark(s)	<ol style="list-style-type: none"> 1. For Surveillance purposes, please refer to yearly schedule. 2. For diagnostic (eg: cold chain breakdown cases), please contact National Pharmaceutical Regulatory Agency (NPRA) for opinion before sending samples to NPHL. 3. For Epidemiological Investigation (clustering of cases), please contact laboratory person incharge before sending samples to NPHL. 	

Pathogen	<i>Mycobacterium tuberculosis complex (MTBC)</i>	
Category	Investigation and Surveillance	
Test Method	<i>BCG Viability and Potency Test</i>	
Sample type	BCG vial	
Sample Volume	2 vials for each lot	
Container/ Transport media	Vial	
Sample Transportation	4 - 8°C	
Type of form	MKAK/UPV/20	
LTAT	35 days	
Frequency of Test	If cold chain indicated	
Cost/test (RM)	40.00	
AKTA FEE 1951 PERINTAH FEE (PERUBATAN 1982)	KELAS 1	50.00
	KELAS 2	25.00
	KELAS 3	12.00
	RUJUKAN BAYARAN	<i>KUMPULAN C: ANALISA MIKROBIOLOGICAL BAHAN-BAHAN MAKANAN DAN LAIN-LAIN</i>
Laboratory Name	TB	
Tel No: 03-61261200 Ext. No.	1289	
PHL	MKAK	√
	MKA Ipoh	√
	MKA Johor Bahru	√
	MKA Kota Bharu	√
	MKA Kota Kinabalu	√
Outsource		
Remarks		

SPECIMEN COLLECTION PROCEDURES FOR DISEASE DIVISION LABORATORY TESTING

Proper collection and transportation of appropriate specimen plays an important role in obtaining accurate laboratory diagnosis. The specimens must be collected at the right time using the right procedures and transported to the NPHL in the right way.

A. CLINICAL SPECIMEN

1. *GENERAL RULES*

- 1.1. Aseptic technique must be practiced throughout the procedure.
- 1.2. Collect the specimen at the right phase of the disease. For microbiological testing, collect the specimen before antibiotic therapy.
- 1.3. Collect sufficient specimen volume/quantity.
- 1.4. Transfer the specimen aseptically in the correct sterile container or transport medium.
- 1.5. Close the container tightly and seal with parafilm if required to avoid leakage during transportation.
- 1.6. Each specimen and requisition form must be labeled properly and completely.
- 1.7. Place the specimen container inside a biohazard bag. Each sample is to be packed in separate biohazard bags.
- 1.8. Pack the specimen properly and send to laboratory as soon as possible. (Please refer to **the A VISUAL GUIDE FOR INFECTIOUS DISEASE SAMPLE COLLECTION**).
- 1.9. Maintain the correct temperature from specimen collection until arrival at NPHL. Refer to **The Comprehensive List of Infectious Disease Tests in NPHL** for the correct temperature ranges.

2. *SERUM*

- 2.1. Draw 3-5ml blood into a plain tube with/without gel (No anticoagulants or preservatives).
- 2.2. Allow to clot at ambient temperature for a minimum of 10 minutes.
- 2.3. Centrifuge at 3,000 rpm for 10 minutes.
- 2.4. Aliquot the serum into another transfer tube when using a tube without gel.
- 2.5. For a tube with gel, please send the original tube.
- 2.6. Seal the tube with parafilm prior to transportation.

3. *RESPIRATORY SPECIMEN*

- 3.1. Throat Swab
 - 3.1.1. Depress the tongue with a tongue depressor.
 - 3.1.2. Swab the inflamed area of the throat, pharynx or tonsils with a sterile swab taking care to collect the pus or piece of membrane. Avoid touching the cheeks, tongue, uvula or lips.
 - 3.1.3. Place the swab for Bacteriology testing in Amies transport medium (with or without charcoal).
 - 3.1.4. Place the swab for Virology testing in Viral Transport Media (VTM).
- 3.2. Nasopharyngeal Swab
 - 3.2.1. Use only Dacron or polyester swabs.
 - 3.2.2. Hold back the patient's head slightly and insert the swab straight into the nostril.

- 3.2.3. Insert the swab to least 5-6cm in length (for adults) to ensure that it reaches the posterior pharynx.
- 3.2.4. Leave the swab in place for few seconds, rotate and withdraw slowly.
- 3.2.5. Repeat the same procedure on the other nostril using new swab.
- 3.2.6. For Bacteriology Culture and Sensitivity testing, place the swab in Amies transport medium with charcoal or without charcoal. The sample shall be transported at ambient temperature.
- 3.2.7. For *Bordetella pertussis* Genome Detection testing, place swab in sterile container with sterile saline or Amies Transport Medium (without charcoal). The sample shall be transported at 2-8°C.
- 3.2.8. For Virology testing place swab in Viral Transport Media (VTM). The sample shall be transported at 2-8°C.

3.3. Nasopharyngeal Aspirates (NPA)/Nasopharyngeal Secretion

- 3.3.1. Insert a small catheter through the nares to the back of nose.
- 3.3.2. Gently suction as the catheter is withdrawn slowly.
- 3.3.3. Collect in sterile screw capped container.
- 3.3.4. Ensure that the container is sealed securely to prevent leakage.
- 3.3.5. The sample shall be transported at 2-8°C (for both Bacteriology and Virology testing).

3.4. Sputum

- 3.4.1. Collect the sputum early in the morning.
- 3.4.2. Use a wide-mouthed container for collection.
- 3.4.3. Instruct the patient to inhale deeply 2-3 times, cough up deeply from the chest and spit the sputum into the container by bringing it closer to the mouth.
- 3.4.4. Make sure the sputum sample is of good quality (2-3ml of thick and purulent sputum).

3.5. Oropharyngeal swab

- 3.5.1. Depress the tongue. Insert swab into the posterior pharynx and tonsillar areas.
- 3.5.2. Gently rub swab over posterior oropharynx behind the tonsils and avoid touching the tonsils.
- 3.5.3. Place swab into the Viral Transport Media (VTM) tube.

3.6. Deep Throat Saliva (DTS)

- 3.6.1. Do not eat or drink, smoke, chew tobacco/betel leaves, brush teeth or gargle with mouth freshener for at least 1 to 2 hours prior to the sample collection. Collect DTS at well ventilated space
- 3.6.2. Drain mucus from the back of the nose and throat at least 3 times.
- 3.6.3. Forcefully breath in 3 times, with head tilt slightly up and cough out the deep throat saliva with mucus.
- 3.6.4. If find difficulty with earlier method, can collect the saliva in mouth and bring at deep throat then gargle it for >30sec.
- 3.6.5. Lift specimen collection cup close to the mouth and take a deep breath in and cough out or spit out the DTS into the collection cup.
- 3.6.6. A minimum of 2 ml of DTS sample is required.

3.7. Saliva/ Oral Fluid

- 3.7.1. Collect 1-5 mL of saliva (not bubbles) in a sterile, leak-proof screw cap container. No preservative is required.
- 3.7.2. Avoid saliva contaminate the outer surface of the bottle.
- 3.7.3. Close the lid of specimen container tightly to ensure no leakage.
- 3.7.4.

4. *BODY FLUIDS*

4.1 Collect the specimen (pleural, pericardial, peritoneal, synovial, amniotic fluid, etc.) according to the Clinical Practice Guidelines (CPG) and transfer 2 to 5ml specimen into a sterile screw capped container.

4.2 Cerebrospinal Fluid (CSF)

4.2.1 Collect CSF before antimicrobial therapy is started.

4.2.2 Collect 1-3ml in sterile screw capped container (Bijou bottle or Cryo vial).

4.2.3 **Do not use urine container.**

4.3 Blood Cultures and Bone Marrow Aspirate for TB

4.3.1 Fill 5-10 ml of blood into Myco F Lytic bottle by using aseptic technique.

4.3.2 Send the specimens to the laboratory as soon as possible or incubate them at 37°C in an incubator if there is a delay in transit.

4.3.3 **Do not store in the refrigerator.**

4.3.4 For bone marrow aspirate, aspirate 1-2 ml and inoculated directly into the bottles.

4.3.5 Send the specimen to the laboratory as soon as possible.

5. *URINE AND STOOL/RECTAL SWAB*

5.1. Urine

5.1.1. Adult Male

5.1.1.1. Give the patient a sterile urine container.

5.1.1.2. Instruct the patient to wash hands with soap and water before collection of urine specimen.

5.1.1.3. Cleanse the glands penis with soapy water and rinse with water.

5.1.1.4. Pass the few millimetres of urine to flush out the bacteria from the urethra, and then collect the mid-stream urine (MSU) in sterile urine container.

5.1.2. Adult Female

5.1.2.1. Give the patient a sterile urine container.

5.1.2.2. Instruct the patient to wash hands with soap and water before collection of urine specimen.

5.1.2.3. Cleanse the area around the urethral opening with clean water, dry the area, and collect the urine with the labia held apart.

5.1.2.4. Discard the first portion of the stream and collect MSU in sterile urine container (without preservative).

5.1.3. Infant and young children

5.1.3.1. Instruct the child to drink water.

5.1.3.2. Clean the external genitalia.

5.1.3.3. Encourage the child to urinate and collect the MSU in sterile urine container.

* Urine collection bag can be used to collect urine.

* If is not possible to send the urine specimen to NPHL within **2-4 hours**, boric acid must be added, **except for virology testing.**

5.2. Stool/Rectal Swab

5.2.1. Collect 5g or 5ml stool into stool screw-capped container.

- 5.2.2. Collect rectal swab if fresh stool collection is not possible. Ensure that the swab shows some faecal staining.
- 5.2.3. Place the swab for Bacteriology testing in Amies transport medium (with or without charcoal).
- 5.2.4. Place the swab for Virology testing in Viral Transport Media (VTM).

6. EYE/EAR/GENITAL/PUS SWAB

6.1. Eye swab

- 6.1.1. Clean skin around the eye using a sterile moistened swab to remove pus and discharge.
- 6.1.2. Use a separate swab for each eye for specimen collection.
- 6.1.3. Place the swab for Bacteriology testing in Amies transport medium (with or without charcoal).
- 6.1.4. Place the swab for Virology testing in Viral Transport Media (VTM).

6.2. Ear Swab

- 6.2.1. Do not apply any antibiotic drops 3 hours prior to specimen collection.
- 6.2.2. Swab the external ear canal by using a sterile swab.
- 6.2.3. Place the swab for Bacteriology testing in Amies transport medium (with or without charcoal).
- 6.2.4. Place the swab for Virology testing in Viral Transport Media (VTM).

6.3. Urethral Discharge Swab for Sexually Transmitted Infection (Male)

- 6.3.1. Clean the foreskin of the penis using sterile moistened swab.
- 6.3.2. Collect the exudates with a sterile swab and inoculate into the Amies transport medium with/without charcoal or Stuart transport medium.
- 6.3.3. If discharge cannot be obtained, use a sterile swab to collect material from about 2cm inside the urethra.

6.4. Pus/Pus Swab

- 6.4.1. Clean the skin around the specimen collection area using a sterile swab.
- 6.4.2. Collect pus in sterile screw capped container or if minimal pus is available, use a sterile swab. Place the swab in Amies transport media with/without charcoal or Stuart Transport Media.

7. SKIN BIOPSY/LESIONS/VESICLE SWABS

7.1. Skin Biopsy for Leprosy

- 7.1.1. Take a minimum size of 4mm x 12mm skin biopsy samples or a minimum of 5mm punch biopsy.
- 7.1.2. Place the samples into sterile screw capped container without preservatives for mouse foot pad inoculation for drug sensitivity testing.
- 7.1.3. Samples for detection of *Mycobacterium leprae* using PCR method and detection of drug resistant *Mycobacterium leprae* by Molecular Line Probe Assay Method can be transported in sterile screw capped container without preservatives or with 70% ethanol.

7.2. Skin lesions/Vesicle swab

- 7.2.1. Examine the body part and choose the largest vesicle (representative lesion).
- 7.2.2. Clean the area around the lesion gently with a normal saline-soaked cotton swab.

- 7.2.3. Rupture the vesicle carefully with a hypodermic needle.
- 7.2.4. Swab the vesicular fluid from the ruptured vesicle quickly or use the swab to squeeze out the vesicular fluid.
- 7.2.5. Place the swab in VTM.
- 7.2.6. Send the specimen to laboratory as soon as possible.

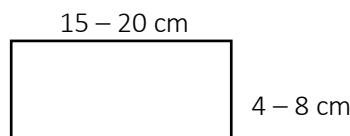
B. ENVIRONMENTAL AND NON-CLINICAL SPECIMEN

1.0 UNTREATED WATER SAMPLING FOR LEPTOSPIRA

- 1.1. Select appropriate water sampling areas, such as:
 - 1.1.1. Bodies of water such as lakes/ wells/ rivers/ waterfalls etc.
 - 1.1.2. Water in a shaded area.
 - 1.1.3. Water in an area with the presence of animals (i.e. paw print marks).
 - 1.1.4. Water in between stones or cracks on the stone.
 - 1.1.5. Water samples taken one foot below the water surface.
- 1.2. Record temperature and pH (compulsory) in the test request form.
- 1.3. Sterilize the collection bucket/pail by pouring 70% alcohol. Let it dry.
- 1.4. Lower the bucket into the river/ well/ pond/ lake and ensure that the connecting rope/string does not touch inner part of the bucket.
- 1.5. Draw up bucket with caution when it is full.
- 1.6. Fill 250ml (minimum) of the collected untreated water into sterile universal samples bag (e.g. Whirl-Pak bags).
- 1.7. Label accordingly and put it into the cooler box following a vertical arrangement.
- 1.8. Wash the bucket with clean water after use, sterilize with 70% ethanol and dry it.
- 1.9. Repeat procedures for sampling in other areas.

2.0 SOIL SAMPLING FOR LEPTOSPIRA

- 2.1 Select the land area for sampling with distance of less than 5 meters from a river/pond/ lake.
- 2.2 The appropriate soil sampling areas are:
 - 2.2.1 Wet land area soil.
 - 2.2.2 Shaded area soil.
 - 2.2.3 Soil in an area with presence of animals (ie: paw print marks).
- 2.3 Sterilize the respective tools by pouring 70% alcohol. Let it dry.
- 2.4 A soil sample size of 15 – 20 cm X 4 – 8cm should be taken in the area after all the loose surface materials are removed.



- 2.5 Place 200 g (minimum) of soil into a sterile universal sample bag (e.g. Whirl-Pak).
- 2.6 Record temperature and pH in the test request form.

3.0 WATER SAMPLING FOR LEGIONELLA

- 3.1 Collect water from a central air conditioning cooling tower or other similar types of water sources.
 - 3.1.1 Water samples must be collected before dosing with biocide.
 - 3.1.2 If dosing has been carried out, take water samples at least 3 days after the dosing.
- 3.2 Ensure that the central air conditioning system is operating and water from the cooling tower is circulated through the system for at least one hour before collection of samples.
- 3.3 Do not collect samples near the take-up water inlet.
- 3.4 Do not stir up sediments in cooling tower.
- 3.5 Take 1000 ml of water for each sample in sterile containers.

***Note: Please notify the laboratory at least 3 days before sending the samples.**

4.0 SOIL SAMPLING FOR BURKHOLDERIA PSEUDOMALLEI

- 4.1 Use a spade, a small gardening shovel or a scoop.
- 4.2 Sterilize the tools by pouring 70% alcohol. Let it dry.
- 4.3 Collect a 100g (minimum) of moist soil samples from a depth of 30cm during the dry season or surface soil during the rainy season.
- 4.4 Put the soil sample in a sterile universal sample bag (e.g. Whirl-Pak).
- 4.5 Label the sample accordingly and record the site sampled.

5.0 WATER SAMPLE FOR BURKHOLDERIA PSEUDOMALLEI

- 5.1 Sterilize the tools by pouring 70% alcohol. Let it dry.
- 5.2 Collect 100ml of stagnant water (from a suspected contaminated pool of water) into a sterile universal sample bag.
- 5.3 Label the sample accordingly and record the site sampled.

6.0 CIGARETTES TESTING (NICOTINE, TAR & CARBON MONOXIDE)

The procedure for sample collection is regulated under **Regulation 17 Control of Tobacco Product Regulations 2004** and **Section 5 of the Food Act 1983**.

C. SPECIMEN REJECTION CRITERIA

The specimens will be rejected if

1.1 Request Form

- 1.1.1 Request form without sample
- 1.1.2 No IC, name or R/N of patient
- 1.1.3 No address of requestor
- 1.1.4 No signature of requesting doctors or requestors.
- 1.1.5 No test indicated
- 1.1.6 Date of collection is not stated
- 1.1.7 Incomplete required clinical history

1.2 Sample



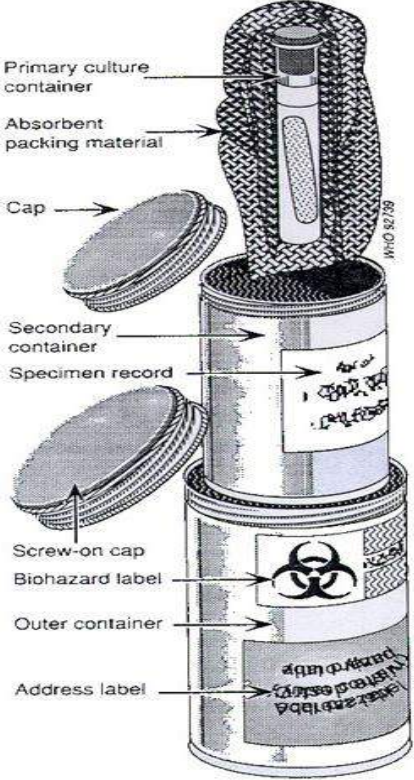
- 1.2.1 Sample without request form
- 1.2.2 No label
- 1.2.3 Leaking sample
- 1.2.4 Haemolysed sample
- 1.2.5 Insufficient sample
- 1.2.6 The type of specimen sent is not appropriate for the test requested.
- 1.2.7 Wrong container



1.3 Others

- 1.3.1 Test is not offered
- 1.3.2 Specimen received is not in suitable condition.

A VISUAL GUIDE FOR INFECTIOUS DISEASE SAMPLE COLLECTION

The steps	Visual guide
<p>Select the correct collection transport container and medium by referring to the A. The Comprehensive Directory of Infectious Disease Tests in NPHL before commencing collection procedure. Ensure that the transport medium used is not expired.</p>	<div> </div> <p>Flocked swab</p> <div> </div> <p>Swab with Cary Blair medium</p> <div> </div> <p>Swab with Amies (without charcoal) medium</p> <div> </div> <p>Swab with Amies (with charcoal) medium</p>
<p>Place the collected sample in sterile container or VTM [for throat or nasopharyngeal swab (NPS)].</p>	<div> </div> <p>Sample in sterile Bijoux bottle</p> <div> </div> <p>Throat / NPS swab in VTM</p>

The steps	Visual guide
<p>Label the sample with:</p> <ol style="list-style-type: none"> 1. Patient's name; 2. Patient's ID number; 3. Sample type; 4. Date of sample collection. 	 <p>The label</p>
<p>Fill in the laboratory request form with complete details.</p>	<p>Refer to the Appendix.</p>
<p>Place individual samples in separate biohazard plastic bags.</p>	 <p>1 sample / plastic bag</p>
<p>Follow the proper triple packing guidelines especially when packing highly infectious substances/samples to ensure safe transportation.</p>	 <p>Primary culture container</p> <p>Absorbent packing material</p> <p>Cap</p> <p>Secondary container</p> <p>Specimen record</p> <p>Screw-on cap</p> <p>Biohazard label</p> <p>Outer container</p> <p>Address label</p>

The steps	Visual guide
<p>Put the sample into cooler box with 3 units of ice packs (i.e. 1 unit at the bottom of the cool box and 2 units at both sides of the samples). Place some absorbent material to protect the container from high impact or unforeseen rough handling of the cooler box.</p>	 <p>Ice packs</p> <p>Place sample individually</p>
<p>Seal the cool box.</p> <p>Place the laboratory request form in a plastic bag and paste on top of the cool box. Ensure that the accompanying request form is secured properly to the box to prevent loss or misplacement of request forms.</p> <p>Transport the sample to the respective regional public health laboratories at 2 to 8°C within 48 hours after collection.</p> <p>All samples must be sent to the sample receiving counter of the respective laboratories.</p>	 <p>Laboratory request form</p> <p>Seal the cool box</p> <p>Address of MKA</p>

SPECIMEN COLLECTION PROCEDURES FOR FOOD DIVISION LABORATORY TESTING

A. SAMPLING PROCEDURE FOR MICROBIOLOGICAL ANALYSIS

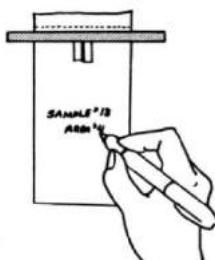
1. *UTENSILS AND STERILIZATION*

- 1.1. Sampling should be done quickly and with caution.
- 1.2. Make sure that the staffs involved are not wearing rings, watches, bracelets, etc.
- 1.3. Wear the suitable personal protective equipment (PPE) including masks and sterile, powder-free gloves.
- 1.4. Wear an overall/apron first, followed by, a mask and a cap.
- 1.5. Follow the 7 hand washing steps before sampling is carried out (<http://fsq.moh.gov.my/v5/ms/faq-cara-membasuh-tangan-yang-betul/>).
- 1.6. The seven hand washing steps must also be done if cross contamination occurs or is identified during sampling activities.
- 1.7. Wipe hands by using hand sanitising wipes or a hand sanitizer that contains at least 75% alcohols.
- 1.8. Wear sterile gloves.
- 1.9. Perform the sampling aseptically by using the appropriate sterile utensils such as sterile spoons, forceps or ladles to prevent cross contamination. If possible, use the food handler's utensils which were used for serving food to customers.
- 1.10. Metal and stainless-steel utensils can be sterilized directly by using a propane torch, spirit lamp or other suitable apparatus.

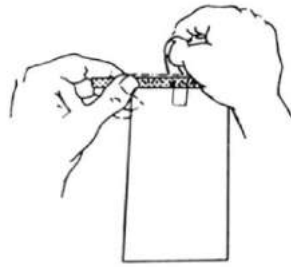


2. *PROCEDURE FOR USING SAMPLING BAGS*

- 2.1. Ensure that the sterile sampling bag is opened only a moment before placing the food samples into the bag and close the sampling bag immediately after.
- 2.2. Do not touch the inner part and the opening area of the sampling bags.
- 2.3. Label the bag with sample information.



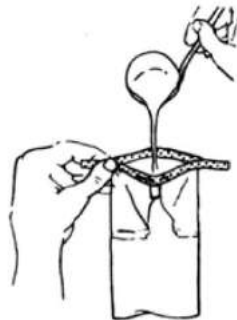
- 2.4. Tear off the top of the bag along the perforation.



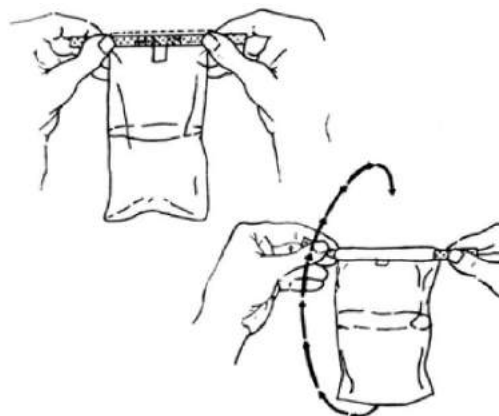
- 2.5. Use pull tabs on each side to open the bag. Sometimes a little pull on the bottom of the bag helps open it completely.



- 2.6. Put sample, liquid or solid, into the bag. Make sure that the ready-to-eat (RTE) sample is not over-filled in the sampling bags. Leave enough space at the top for closing and mixing if needed.



- 2.7. Pull the ends of the wire to close the bag. Holding the bag by the wire ends, whirl the bag three complete revolutions to form a leak-proof seal. Whirling the bag will form the tightest seal. Larger bags can be closed by “folding” the tab over as tightly as possible. Bend the wire ends over onto the bag to complete the closing. Make sure no air is trapped in the sampling bags.



3. *QUALITY CONTROL OF SAMPLE DURING SAMPLING*

- 3.1. For the positive control of sampling bags during sampling activities, make sure that the time exposed to the air for the sampling bag is same to the time used for the sampling activities. Sterile distilled water can be filled into the positive control of sampling bags. It can indicate the air quality at the sampling area.
- 3.2. Un-opened sampling bags can be used as negative control of sampling bag during sampling activities.

4. *SWAB SAMPLING PROCEDURE*

- 4.1. The suitable type of swab to be used for monitoring of environmental hygiene are 3M quick swab, Hygiena Q-swab and etc.
- 4.2. For wet swabbing,
 - 4.2.1. Label the swab, bend snap valve at a 45° angle until snapping sound is heard.
 - 4.2.2. Squeeze bulb to transfer all the broth to the tube.
 - 4.2.3. Remove swab from the tube, and swab targeted area. Place swab back into tube and bring to the lab.
 - 4.2.4. Shake tube vigorously for 10 seconds to release bacteria from swab.
- 4.3. For dry swabbing,
 - 4.3.1. Label the swab, remove swab from the tube, and swab targeted area. Place swab back into tube and bring to the lab.
 - 4.3.2. Bend snap valve at a 45° angle until snapping sound is heard. Squeeze bulb to transfer all the broth to the tube.
 - 4.3.3. Shake tube vigorously for 10 seconds to release bacteria from swab.



5. LABELLING AND 'LAK' PROCEDURE

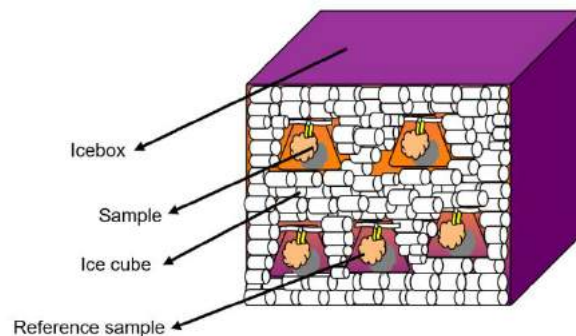


- 5.1. Insert the label in the small plastic packaging and 'lak' the sample bags accordingly.
- 5.2. Take the photos of the sample for further reference (court case).
- 5.3. Insert the labelled sample bags into second layer of transparent plastic packaging to protect the label and 'lak'.



6. PROCEDURE FOR PACKING OF SAMPLES IN AN ICE BOX

6.1. The samples are separated in crushed ice / ice cube, no hot spot occurred, enhanced rapid cooling and easy flowing for melting ice.



6.2. Sample will be rejected by the laboratory if hot spot occurred. Hot spot can occur due to:-

6.2.1. The size of ice is too big and not enough to control the temperature inside the box

6.2.2. The overlapping samples

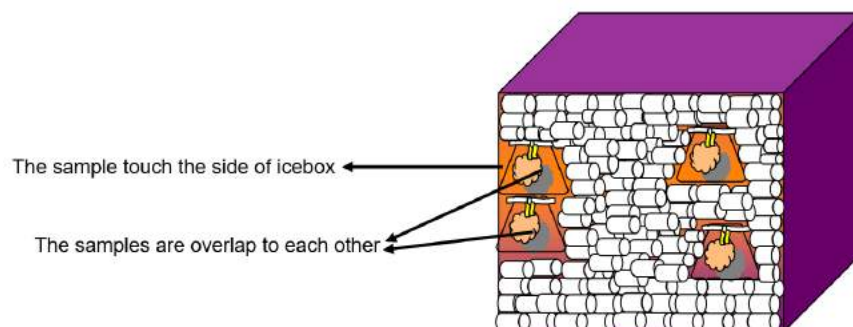
6.2.3. There are too many samples

6.2.4. Sample touch to an ice box

6.2.5. The big air space in packaging

6.2.6. Using ice pack

6.3. For the test of *Vibrio cholerae* and *Vibrio parahaemolyticus* **specifically**, it is recommended to use ice pack to retain a temperature of 7-10°C which is crucial for the stated analysis.



B. SAMPLING PROCEDURE FOR CHEMICAL ANALYSIS

1. GENERAL RULES

- 1.1. Refer PART III PROCEDURE FOR TAKING SAMPLES, Regulation 4 in Food Regulations 1985.
- 1.2. An authorized officer shall :—
 - 1.2.1. divide the sample into three separate parts and mark and seal or fasten up each part in such a manner as its nature will permit.
 - 1.2.2. offer one part to the seller, importer or manufacturer or his agent or the person having charge of the food;
 - 1.2.3. deliver either personally or through another authorized officer or by A.R. (Acknowledgement of Receipt) registered mail or by courier services with acknowledgment of receipt one of the remaining parts to an analyst; and
 - 1.2.4. retain the other remaining part.
- 1.3. Label the food sample according to Regulation 6 in Food Regulations 1985.
 - 1.3.1. The label for food sample shall be in quadruplicate with a common counterfoil in the form as prescribed in the Second Schedule in Food Act 1983.
 - 1.3.2. Where a food sample is divided into three parts one of such label shall be pasted on each part of the sample while the remaining label is to be affixed to the request for analysis form.
 - 1.3.3. Sample need to be paste with official lacquer (*lak rasmi*).
- 1.4. The request for analysis of food sample shall be made in Form A as set out in the Third Schedule in Food Act 1983.
- 1.5. Obtain a sample acceptance letter or receipt from analyst.

2. SPECIAL REQUIREMENT OF SAMPLING FOR PESTICIDES ANALYSIS

- 2.1. For pesticides analysis; sample like cabbage, watermelon must not be divided (cannot be cut) as it might affect the composition or impede the proper analysis of the content.
- 2.2. For samples such as fruits & vegetables, it is recommended to wrap it using clean browning paper to avoid it from wilting. Other options use clean containers and robust packaging such as Polythene or polypropylene bags, ventilated if appropriate. Perishable sample such as fish and meat are wrapped using clean packaging with no ventilated hole.
- 2.3. It is also recommended to submit as soon as possible to the laboratory preferably within one day, especially fresh products as it (pesticides) can be degraded.
- 2.4. Samples of commodities pre-packed for retail sale should not be removed from their packaging before transport.
- 2.5. Samples that are frozen at the time of collection must be transported without thawing. Samples that may be damaged by chilling (e.g. bananas) must be protected from both high and low temperatures.
- 2.6. The use of marker pens containing organic solvents should be avoided for labelling bags containing samples to be analysed for fumigant residues, especially if an electron capture detector is to be used.

3. SPECIAL REQUIREMENT OF SAMPLING FOR HEAVY METAL ANALYSIS

- 3.1. Any samples for heavy metals analysis should not have direct contact with any metals container or apparatus.

4. *SPECIAL REQUIREMENT OF SAMPLING FOR VETERINARY DRUG RESIDUE ANALYSIS*

- 4.1. Sample should be sent to the laboratory as soon as possible, after taking precaution against leakage and spoilage
- 4.2. For shipping/ courier: if possible all perishable samples should be frozen to minus 20°C, immediately after collection
- 4.3. Quantity needed do not include the packaging or inedible portion.

5. *SPECIAL REQUIREMENT OF SAMPLING FOR STANDARD AND NUTRITIONAL LABELLING ANALYSIS*

- 5.1. Sample should send to laboratory according to the requirements in the 1983 Food Act under PART VIII Standards and Particular Labelling Requirement for Food. This is referring to Regulation 42 until Regulation 395.
- 5.2. Example:
 - 5.2.1. Parameter being requested: Percent of Fat
 - 5.2.2. Regulation 62: Oatmeal shall contain not less than 5% of oat fat.
 - 5.2.3. Example of food sample:
 - 5.2.4. Oatmeal (cleaned oats after the removal of the husk and not mixed with other ingredients)
- 5.3. If mixed with other substances such as sugar, malt and salt, it falls under Regulation 64: Prepared Cereal Food. Under this regulation, no allowable percentage of fat content is specified.
- 5.4. Any request for testing of Food Standard shall be referred to Food Regulations 42 to 395 for its suitability prior to sampling.

NPHL OPERATING HOURS AND ON CALL CONTACT NUMBER

Normal Service Hours - From 7.30am to 6.00pm

Mondays to Fridays excluding Public Holidays.

*All samples/specimens should be sent and received by NPHL during the normal service hours except for outbreak samples/specimens.

Outbreak Service Hours (24-hour service)

*Please visit NPHL web site <http://mkak.moh.gov.my/ms/> (Muat Turun> Jadual On-Call> Bahagian Penyakit> Jadual On Call> Bahagian Penyakit or Bahagian Makanan) for the current on-call personnel in-charge. All test request forms are also available for download from the website.

Customers should inform the on-call personnel prior sending the samples/specimens by calling the **NPHL Hotline at 017-219 7439.**

RESULTS TRACING

A. SIMKA (Sistem Informasi Maklumat Kesihatan Awam)

Results for samples sent to the **Disease Division** sections, including:

- a) **Virology**
- b) **TB and Leprosy**
- c) **Bacteriology**

are traceable via NPHL's online system SIMKA (simka.moh.gov.my/result/). The results can be downloaded and printed by users with authorized logins and passwords.

However, results for Biochemistry, Parasitology and Mycology, Entomology are traceable via phone and fax at the present time until further notice of results availability via SIMKA. Please see the the Comprehensive Directory of Infectious Disease, Biochemistry and Entomology Tests for full details.

B. TELEPHONE

All results for samples sent to the Food Division are traceable by phone **+60 (3) 6126 1200 (General Line)** or fax. **+60 (3) 6140 2249.**

The extension numbers of the specific officers to contact are available in the NPHL website:

<http://mkak.moh.gov.my> (Hubungi Kami > Direktori Staf > Bahagian Makanan)

REFERENCES

1. <http://mkak.moh.gov.my>
2. MKAK Service Handbook 2016
3. Instruction Sheet for WHIRL-PAK Sample Bag, NASCO Canada
4. 3M Product Guide: All-in one Swab for Consistent Surface Sampling, 3M Health Care Food Safety Department

BORANG PERMOHONAN UJIAN MAKMAL (SPESIMEN KLINIKAL)
MAKMAL KESIHATAN AWAM

NO RUJUKAN MAKMAL (MKA) :

A. MAKLUMAT PESAKIT		
Nama Pesakit:	Umur:	No Rujukan Pesakit (R/N):
No K.P/ Lain-lain:	Jantina: L / P	
Warga Negara:	Bangsa:	Wad:
Alamat pesakit:	Pekerjaan:	Status perkahwinan Tanda (√) yang berkenaan:
	No. Tel.:	<input type="checkbox"/> Bujang <input type="checkbox"/> Berkahwin <input type="checkbox"/> Lain-lain

B. TUJUAN PERSAMPELAN Tanda (√) yang berkenaan			C. LAIN-LAIN MAKLUMAT			
Wabak/ Kluster	<input type="checkbox"/>	Pesakit (Ada gejala)	<input type="checkbox"/>	Lokality kejadian:		
Survelan	<input type="checkbox"/>	Kes	<input type="checkbox"/>			
Diagnostik	<input type="checkbox"/>	Kontak	<input type="checkbox"/>			
Projek	<input type="checkbox"/>	Kluster	<input type="checkbox"/>			
Lain-lain	<input type="checkbox"/>		<input type="checkbox"/>			
			Sejarah melancong: Ada / Tiada	Negara:		
			Tarikh keluar:	Tarikh masuk:		

D. RINGKASAN KLINIKAL			Tanda (√) yang berkenaan					
			Tanda dan Gejala	Ada (√)	Tarikh onset	Tanda dan Gejala	Ada (√)	Tarikh onset
			1) Demam (°C)			5)		
			2) Selsema			6)		
			3) Cirit-birit			7)		
			4) Muntah			8)		
Status & tarikh imunisasi berkaitan: Ada _____ Tarikh _____ Tiada _____ Tidak diketahui _____								

E. MAKLUMAT SPESIMEN				
Jenis Spesimen	Jenis ujian dipohon	Tarikh diambil	Tarikh dihantar	Tanda Tangan Pegawai yang mengambil spesimen (sila cop)

* Nota: Sila rujuk Service Handbook Makmal Kesihatan Awam Kebangsaan untuk maklumat lanjut tentang spesimen

F. BUTIRAN PEMOHON			G. BUTIRAN MAKMAL TRANSIT		
Nama			Nama		
Jawatan			Jawatan		
Tempat bertugas (sila cop)			Tempat bertugas (sila cop)		
No H/P:	Email:		No tel & samb.	Email:	
KK/PKD/Hospital:			Nama Pusat Transit:		
Daerah:	Negeri:		Daerah:	Negeri:	

H. MAKMAL (untuk kegunaan MKA):		
Unit Pengurusan Spesimen	Makmal	Catatan
Suhu: °C	Jenis sampel:	Terima / Tolak
Sampel: Terima / Tolak	Sampel dlm transport media: Ya / Tidak	Suhu: °C
Nama Penerima:	Nama Penerima:	
Tarikh & masa:	Tarikh & Masa:	
Keputusan ujian disahkan oleh:	Tarikh:	



Kementerian Kesihatan Malaysia
Program Kawalan Penyakit TB
Permohonan ujian TB

A. Pusat Pungutan spesimen (Wad/KK/Hospital) :		Tarikh Permohonan:	
B. Maklumat Pesakit			
Nama :		No Pengenalan Diri (IC/Pasport) :	
Umur :	No Telefon :	Jantina: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> M <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> F	
Alamat:		Warganegara : <input type="checkbox"/> <input type="checkbox"/> Malaysia <input type="checkbox"/> <input type="checkbox"/> Bukan Malaysia, Nyatakan	
Status RVD : <input type="checkbox"/> Positif <input type="checkbox"/> Negatif		<input type="checkbox"/> Diabetik? : <input type="checkbox"/> Ya <input type="checkbox"/> Tidak	
C. Sebab memohon (Tandakan satu)		Adakah pesakit telah menerima rawatan \geq 1 bulan?	
<input type="checkbox"/> Presumptive TB ----->		<input type="checkbox"/> Ya <input type="checkbox"/> Tidak (New Case)	
<input type="checkbox"/> Follow-up TB case (Month of treatment:months)]		Sekiranya YA,	
<input type="checkbox"/> Contact of TB case]		No Pendaftaran TB bagi kes adalah: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
<input type="checkbox"/> Contact of DRTB case (RR, MDR, XDR, TDR)]		Klasifikasi Previously Treated TB adalah :	
<input type="checkbox"/> Suspected MDR-TB]		<input type="checkbox"/> After Failure of 1st treatment <input type="checkbox"/> After Failure of retreatment	
<input type="checkbox"/> Surveillance of		<input type="checkbox"/> After loss to follow-up <input type="checkbox"/> Relapse <input type="checkbox"/> Others	
D. Jenis Specimen : <input type="checkbox"/> Kahak (x1 / x2 / x3) <input type="checkbox"/> Spot <input type="checkbox"/> Pagi <input type="checkbox"/> lain-lain (nyatakan) :			
Tarikh pengambilan spesimen : <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
E. Ujian Di pohon <input type="checkbox"/> Mikroskopik <input type="checkbox"/> Kultur <input type="checkbox"/> ID & Kerentanan Ubatan (Drug susceptibility)			
<input type="checkbox"/> PCR MTB <input type="checkbox"/> Xpert MTB/RIF <input type="checkbox"/> LPA <input type="checkbox"/> Interferon Gamma Release Assay (IGRA)			
F. Maklumat Pemohon			
Tandatangan :			
Nama :			
Jawatan & Cop Rasmi : No.Telefon :			
KEPUTUSAN UJIAN MAKMAL (Di isi oleh pihak makmal yang menjalankan ujian)			
(Sila gunakan bahagian belakang mukasurat ini sekiranya ruangan tidak mencukupi)			
Diuji oleh:		Disahkan oleh	
Tandatangan:		Tandatangan:	
Nama:		Nama:	
Jawatan & Cop Rasmi:		Jawatan & Cop Rasmi:	
No.Telefon:		No.Telefon:	

MAKMAL KESIHATAN AWAM KEBANGSAAN, KEMENTERIAN KESIHATAN MALAYSIA

Lot 1853, Kg Melayu Sungai Buloh, 47000 Sungai Buloh, Selangor Darul Ehsan

Tel: 03-61565109

Fax: 03-61402249/61569654

LABORATORY REQUEST FORM FOR DENGUE AND FLAVIVIRUS

		Lab No. (for lab use) :	
REQUESTOR INFORMATION			
Name :			
Post :			
Address :			
District :		State :	
Tel. No. :		Fax No. :	Email :
Purpose of Sampling			
a. Dengue (please tick purpose of sampling as below)		b. Flavivirus (please tick purpose of sampling as below)	
<input type="checkbox"/> Outbreak		<input type="checkbox"/> Outbreak	
<input type="checkbox"/> Surveillance		<input type="checkbox"/> Surveillance	
<input type="checkbox"/> Diagnostic		<input type="checkbox"/> Diagnostic	
Specimen Category : <input type="checkbox"/> case <input type="checkbox"/> Contact			
A. PATIENT'S INFORMATION			
Name :		Age :	
IC No.		Date of birth	
Reference No. :		Sex : <input type="checkbox"/> Male <input type="checkbox"/> Female	
Address		Nationality : <input type="checkbox"/> Malaysian Non Malaysian	
District :		(Please state country of origin) _____	
Postcode :		Occupation :	
State :		Tel. No. :	
B. CLINICAL SUMMARY			
<input type="checkbox"/> Fever : T°C		<input type="checkbox"/> Diarrhea	
<input type="checkbox"/> Retro-orbital pain		<input type="checkbox"/> Bleeding tendencies	
<input type="checkbox"/> Maculopapular rash		<input type="checkbox"/> Hepatomegaly	
<input type="checkbox"/> Vomitting		<input type="checkbox"/> Shock	
<input type="checkbox"/> Myalgia/arthritis		<input type="checkbox"/> CNS Complications	
Date of fever onset : _____ (dd/mm/yyyy)		Laboratory findings at admission	
Clinical/Provisional Diagnosis :		Hb : TWBC : (PN : %; L : %; M : %; E : %)	
<input type="checkbox"/> Dengue Fever		Platelets : /mm ³ HCT :	
<input type="checkbox"/> Dengue Shock Syndrome		Dengue NS1 : Date of test :	
<input type="checkbox"/> Compensated Shock		Method :	
<input type="checkbox"/> Dengue Hemorrhagic		Dengue IgG : Date of test :	
<input type="checkbox"/> Death : _____ (dd/mm/yyyy)		Method :	
<input type="checkbox"/> Other (flavivirus).		Dengue IgM : Date of test :	
		Method :	
C. PATIENT'S LOCATION			
<input type="checkbox"/> Clinic		<input type="checkbox"/> Ward	<input type="checkbox"/> ICU
D. SPECIMEN INFORMATION			
Type of specimen :		Name of Collector :	
Date of Collection: (dd/mm/yyyy)		Date specimen Received (for lab use) : (dd/mm/yyyy)	
E. RESULTS (for lab use only)			
Verified by :		Date:	

MAKMAL KESIHATAN AWAM KEBANGSAAN
BORANG PERMOHONAN UJIAN MAKMAL HFMD

No. Rujukan Makmal: MKAK/ENT/20 _____ / _____)

A. TUJUAN PERSAMPELAN	
Wabak	O
Survelan (Klinik Sentinel)	O
Kes Teruk (Masuk Wad & Umur < 5 tahun)	O

B. MAKLUMAT PESAKIT	
Nama Pesakit:	
No. Kad Pengenalan / Passport:	Umur:
Warganegara:	Jantina: L / P
Hospital / Klinik Kesihatan:	Wad:
R/N:	Bangsa :
Negeri:	Daerah :

C. MAKLUMAT KLINIKAL		
Gejala	Tandakan (√) di ruangan berkenaan	Tarikh mula
Demam $\geq 38^{\circ}\text{C}$		
Ulser di mulut & tekak		
Maculopapular rash dan / vesikel pada tapak tangan dan tapak kaki		
Tanda dan gejala URTI		
Lain-lain		

D. MAKLUMAT SPESIMEN KLINIKAL				
Jenis Spesimen	Tandakan (√) di ruangan berkenaan	Tarikh diambil	Tarikh dihantar	Pengambil Sampel
Rectal swab				
Mouth ulcer				
Vesicle swab				
Stool				

E. MAKLUMAT PEMOHON	F. MAKLUMAT MAKMAL TRANSIT* (sekiranya berkenaan)
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:
No. Telefon:	No. Telefon:

G. UNTUK KEGUNAAN MAKMAL	
Kaunter Penerimaan Sampel	Makmal
Tarikh spesimen diterima:	Tarikh spesimen diterima:
Suhu: $^{\circ}\text{C}$	Suhu: $^{\circ}\text{C}$
Jenis spesimen:	Jenis spesimen:
Status: Sampel Diterima / Sampel Ditolak*	Status: Sampel Diterima / Sampel Ditolak*
* Sekiranya spesimen ditolak, sila nyatakan sebab:	
CATATAN:	
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:

Sebarang kemusykilan sila hubungi:

- Makmal Kesihatan Awam Kebangsaan (MKAK) Sungai Buloh, Selangor (u.p. Makmal Isolasi Virus): 03-6126 1200 / 1325
- Sample swab mesti dimasukkan dlm vtm dan suhu penghantaran utk semua sample adalah 2-8 degree celcius

No. Rujukan Makmal:

MEASLES - BORANG PERMOHONAN DAN KEPUTUSAN UJIAN MAKMAL

A. MAKLUMAT PESAKIT			
Negeri:		Daerah:	
Hospital / Klinik Kesihatan:			
Nama Pesakit:			
No. KIP:		Umur:	Jantina: L / P
B. MAKLUMAT IMUNISASI MEASLES			
Imunisasi measles: <input type="checkbox"/> Ada <input type="checkbox"/> Tiada <input type="checkbox"/> Tidak diketahui Tarikh dos terakhir diberi:			
C. MAKLUMAT KLINIKAL			
<i>Gejala (Simptom)</i>	<i>Ada/Tiada (Tandakan ✓ diruang berkenaan)</i>	<i>Tarikh mula</i>	
Demam			
Ruam (maculopapular rash)			
Konjunktivitis			
Batuk			
"Coryza"			
D. SPESIMEN KLINIKAL			
Spesimen: <input type="checkbox"/> Pertama <input type="checkbox"/> Kedua			
<i>Spesimen (tandakan -/ diruang berkenaan)</i>	<i>Tarikh diambil</i>	<i>Tarikh penghantaran</i>	
Darah / Serum			
Sekresi pernafasan (Respiratory secretion)			
Air kencing (Urine)			
E. MAKLUMAT PEMOHON			
Nama dan Cop Pegawai:		No telefon:	
Tandatangan:		No. fax:	
		e-mail:	
F. MAKMAL (Untuk Kegunaan Makmal)			
Keadaan spesimen:		Tarikh terima spesimen:	
<i>Spesimen</i>	<i>Jenis ujian</i>	<i>Keputusan ujian</i>	<i>Komen</i>
Darah / Serum			
Sekresi pernafasan (Respiratory secretion)			
Air kencing (Urine)			
Nama dan tandatangan Pegawai Makmal:			
Jawatan Pegawai Makmal dan Cop Makmal:		Tarikh:	

* Nota: Jika spesimen ini adalah spesimen kedua, maklumat mengenai Imunisasi Measles dan Klinikal tidak perlu diisi jika telah diisi pada borang spesimen pertama.

Spesimen klinikal (darah / sekresi pernafasan / air kencing) hendaklah diambil jika pesakit disyaki sebagai kes measles. Defini kes (case definition) adalah seperti dinyatakan di belakang

No. Makmal (untuk kegunaan makmal):

MAKLUMAT PEMOHON (cop rasmi)	
Nama :	
Jawatan :	
Alamat :	
Daerah :	Negeri :
No. Tel :	No. Faks :
E-mel :	

**MAKMAL KESIHATAN AWAM KEBANGSAAN
KEMENTERIAN KESIHATAN MALAYSIA**

Lot 1853, Kg. Melayu Sungai Buloh,
47000 Sungai Buloh, Selangor Darul Ehsan Tel :
03 - 61565109
Faks : 03 - 64102249 / 61569654

BORANG PERMOHONAN PENYIASATAN/PEMANTAUAN SAMPEL PERSEKITARAN

A. MAKLUMAT SAMPEL						
Jenis Sampel :			Tujuan persampelan :			
Tarikh Persampelan :			<input type="checkbox"/> Wabak / kluster			
Lokasi Persampelan :			<input type="checkbox"/> Survel ^{1a}			
Nama Pegawai Persampelan :			<input type="checkbox"/> Program / projek			
No. Kad Kuasa Pegawai Persampelan :			<input type="checkbox"/> Lain-lain :			
Jenis ujian :						
Analisa Parameter Fizikal						
ID Sampel	Masa Persampelan	Suhu (°C)	pH	Clarity	Catatan	
B. MAKLUMAT SAMPEL BERKAITAN PENGESANAN LEGIONELLA SAHAJA						
Jumlah Tangki/Menara Penyejuk :			Tarikh Akhir Penyelenggaraan :			
Kaedah yang digunakan untuk penyelenggaraan (termasuk jenis bahan kimia) :						
C. MAKLUMAT KES (sekiranya ada) :						
Nama kes :			Status kes / <input type="checkbox"/> Hidup			
No. K/P atau ID :			kontak* : <input type="checkbox"/> Mati			
Pekerjaan / Pendedahan (<i>Exposure</i>) :			* potong mana yang tidak berkenaan			

D. MAKLUMAT LOKASI PERSAMPELAN

Keadaan Sekitar Lokasi Persampelan :

- Premis makanan *(Kekal / Bergerak)
- Penternakan haiwan. Nyatakan :
- Kawasan Kediaman / Perumahan. Nyatakan :
- Aktiviti rekreasi. Nyatakan :
- Aktiviti pertanian
- Sistem pengurusan sisa *(Baik / Tidak)
- Sistem saliran air *(Baik / Tidak)
- Kawasan bar jir
- Kawasan redup / celah batu
- Lain-lain :

* potong mana yang tidak berkenaan

Adakah sampel air menjadi sumber bekalan air kepada awam? Ya Tidak

Jenis sumber air : Terawat Tidak Terawat. Nyatakan :

E. LAKARAN LOKASI PERSAMPELAN

Petunjuk :

Nama PKD:

BORANG PERMOHONAN UJIAN PARAS *CHOLINESTERASE*

(A) BUTIR PERIBADI								
Nama	:				Umur	:		
No Kad Pengenalan	:				Pekerjaan	:		
Jantina	:	L / P	Bangsa	:	M / C / I / L	Taraf Perkahwinan: Bujang / Berkahwin		
Alamat Majikan	:							
(B) BUTIR KLINIKAL								
Berat badan	:	kg	Tinggi	:	m	Tekanan darah	:	/mmHg
Ada menggunakan racun perosak selain daripada semasa bekerja? (contoh berkebun atau ladang) Sila tandakan (/) pada kotak.							Ya	
							Tidak	
Ada mengambil ubat? (Jika ada sila nyatakan nama ubat-ubat tersebut)								
Ada tanda-tanda klinikal berikut (Sila tanda (/) pada kotak)						Sejarah klinikal (termasuk pengambilan alkohol, merokok)		
<i>Jaundice</i>		<i>Anxiety</i>		<i>Staggering gait</i>				
<i>Lymphadenopathy</i>		<i>Tremors</i>		<i>Mental confusion</i>				
<i>Hepatomegaly</i>		<i>Salivation</i>		<i>Miosis</i>				
<i>Splenomegaly</i>		<i>Lacrimation</i>		<i>Hypotension</i>				
Lain-lain: Sila nyatakan								
(C) BUTIR PENYEMBURAN RACUN PEROSAK								
Jenis racun perosak. (Sila tandakan (/) pada kotak)			<i>Organophosphate</i>			<i>Carbamate</i>		
Ada memakai perlindungan diri seperti berikut semasa mengendalikan racun perosak? [Sila tandakan (/) pada kotak.]			Topeng muka (<i>mask</i>)					
			Sarong tangan					
			<i>Apron/kot/Baju khas</i>					
			Kasut but getah					
			<i>Earplug/earmuff</i>					
			<i>Goggles</i>					
			Lain-lain. Sila nyatakan.....					
Tarikh akhir penyemburan/pendedahan pada racun perosak (Diisi untuk permohonan <i>baseline</i> shj)								
Tempoh masa anggota direhatkan (Diisi untuk permohonan <i>baseline</i> shj)			> 30 hari					
			> 14 hari					
(D) UJIAN <i>CHOLINESTERASE</i> (Sila tandakan (/) pada yang berkaitan)								
a) Serum <i>BASELINE</i> (Sebelum Penyemburan)								
<i>1st Baseline Sample</i>		Tarikh Pengambilan			Masa Pengambilan			
<i>2nd Baseline Sample</i>								
<i>3rd Baseline Sample</i> (Jika perlu)								
b) Serum <i>POST EXPOSURE</i> (Selepas Penyemburan)								
Tarikh Penyemburan								
Tarikh Pengambilan darah			Masa Pengambilan					
Nama Pegawai Perubatan :								
Cop dan Pengesahan :			Tarikh penghantaran :					

Appendix 3

Ref No.

--	--	--	--	--

CONGENITAL HYPOTHYROIDISM CORD BLOOD SCREENING TEST
HOSPITAL _____

Items 1-8 are to be filled in by labour room staff

1. Mother's IC number:	2. RN:	
3. Mother's name:		
4. Home Address:		
a) Permanent address	b) During confinement period/maternity leave	
5. Home Telephone No:	Hand phone No :	
6. Place of birth:	7. DOB:	Time:
8. Date sample taken:		

Items 9-10 are to be filled in by laboratory staff:

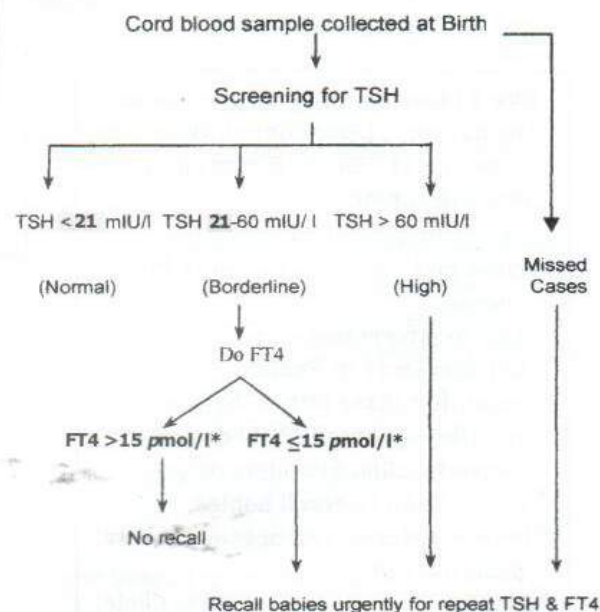
9. Date sample received:	
10. Result : a) TSH (mIU/l) :	b) FT4 (pmol/L)

Collection of blood samples for TSH in hospital

- i) Immediately after delivery, clean the maternal side of the cord with a sterile gauze and collect the blood sample. (**Appendix 1**)
- ii) Allow free flow of blood from the cord directly to the tube (if you need to 'milk', do it gently to prevent hemolysis).
- iii) The tube should be filled with a minimum of 3 ml of blood. (Allow space for the cap to be pushed in)
- iv) Label the tube immediately. Complete the investigation form.
- v) Send the sample to the laboratory with the form at the normal routine intervals within 24 hours.
- vi) See **Appendix 2** for the handling of blood samples at the laboratory.

Missed, Insufficient, Blood Clot Samples & Born Before Arrival Cases

- i) If for some reason the blood sample has not been taken from the cord then it should be taken from the baby as soon as possible after the third day of life. This is to avoid the TSH surge that occurs from ½ hour after birth to about 72 hours of age and to ensure early treatment before 2 weeks of life for better prognosis.
- ii) Fill up the data collection form (**Appendix 3**) and send this to the Paediatric doctor in charge. In addition give parents the instruction sheet and the date to return for a blood sample (after the 3rd day of life).
- iii) The Paediatric Department is responsible to collect the blood sample. Blood samples collected after the 3rd day of life should be venous samples of at least 2 mls.

Flow of Investigations***Note:**

Lab is encourage to determine own 97.5th percentile (use log TSH for it determination) for TSH to be used as cut off value

Source: KKM Congenital Hypothyroidism Screening Programme (Revised Nov 2008)

PERMOHONAN UJIAN KERINTANGAN VEKTOR TERHADAP RACUN SERANGGA**Borang Penghantaran Spesimen (KKM/BPS/001/2014)**

Negeri:	
Daerah :	
Lokaliti :	
Koordinat GPS :	
Minggu epid :	
Sejarah penggunaan racun serangga di lokaliti:	

Tujuan (sila tanda \checkmark pilih satu sahaja)

- Survelan Wabak

Jenis Ujian (sila tanda \checkmark pilih satu sahaja dan potong yang tidak berkenaan)

- Ujian Kerintangan Nyamuk
 Pengesanan Parasit Filariasis / Malaria Dalam Nyamuk
 Pengesanan Virus Denggi Dalam Nyamuk
 Pengesanan Virus JE /Chikungunya Dalam Nyamuk

Borang Penghantaran Spesimen (KKM/BPS/001/2014)

No	Nama Lokaliti	No Sampel	Spesis Nyamuk	Bilangan Spesimen			Tarikh	
				Telur	Larva	Dewasa	Pungutan / Tangkapan	Penghantaran

Nama Pemohon:

Jawatan :

Alamat Tempat Bertugas:

Telefon / Fax Pejabat :

Email :

THIRD SCHEDULE
 FORM A
 (Regulation 7 (1))
 FOOD ACT 1983
 FOOD REGULATIONS 1985
REQUEST FOR ANALYSIS OF FOOD SAMPLE

Office Ref. No.

Pejabat Kesihatan

Date :

The Analyst,

I am sending herewith *sample of food/appliance personally/through
 /by A.R registered mail* for your analysis and report.
 (name of authorized officer)

This sample is contained in a sealed *bottle/package/container and labelled as follows :

Sample Reference No.	*Type of Food/Appliance	Date of sample taken
1.
2.
3.

The type of analysis required for the sample is as follows:

Sample Reference No.	Type of Analysis
1.
2.
3.

Name and Designation of Authorised Officer

(NOTE – This sample has been taken in accordance with the procedures laid down by the Food Regulations 1985)

*Delete where not applicable

MKAK-BPU-K03

REQUESTOR INFORMATION	
Name :	
Post :	
Address :	
District :	State :
Tel. No. :	Fax No. :
Email :	

Lab No. (for lab use) :	
-------------------------	--

**MAKMAL KESIHATAN AWAM KEBANGSAAN
KEMENTERIAN KESIHATAN MALAYSIA**
Lot 1853, Kg Melayu Sungai Buloh,
47000 Sungai Buloh, Selangor Darul Ehsan
Tel: 03-61565109 Fax: 03-61402249/61569654

Mycobacterium leprae VIABILITY & DRUG SENSITIVITY TEST REQUEST FORM

A. PATIENT INFORMATION																															
Name :		Age :	Date of Birth :																												
IC No :		Sex : <input type="checkbox"/> Male <input type="checkbox"/> Female																													
Your Reference No :		Marital Status : <input type="checkbox"/> Single <input type="checkbox"/> Married																													
Address :		Nationality : <input type="checkbox"/> Malaysian																													
District : Postcode :		: <input type="checkbox"/> Non Malaysian :																													
State :		(Please state country of origin)																													
Tel. No :		Occupation :																													
B. CLINICAL SUMMARY																															
Clinical Diagnosis* : <input type="checkbox"/> IDT <input type="checkbox"/> TT <input type="checkbox"/> BT <input type="checkbox"/> BB <input type="checkbox"/> BL <input type="checkbox"/> LL																															
Type of Case : <input type="checkbox"/> New case <input type="checkbox"/> Reactivation <input type="checkbox"/> Relapse <input type="checkbox"/> Problems in treatment																															
History : (including complaints, any exposure to anti-leprosy drug or family history of leprosy)																															
Previous Slit Skin Smear Report :																															
<table border="1"> <thead> <tr> <th>No.</th> <th>Date</th> <th>BI</th> <th>MI</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>				No.	Date	BI	MI																								
No.	Date	BI	MI																												
Site of Biopsy :		Time & Date of Biopsy Procedure :																													
C. RESULTS (for laboratory use only) :																															
Verified By :		Date :																													
.....																															

* IDT - Indeterminate leprosy. TT - Tuberculoid leprosy. BT - Borderline tuberculoid leprosy
BB - Borderline borderline leprosy. BL - Borderline lepromatous leprosy. LL - Lepromatous leprosy

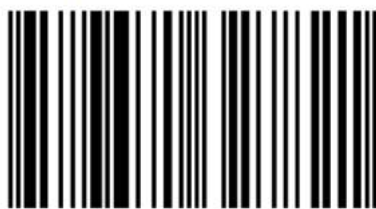
NB : Please send request form in duplicate

BORANG PERMOHONAN UJIAN POTENSI VAKSIN MAKMAL KESIHATAN AWAM KEBANGSAAN , SG BULOH		MKAK/JPV720	
		No Ruj Makmal	
		Tarikh terima	
		Diterima Oleh	
1	Jenis Vaksin	:	<input type="checkbox"/> BCG <input type="checkbox"/> MMR <input type="checkbox"/> Monovalent Measles
2	Jenis Ujian Yang Dimohon	:	:MMR <input type="checkbox"/> Measles <input type="checkbox"/> Mumps <input type="checkbox"/> Rubella :BCG <input type="checkbox"/>
3	Kategori	:	<input type="checkbox"/> Survelan <input type="checkbox"/> Gangguan Rangkaian <input type="checkbox"/> Lain-lain. Nyatakan
4	Maklumat Fasiliti	:	<input type="checkbox"/> Sejuk
	Negeri	:
	Daerah	:
	Nama Fasiliti	:
5	Maklumat Vaksin	:	
	Batch/Lot Number	:	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	Nama Vaksin	:	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	Tarikh Pengilangan		Vaksin : <input type="text"/> <input type="text"/> hari <input type="text"/> <input type="text"/> bln <input type="text"/> <input type="text"/> thn Diluent : <input type="text"/> <input type="text"/> hari <input type="text"/> <input type="text"/> bln <input type="text"/> <input type="text"/> thn
	Tarikh luput		Vaksin : <input type="text"/> <input type="text"/> hari <input type="text"/> <input type="text"/> bln <input type="text"/> <input type="text"/> thn Diluent : <input type="text"/> <input type="text"/> hari <input type="text"/> <input type="text"/> bln <input type="text"/> <input type="text"/> thn
6	Maklumat Penyimpanan	:	<input type="checkbox"/> Top loading <input type="checkbox"/> Pharmaceutical Refrigerator <input type="checkbox"/> Domestic <input type="checkbox"/> Cold Room <input type="checkbox"/> Lain-lain. Nyatakan.....
7	No Aset Kerajaan	:
8	Suhu semasa persampelan	:	<input type="text"/> <input type="text"/> °C
9	Maklumat Pemohon(FMS/MO/PF/Matron/Sister)	:	
	Tandatangan	:
	Nama	:
	Jawatan & Cop	:

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