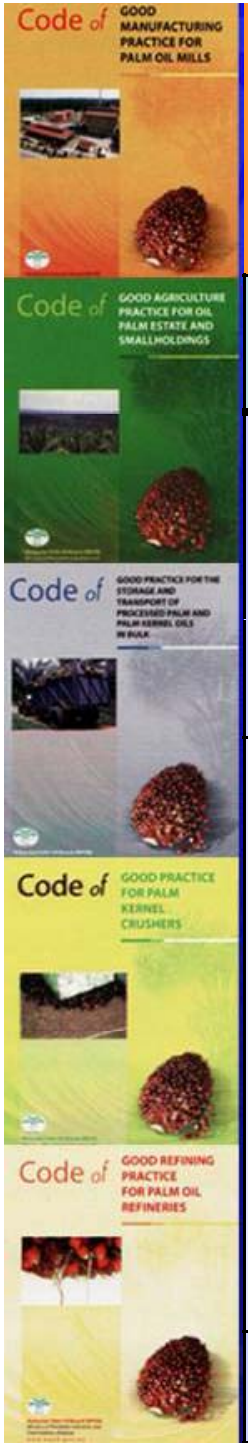
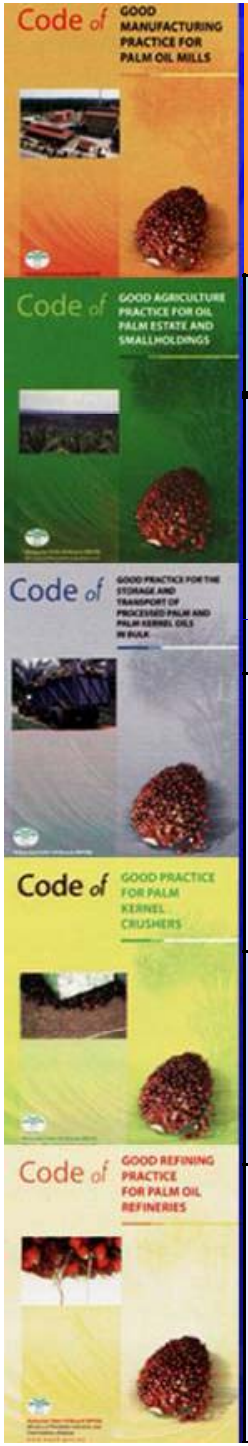
MPOB Codes of Good Refining Practice for Palm Oil Refineries

Mohd Mokmin Bin Bahari



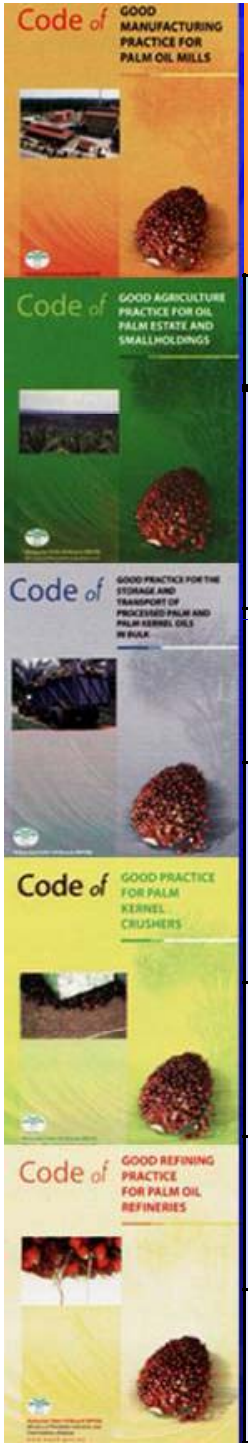
Objective, Scope & Definition

CoP	Requirements
Objective	To promote effective hygiene and process controls to ensure quality, safe and sustainable refined palm oil and palm kernel oil products for consumers
Scope	Refining, fractionation, packaging and other relevant processing of palm oil and palm kernel oil from crude to finished products that are sustainable, safe and suitable for utilization and/or consumption, from their respective crude oils
Definitions	22



Sustainability Principles

Issue	Principle
4.1 Premises	To ensure the location, design and layout are suitable for the refining and packing of palm oil and palm kernel oil products and provide conducive working condition to the employees
4.2 Utility, facility & equipment	To ensure effective implementation of good hygiene and sanitation practices and ensure that all waste are handle according to the rules, regulations and laws in force.
4.3 Quality and Process	To ensure optimum yield and quality of the refined products and minimize production losses
4.4 Quality control and assurance	To ensure that the quality of the products are meets the standard specification and customer requirements and verified before deliver to customer

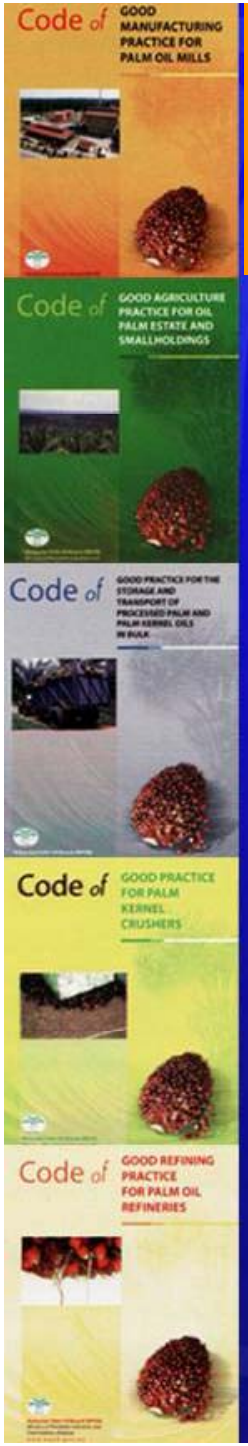


Sustainability Principles

Issue	Principle
4.5 Storage, handling and distribution	To minimize quality deterioration and cross contamination
4.6 Packaging	To add value to the products
4.7 Sampling and analysis	To verify the quality and safety of the products and ensure that the products are free from any contaminant or any undesired materials.
4.8 Food safety	To ensure the products produce by the refinery are safe for consumption and utilization in food.
4.9 Human resource	To promote safe and good working conditions and improve workers' wellbeing/welfare.
5. Legality	To respect all applicable laws of Malaysia and agreements of which country is signatory.

Sustainability Principles

Issue	Principle
Traceability	To enable us to trace the origin of the raw materials to ensure the products are of high quality, safe and sustainable



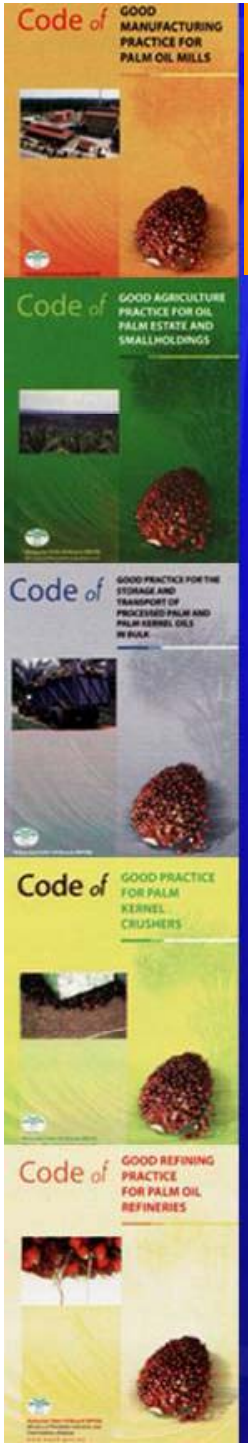
4. REQUIREMENTS

4.1 Premises
4.2 Utilities, facilities and equipments
4.3 Quality and Processing Condition
4.4 Quality Control and Assurance
4.5 Packaging of Finished Products
4.6 Handling, Storage and Transportation
4.7 Sampling and Analysis
4.8 Food Safety
4.9 Human Resources

4.1 Premises

Location, design, construction and layout of a palm oil refinery including sanitary and hygienic requirements.

- *Code of Practice for the Processing and Refining of Edible Palm Oil, Palm Olein and Palm Stearin for the issuance of Health Certificate, MOH 1995*
- Any other national or local laws in force
- Any other code of practice
- Any other regulations and by-laws.



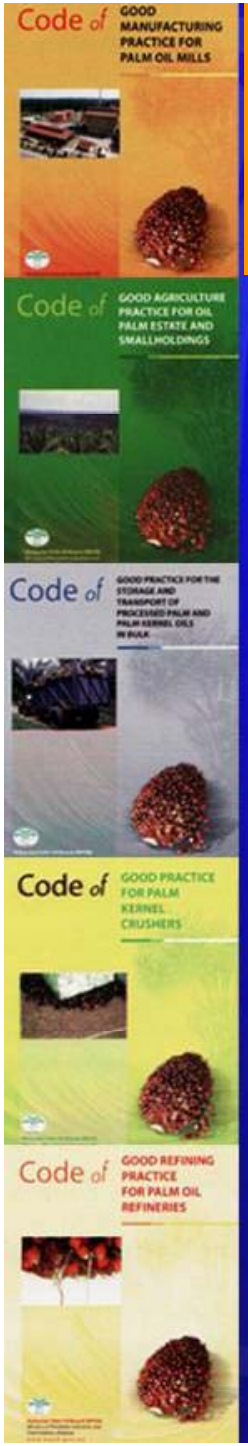
4.2 Utilities, facilities & equipment

4.2.1 Water Supply, Steam, Air and Gas

Water: Portable water
Steam: Dry, free from chemical
Air: Dry, Clean
Gas: Dry, Pure

4.2.2 Separation of Process Areas

Raw Materials
Processed Products
Packaging Materials
Chemicals Additives



4.2 Utilities, facilities & equipment

4.2.3 Tanks, Containers and Equipment

Material: SS, MS, MS-coated

Heating: SS Coil, Hot water or Low Pressure Steam

Fitting: SS, NO COPPER/ALLOY

Design: Easy Cleaning and drying, Complete draining, No splashing, Agitation, No Aeration

Gauging: Temperature, Pressure, Vacuum, Flow Rate, Weight, Volume, Properly maintained, Calibrated

4.2 Utilities, facilities & equipment

4.2.4 Waste Management

4.2.4.1 Waste Water

Dedicated drain/pipeline, Treated, Standard (EQA), Tested, Competent Staff

4.2.4.2 Schedule Waste

Segregated, Labelled, Quantified, Licence/ Authorized, Competent Staff, Proper PPE, Spillage Control Kit

4.2.4.3 Refuse & Solid Waste

Collected, Dedicated, Proper disposal

4.3 Quality & Process Condition

4.3.1 Trade specifications (Domestic) for CPO and CPKO

- Specification, Purchase contract, PORAM, MEOMA, Malaysian Std
- Supplier Assurance/ Evaluation
- Test and Verify

4.3 Quality & Process Condition

4.3.2 The Refining Process

Neutralization: Lye Strength & Dosing, Flow rate RPM, Temperature, Vacuum, Soap Content, pH, Citric Acid Dosing

Bleaching: H3PO4 Dosing, BE Dosing, filter Temperature, Flow rate, Vacuum

Deodorization: Flow Rate, Temperature, filter Vacuum, Sparging Steam, Citric Acid Dosing

Trained and Competent Staff

4.3 Quality & Process Condition

4.3.3/4 Fractionation

Crystallization:

Homogenizing, Time, Temp- Diff, Water Temp, Oil Temp, Cooling Curve, Agitator speed

Filtration:

Pressure, Cycle time, Cloth/ Membrane,

Trained and Competent Staff

4.3 Quality & Process Condition

4.3.5 Quality Specifications

Products Specification, Sale Contracts, Malaysian Standard, PORAM, MEOMA, Test and Verify

4.3.6 Control of Non-conforming Products

Segregation, Marked, Test, Verify, Investigate, Correction, Disposal

4.4 Quality Control & Assurance

Quality or Food Safety Management System

ISO 9000, HACCP, GMP Plus, ISO 22000, EMS 14000, OHSAS 18000, CGMP

Policy, Objectives, Review, Verification

Manual, Procedure, Instruction,

Test – Raw Material, In-process & finished Products, Processing Aids, Packaging, Additives, etc

Laboratory, Laboratory Instruments and Testing Facilities, Competent Staff, Reliable results, Cross-Check, Result Transmission,

4.4 Quality Control & Assurance

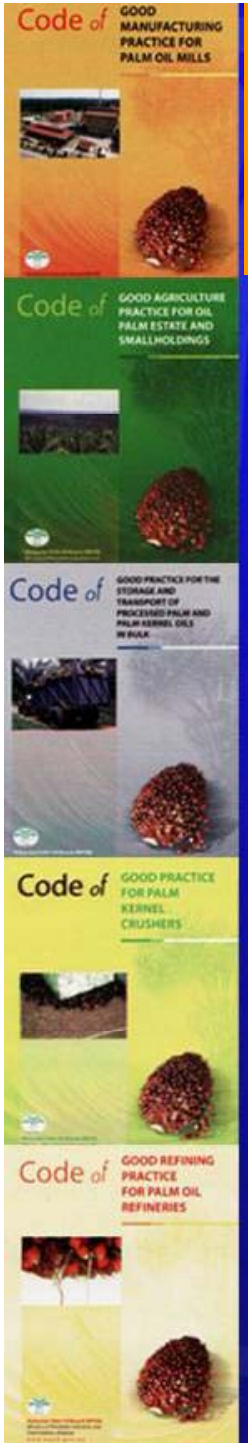
Common Parameter:

FFA, DOBI, Moisture, Impurities, PV, IV, SMP, CP, Colour, packaging material, effluent water, processing Chemicals

Other Parameter:

FAC, SFI, OSI/Rancimat,

Heavy metals, Pesticide residue, Dioxin, PCB, PAH, Phosphorus, etc.



4.5 Packaging of Finished Products

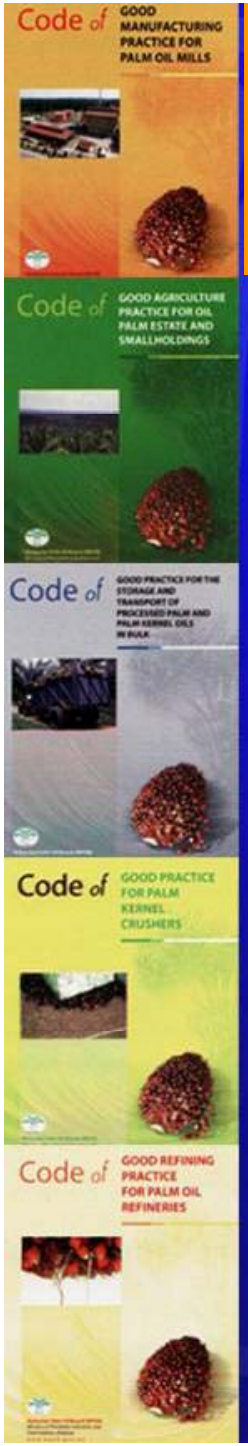
Packaging material –

including crown seals, wads and capping devices

Non-Toxic, Food Approved, Colour fast, Non-absorbent, Tasteless, Odourless, Clean and New, No recycling, Inspected and Verified, Timely Preparation.

Filling equipment, Conveyors and Holding vessels

SS, Impervious, Easy cleaning, washing and drying, food grade lubricant, heating and agitation facilities



4.5 Packaging of Finished Products

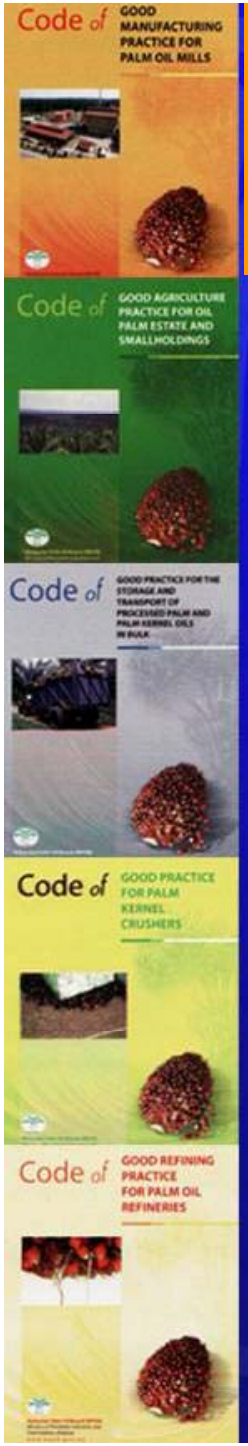
Pipelines, fittings and valves

Stainless steel, clean, rinse and maintain in hygienic conditions, CIP system, Complete drain

Keep all lines dry and free from moisture and residues of cleaning agents or detergents.
NO COPPER OR Cu-Alloy

Packed processed products

Label, Product Name and code, Batch No., Manufacturing Date, Expiry Date, Seal, Test & Verify, Manufacturer name and address



4.6 Handling, Storage & Transport

4.6.1 General Requirements

Made: SS, MS-Coating, MS

Heating: SS Coil, Hot water(80 deg C) or Steam 1.5 bar max

Fitting: SS, NO Copper/Alloy, Easy cleaning, Pressure gauge, Temperature gauge, Level gauging

Agitator: SS, Slow agitation Down pipe or directed to wall

4.6 Handling, Storage & Transport

4.6.2 Crude Oil

Tanker: SS/MS, Dedicated, Clean and Dry, No Copper/Alloy Fitting

Storage: Heating rate 5 deg C/24hr, Temp

4.6.3 Bulk Processed Oil

Tanker: SS/MS, Dedicate, Clean, Dry, No Copper/Alloy Fitting.

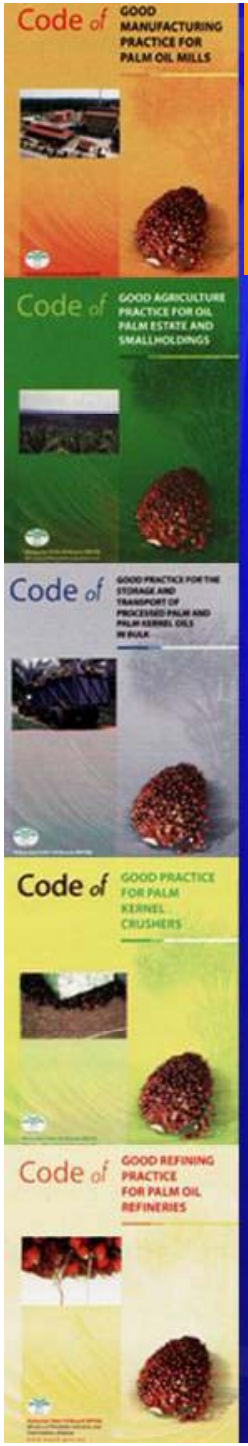
Storage: Temp, Heating rate 5 deg C/24hr, Protected from air, No splashing, Dedicated Lines, Clearly Identify

4.6 Handling, Storage & Transport

4.6.4 Packed Processed Products

Storage: Identify, Label, Contract No, FIFO, Temperature, Humidity, Ventilation, Pest Control, Separated from Hazardous Chemicals

Transport: Dedicated, Clean, Dry, Odourless, Steel, Covered, Sealed

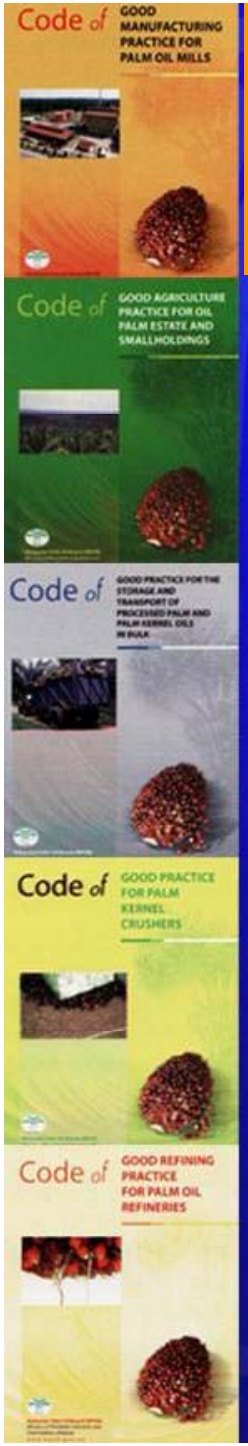


4.7 Sampling & Analysis

4.7.1 General

Sample: Representative
Tool: Stainless Steel Sampler
Can: PE bottle, SS Can, Plastic Pouch, Clean, Dry

Trained & Competent Staff



4.7 Sampling & Analysis

4.7.2 Sampling Procedures

4.7.2.1 Sampling from Tankers

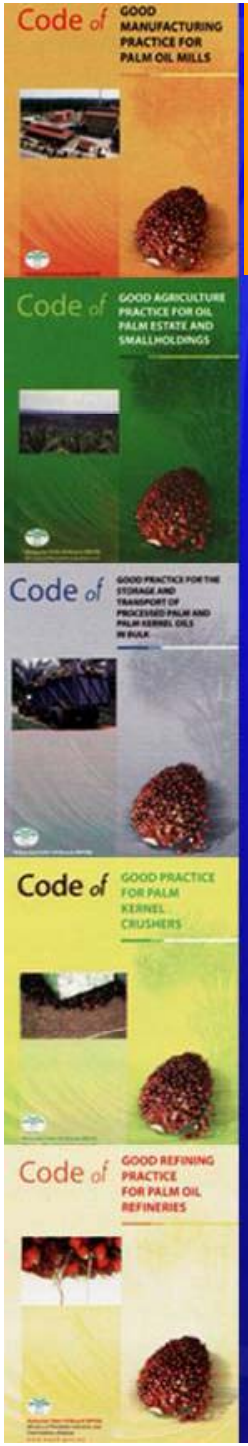
Clean, Dry, Representative, Labelled Discharge Valve & Manhole

4.7.2.1 Sampling from Processing Plants

Clean, Dry, Representative, Labelled

4.7.2.2 Sampling from Bulk Storage Tanks

Clean, Dry, Composite, Representative, Labelled, Zone Sampler



4.7 Sampling & Analysis

4.7.2 Sampling Procedures

4.7.2.3 Sampling from a Batch or Consignment of Packed Products

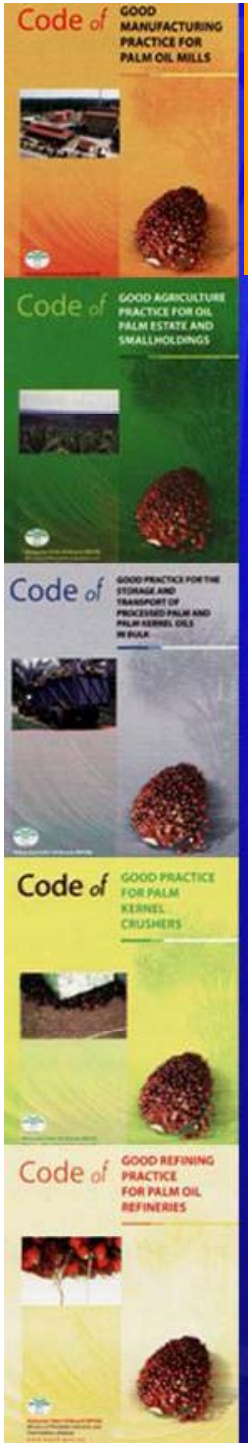
Clean, Dry, Representative, Labelled

4.7.3 Analysis

Approved Test Method (MPOB, AOCS, MS others), GLP, Accredited.

Immediate, Check, Verify, Data Transmission

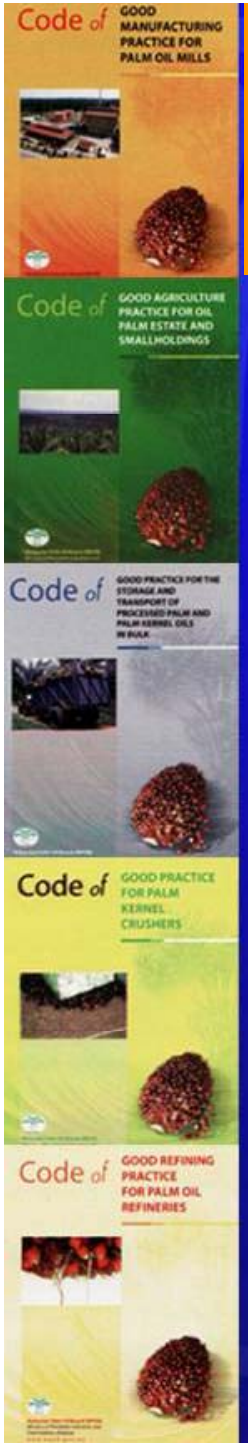
Trained & Competent Lab. Conductor, Round Robin Test, Cross Check



4.8 FOOD SAFETY

Requirements

Food safety has never become more important than it is today. Consumers, customers and governments worldwide are more concerned with the safety of foods than just ensuring supply. Hence palm oil refiners should take necessary actions to ensure food grade oils are safe.



4.8 FOOD SAFETY

Requirements

4.8.1 Recommendations for Food Safety System

Conduct Hazard Analysis & Identify Potential Hazard

Risk Assessment for Every Process Step

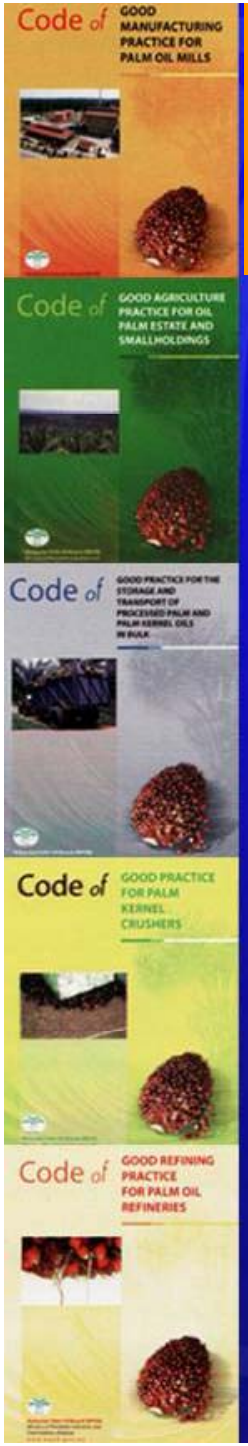
Establish Control Measure

Identify Critical Control Point and Limit

Establish Monitoring Procedure

Establish Corrective Action Procedure

Record and Verification



4.9 HUMAN RESOURCES

Employees Welfare and Carrier Advancement

Training Need Analysis;
Training Plan and Programme;
Conduct Training – In-house or External;
On the Job Training, Job Requirement Training, Skill Training, Advance Skill Training;
Quality & Food Safety, GMP, Personal Hygiene, Hazard, CCP, Corrective Action, Cleaning and Sanitation, Pest Control;
PPE, Chemical Handling, Schedule Waste Handling, First Aid, Fire Safety, Emergency Response Plan, Legal Requirements;
Others.
Recorded, Evaluated and Verified

5. LEGAL REQUIREMENTS

Requirements

Comply to all Malaysian Laws in force and international agreements Malaysia is signatory

Indicators

Evidence of compliance to all Malaysian Laws in force and international agreements Malaysia is signatory.

THANK YOU

FOR YOUR KIND ATTENTION

Lembaga Minyak Sawit Malaysia ● Malaysian Palm Oil Board

MPOB