



Thailand experience on applying the acute risk assessment of pesticide residues

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Thailand**

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7 September 2015, Switzerland



Outline

Part I: The establishment of Thai MRLs for pesticide residue

Part II: Opinion on the proposal



National Agencies in charge of Food control

Ministry of Agriculture and
Cooperatives:
Production based



- Food production, mainly primary production (safety + quality)
- Standard of food in trade, mainly export
- Food security



Ministry of Public Health:
Health based



- Consumer protection (safety + quality)
- Some parts of food production related to consumer protection
- Food import
- Domestic market including food service



Food Act 1979

- Regulated by Ministry of Public Health (MOPH), Food and Drug Administration (FDA)
- Registration of food establishments
- Establish regulations on specific foods
- Control of food sold domestically or imported foods
- Control of food labelling and food advertising



Agricultural Standards Act 2008

- Effective on 20 August 2008
- The Agricultural Standards Committee is a statutory body in charge of policy
- Enforced by the National Bureau of Agricultural Commodity and Food Standards (ACFS) , Ministry of Agriculture and Cooperative (MOAC)





Agricultural Standards Act 2008

- Mandatory standards:
 - license required for production, export or import
 - require inspection / certification by approved CB
- Voluntary standards:
 - license not required
 - inspection / certification on voluntary basis
- The uses of certification mark for both types of standards are controlled by law



The Establishment of Thai MRLs



มาตรฐานสินค้าเกษตร

มกษ. 9002-2556

THAI AGRICULTURAL STANDARD

TAS 9002-2013

สารพิษตกค้าง : ปริมาณสารพิษตกค้างสูงสุด

PESTICIDE RESIDUES : MAXIMUM RESIDUE LIMITS

สำนักงานมาตรฐานสินค้าเกษตรและอาหารแห่งชาติ
กระทรวงเกษตรและสหกรณ์

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THAI AGRICULTURAL COMMODITY AND FOOD STANDARD

TACFS 9003-2004

สารพิษตกค้าง : ปริมาณสารพิษตกค้างสูงสุด
ที่ปนเปื้อนจากสาเหตุที่ไม่อาจหลีกเลี่ยงได้

PESTICIDE RESIDUES : EXTRANEOUS
MAXIMUM RESIDUE LIMITS

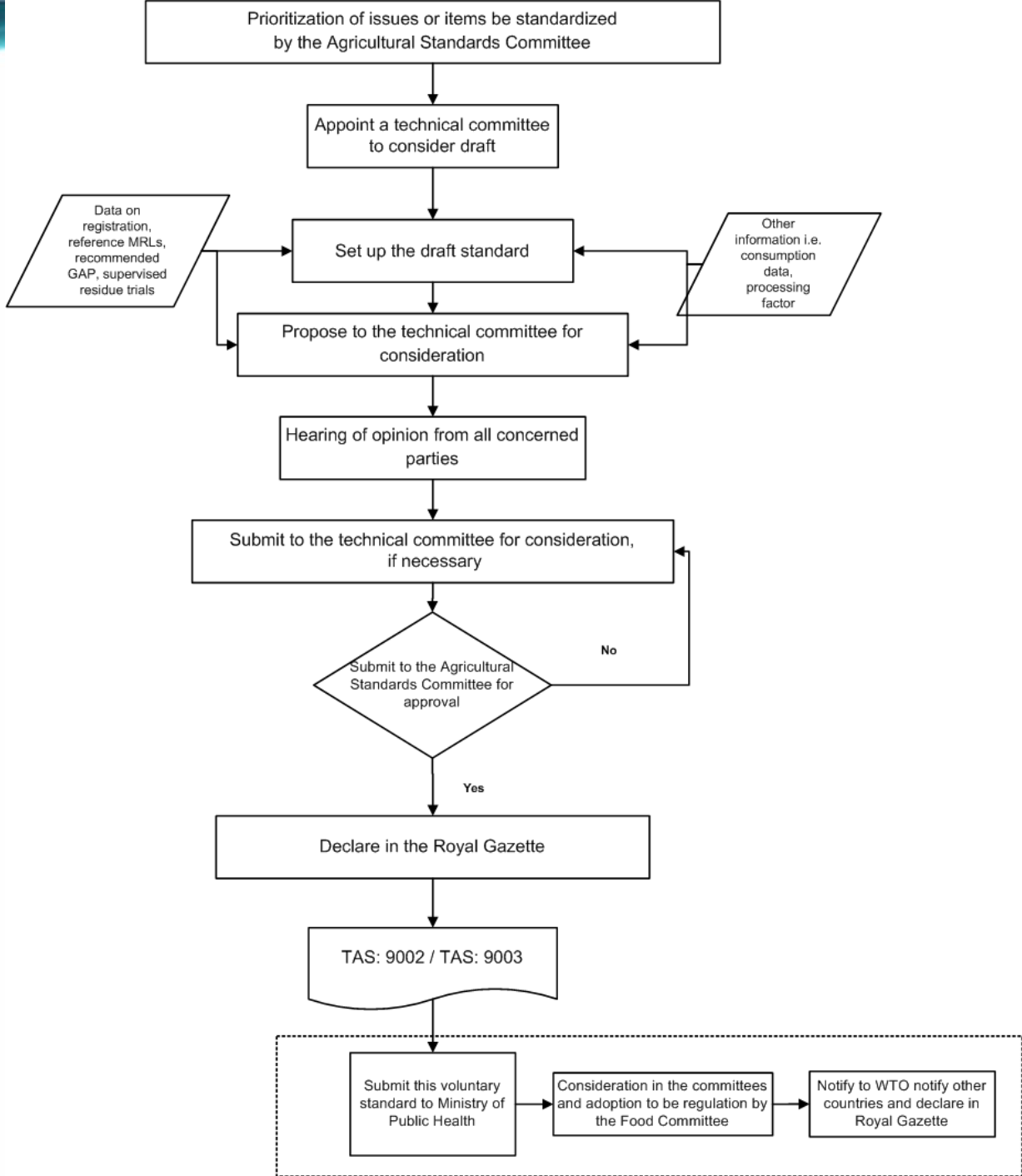
สำนักงานมาตรฐานสินค้าเกษตรและอาหารแห่งชาติ
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Flow chart of the Elaboration of Thai MRLs





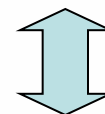
Establishment of Thai MRL

**Agricultural Std
Committee**

ACFS

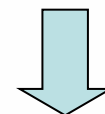
Codex/JMPR

Approved label = GAP



**Data i.e. Codex MRLs
Supervised Trial, other
countries' national MRLs**

Exposure assessment



ADI/ARfD

MRL - Recommendation



MRL Adoption



Principle/Process of MRL Establishment

- Set MRL for all commodities which the pesticide is allowed to be used
- Reference is made to Codex/ASEAN MRLs, where available
- In case of no Codex/ASEAN MRL, the following data are used :
 - Supervised residue trial data
 - Other national MRLs e.g. EU, USA, Japan, Australia
 - Other Codex/ASEAN/National MRLs on related commodities
 - Other related and available data e.g. monitoring data



Risk Assessment of the Proposed MRLs

- ⊕ All proposed MRLs must ensure safety to consumer by apply appropriate risk assessment using Codex technique
- ⊕ Intake calculation is conducted, assuming that all food consumed contain residue at MRL (worst case)
- ⊕ Consumption data was used in the intake calculation
- ⊕ Both chronic and acute intake were included in the calculation
- ⊕ All MRLs/EMRLs have to pass the assessment that provide sufficient safety to consumer before they can be submitted for adoption as national MRLs



Chronic Exposure Assessment

Chronic intake =

$$\sum \frac{\text{Food consumption} \times \text{Concentration}}{\text{Body weight}}$$

Compare intake to ADI

= Risk characterization



Acute Exposure Assessment

= intake from one food in one meal or day

Calculate “National Estimated Short-Term Intake (NESTI)

3 cases of intake calculation depended on food commodity unit weight

Case 1 : food commodity unit weight ≤ 25 g

Case 2 : food commodity unit weight > 25 g

Case 3 : processed Commodity is bulked or blended;
including milk

Compare intake to ARfD = Risk characterization



Acute Exposure Assessment

Calculate “National Estimated Short-Term Intake (NESTI)

Case 1 - food commodity unit weight ≤ 25 g

- also applies to meat, edible offal, eggs

$$\text{NESTI} = \frac{\text{LP} \times \text{HR}}{\text{bw}}$$

LP = Large portion consumption (97.5th percentile of eater)

HR= Highest residue found from supervised trial data



Acute Exposure Assessment

Case 2 : food commodity unit weight > 25 g

Case 2a unit weight, edible portion (U) < LP

$$\text{NESTI} = \frac{(U \times \text{HR} \times V) + [(LP - U) \times \text{HR}]}{bw}$$

V = Variability factor
(JMPR use a default V = 3)



Acute Exposure Assessment

Case 2b unit weight, edible portion (U) \geq LP

$$\text{NESTI} = \frac{\text{LP} \times \text{HR} \times \text{V}}{\text{bw}}$$



Acute Exposure Assessment

Case 3 Processed Commodity is bulked or blended; including milk

$$\text{NESTI} = \frac{\text{LP} \times \text{STM R-P}}{\text{bw}}$$

STM R-P = supervised trials median residue
in processed commodity



Tier approach

- Applied in the risk assessment for setting up national MRLs
- **1st Calculation** : Primary estimation, MRL can be used as a maximum residue concentration
 - If intake \leq ADI/ARfD \rightarrow pass
 - If intake $>$ ADI/ARfD \rightarrow **2nd refine intake calculation**



Refine of Intake Calculation

- **2nd Calculation** : STMR, HR, residue in edible portion, processing/cooking factors are used in this step
 - If intake \leq ADI/ARfD \rightarrow pass
 - If intake $>$ ADI/ARfD \rightarrow the proposed MRLs are rejected



Intake calculation for residue gathering from monitoring program

- Use current formulas
- Use means and HR for chronic and acute intake calculation
- Submit the result of risk assessment to risk manager for consideration



Opinion on Proposal

- **MRL**

Using MRL —→ acceptable if Tier approach

- Tier 1 : using MRL
- Tier 2 : using STMR, HR

- **Unit weight**

Agree with the harmonisation of guidelines for unit weight, **but** the data can be different among region.



Opinion on Proposal

- **Variability factor**

The figure(s) should be from the study

- **Processing / cooking factor =>** Another factor leads to the result of different MRLs
Could they be harmonised??



Conclusion

- No objection on applying the MRLs but tier approach should be applied as well.
- Agree with the establishment of guidelines of generating of the unit weight.
- Propose for consideration of processing / cooking factors
- Propose for establishment of the guideline of inspection management on pesticide residues based on risk



Thank you

Any Questions?

