The scientific basis of International food safety standards

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http://www.who.int/foodsafety/en/
Purpose of JMPR: Pesticide residues (MRLs) not greater than toxicologically acceptable.

JMPR evaluates:
- Standard toxicology data package:
  - Acute, short-term and long-term studies, genotoxicity
  - Carcinogenicity, Fertility and fetal development
  - Toxicology of plant metabolites
- Mechanistic studies (in vitro and in animals)
- Human data (e.g. on operators, epidemiology)
Assumption: animal model for humans

 Extrapolation to humans

Safe dose range for animals
The main output of JMPR WHO are the two health based guidance values

→ **Acceptable Daily Intake (ADI)**, lifelong daily dose without inacceptable risk

→ **Acute Reference Dose (ARfD)**, single high dose without inacceptable risk

Usually ADI < ARfD
Food commodities safe, if …

… MRL can be set ensuring that exposure \( \leq \text{ADI and ARfD} \), even if consumption patterns may considerably vary:

- seasonality
- high consumers
- individual preferences
- children vs adults
- ….
A pesticide may even be carcinogenic or teratogenic (hazard).

1. If low doses identified in animals without effects:
   → Establishment of safe human doses (ADI and ARfD)
2. If GAP available giving exposures ≤ ADI and ARfD
   → Establishment of MRL

→ JMPR recommends MRL strictly risk-based, not hazard-based
JMPR WHO group works “at home”…

during the year:

- For each pesticide (ca. ten per year) a monograph on toxicological data is drafted (two persons per pesticide)

- The drafters interact electronically, also with the company if questions arise

- The whole group has telephone conferences to identify critical points
...and at the Meeting (Rome/Geneva)

• All the compounds are critically discussed by all participants and monographs amended accordingly

• ADI and ARfD established

• General items discussed (e.g. improvement of risk assessment methods)

• Report item and monographs finalized
Publications on JMPR Meetings

FAO group - residues

Pesticide residues in food 2012
Joint FAO/WHO Meeting on Pesticide Residues

EVALUATIONS 2012
PART I - RESIDUES

WHO group - toxicology

Pesticide residues in food — 2012
Joint FAO/WHO Meeting on Pesticide Residues

EVALUATIONS 2012
Part II — Toxicological

JMPR - risk assessment

Pesticide residues in food 2012
Joint FAO/WHO Meeting on Pesticide Residues

REPORT 2012
Good evaluations need best data

New views on old data together with new data may have an impact on risk assessment:

- Each new study increases world-wide database for comparative analysis (e.g. quantitative structure activity relationship)

- Toxicological technologies change with time (e.g. in silico and in vitro data, combinations of both)

- Assessment methods change with time (e.g. chemical-specific assessment factors, assessment frameworks)
Thank you for your attention