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Strengthening Pesticide Evaluation Capacity: The Role of FAO and the Pesticide Registration Toolkit



Pesticide use should have benefits









Pesticide use should not pose unacceptable risks





Agronomic risks







Sound Registration Decisions



Pesticide registration authorities are "gate keepers"

Decide whether a pesticide:

- responds to local needs
- has added value for its users
- does not pose unacceptable risks to human health and the environment



They must balance potential benefits of pesticides against their expected risks

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FAO's role in pesticide management

Leads the UN's work on pesticide management.

Supports countries to develop policies, tools and practices for safe and effective pesticide use.

Promotes a life-cycle approach-from registration and use to risk reduction and sound management.

Works to protect human health, the environment and ecosystems.

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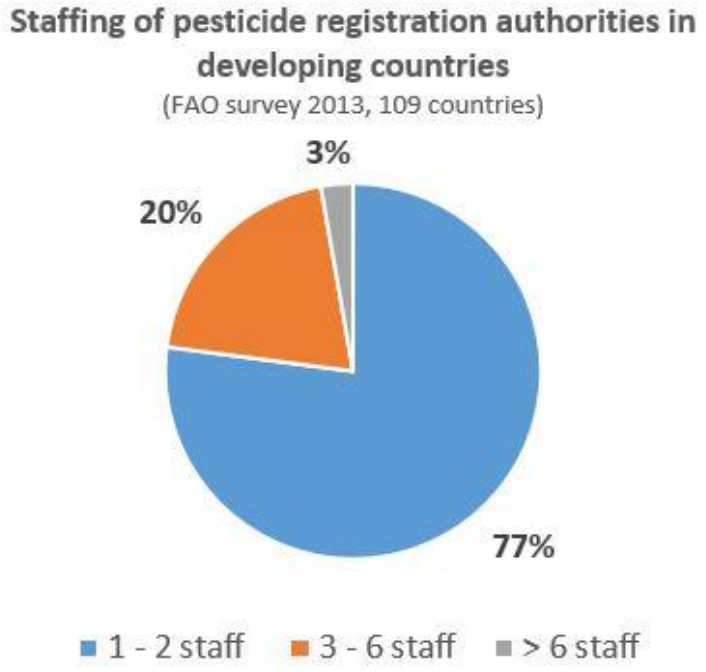
A life-cycle approach to safer pesticide use



Registration	Risk management	Use in practice	After application	Review & improve
Evaluate hazards, uses and risks	Set conditions and mitigation measures	Support safe handling and application	Protect re-entry workers and the environment	Build evidence, update guidance and capacity

Evaluation is not only about whether a pesticide can be registered—it is also about how risks are managed throughout use.

Starting point





Starting point

Pesticide registration authorities in most developing countries tend to have **very limited resources**:

- Personnel (time)
- Specific expertise
- Finances
- Access to external information/specialists



→ **Full, or even partial, evaluations** of a pesticide are **rarely possible.**

and

→ **Reinventing the wheel** (in particular if it has been well invented) is a **waste of resources.**

FAO Supporting pesticide registration

- FAO is regularly requested for guidance on pesticide registration
- Several FAO & WHO guidelines are published, but not well used
  - Registrars **not aware**
  - **Not** sufficiently **user friendly**
  - **Not** sufficiently **interactive**



So how to provide better guidance ?!

Toolkit objectives

- Make **existing information** relevant for pesticide registrars available “at fingertips”
- Provide **guidance** about key registration procedures and methods in an interactive manner
- Assist registrars in **informed decision making**
- Create a basis for **training and capacity building** of pesticide registration authorities

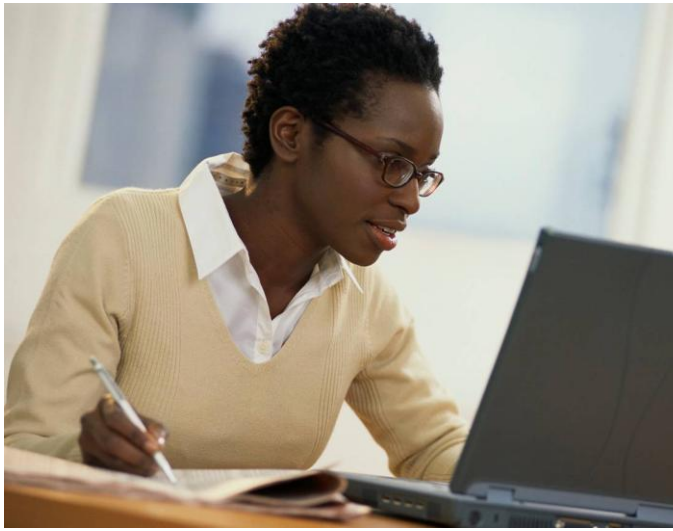


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Pesticide Registration Toolkit

What is the Toolkit?

- **Decision support system** for pesticide registration staff in LMICs
- Online registration **handbook intended for day-to-day use**
- Favours methods feasible with **limited resources**
- **Focussed tool** providing only information relevant for pesticide registration, plus guidance on how to use the information provided.



Pesticide Registration Toolkit

What is the Toolkit (and what not)

- **Not an automated system** for the evaluation of pesticides.
  - Toolkit will not "calculate" whether a pesticide can be registered or not
  - Registration staff still needs to evaluate the pesticide!
- **Focussed** tool:
  - Only directly relevant information for pesticide registration
  - Guidance on how to use the information provided



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Main elements of the Toolkit

Pesticide Registration Toolkit

Registration Tools | Information Sources | Special Topics | News | About | Training | Dgroups forum

Registration tools

technical advice on various processes and methods in pesticide registration

Information sources

information on individual pesticides, often on external links not mantained by FAO

Special topics

topics of special interest Highly Hazardous Pesticides and Public Health Pesticides

Quick start guide



NOT PESTICIDE-SPECIFIC

Registration Tools

→ Processes and procedures

- Advice on which **registration strategy** to follow
- Advice on steps in the **registration process**
- **Data requirements and testing guidelines** for the evaluation of a specific type of pesticide for a particular use
- **Assessment methods** for the various aspects of the pesticide registration dossier
- Advice on **risk mitigation** measures
- Advice on **decision making** principles and procedures
- **Registration criteria** used by other regulators
- Options for the **assessment of alternatives**

PESTICIDE-SPECIFIC

Information Sources

→ Links to existing databases, websites, etc.

- **Existing registrations** through national databases/lists
- **Restrictions and bans** by international conventions
- **Scientific reviews** by reputable international and national bodies
- **Hazard classifications and labels**
- **Pesticide properties databases with** information on individual pesticides
- **Maximum residue limits** (MRLs)
- **Pesticide specifications**

Special pages

→ High interest topics relevant to pesticide registration

- **Highly hazardous pesticides** (HHPs)
- **Registration of public health pesticides** (in collaboration with WHO)
- **Biological Pest Control Agents**
- **GHS system** of classification and labelling of chemicals

Terms & Definitions

- Regularly used terms in pesticide registration

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FAO PESTICIDE REGISTRATION TOOLKIT

ASSESSMENT METHODS

A flexible, stepwise approach to pesticide dossier evaluation

THREE-SLIDE BRIEFING

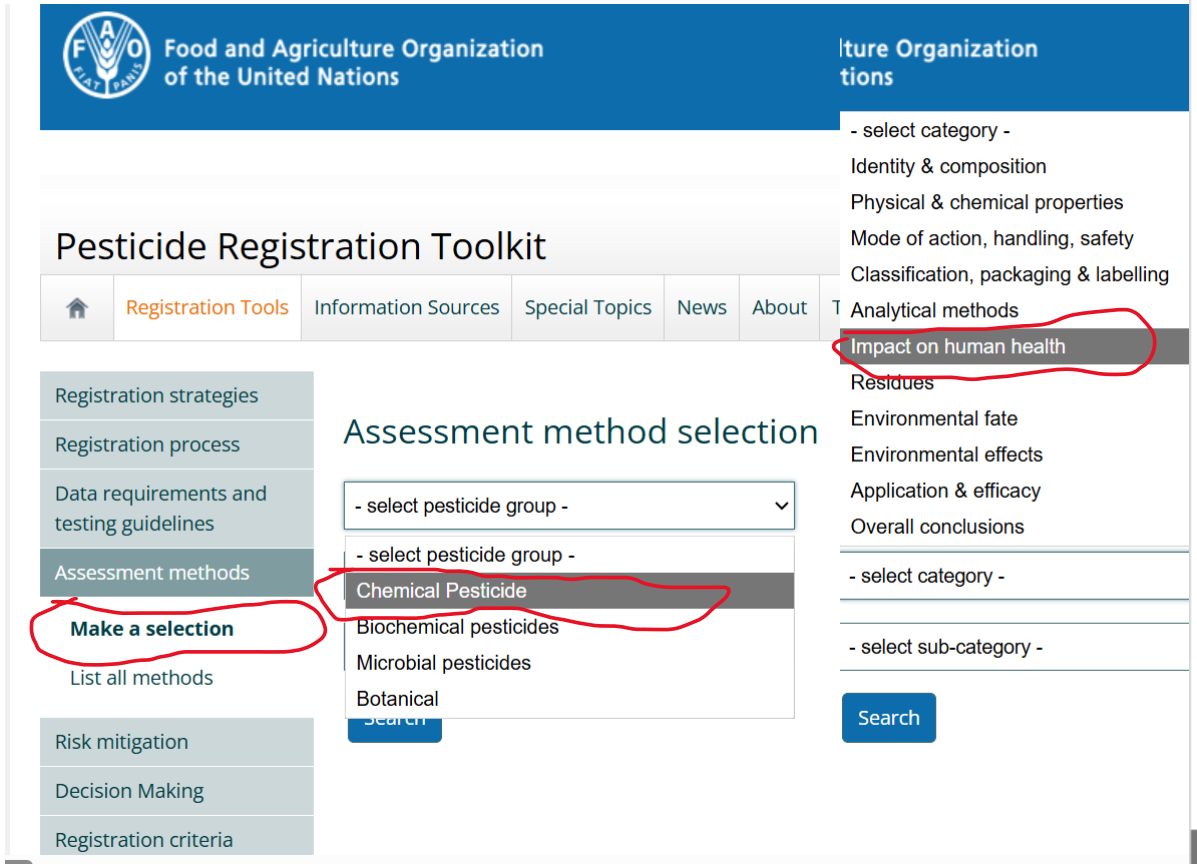
From choosing methods to assessing operator risk

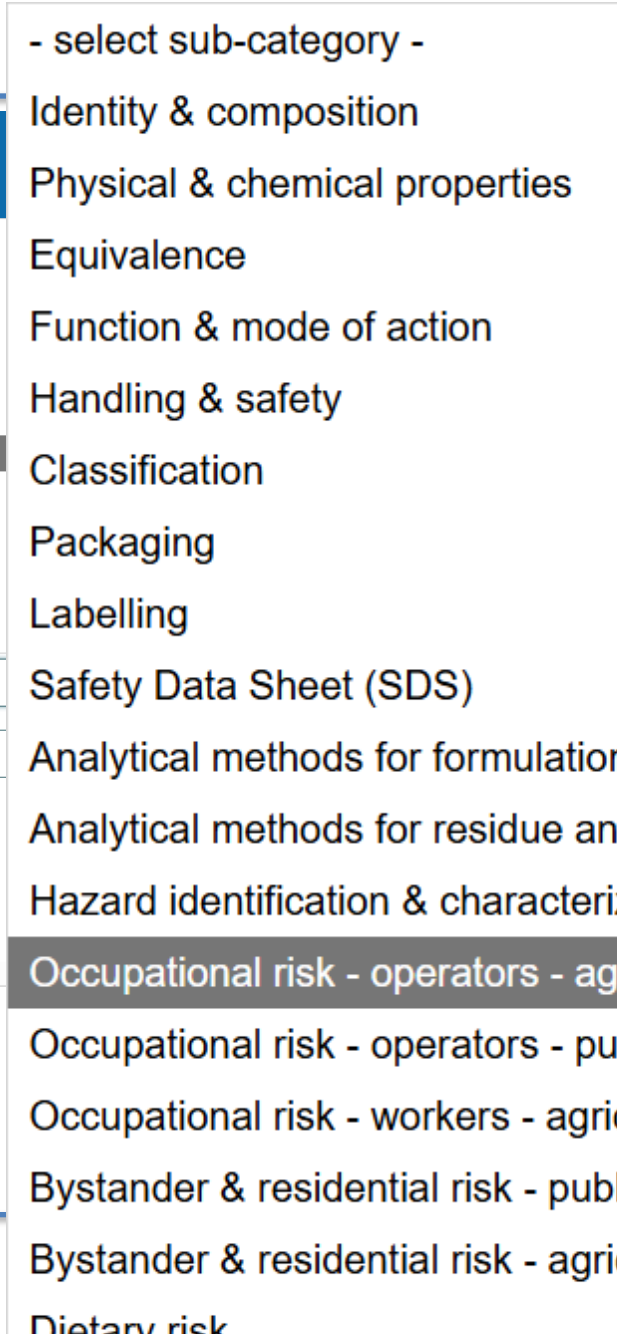
The Toolkit guides registration authorities to methods, models and procedures for evaluating specific parts of a pesticide registration dossier—matched to the assessment question and available capacity.

Focus: operator exposure in agricultural use

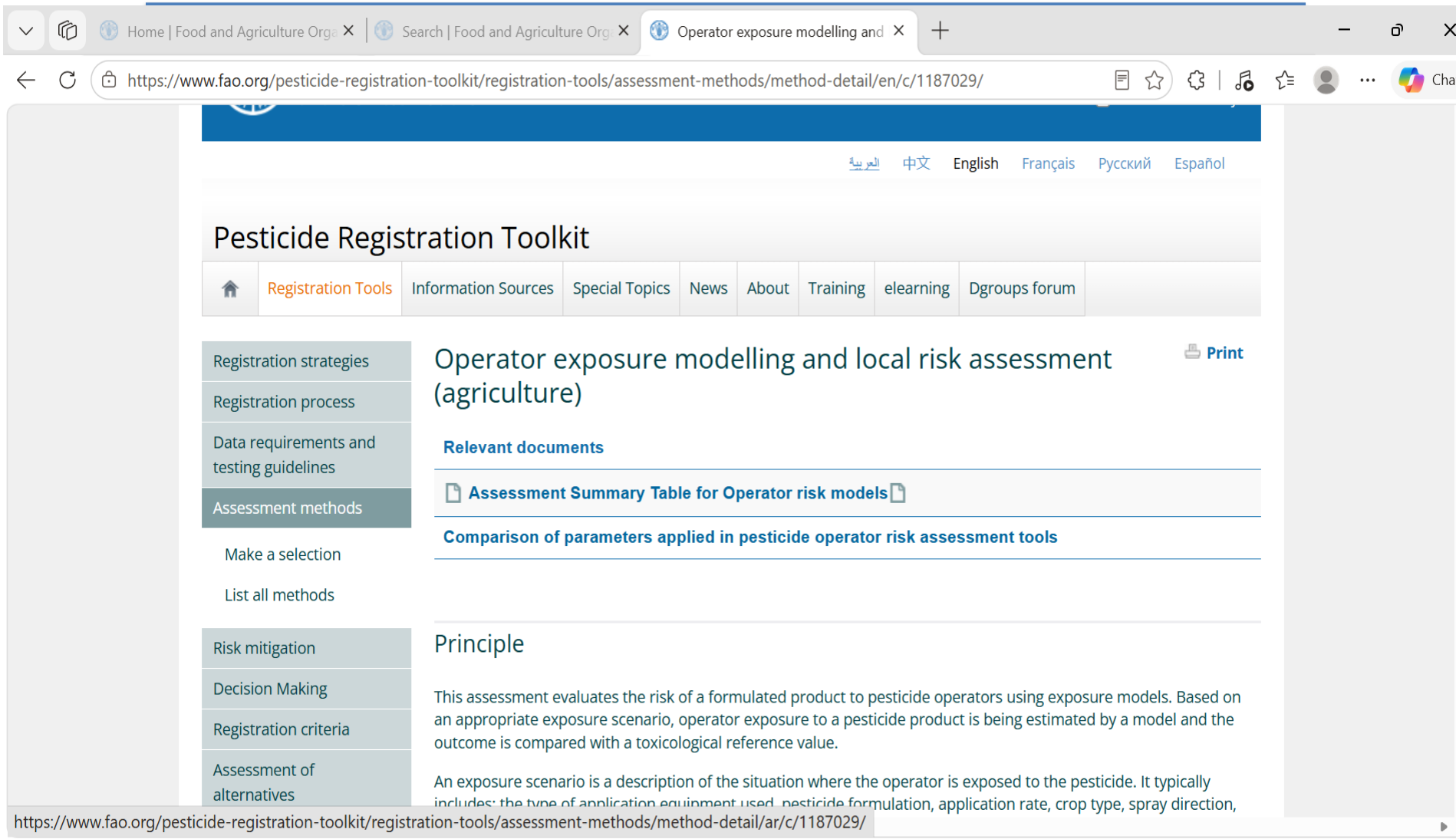
Source: FAO Pesticide Registration Toolkit

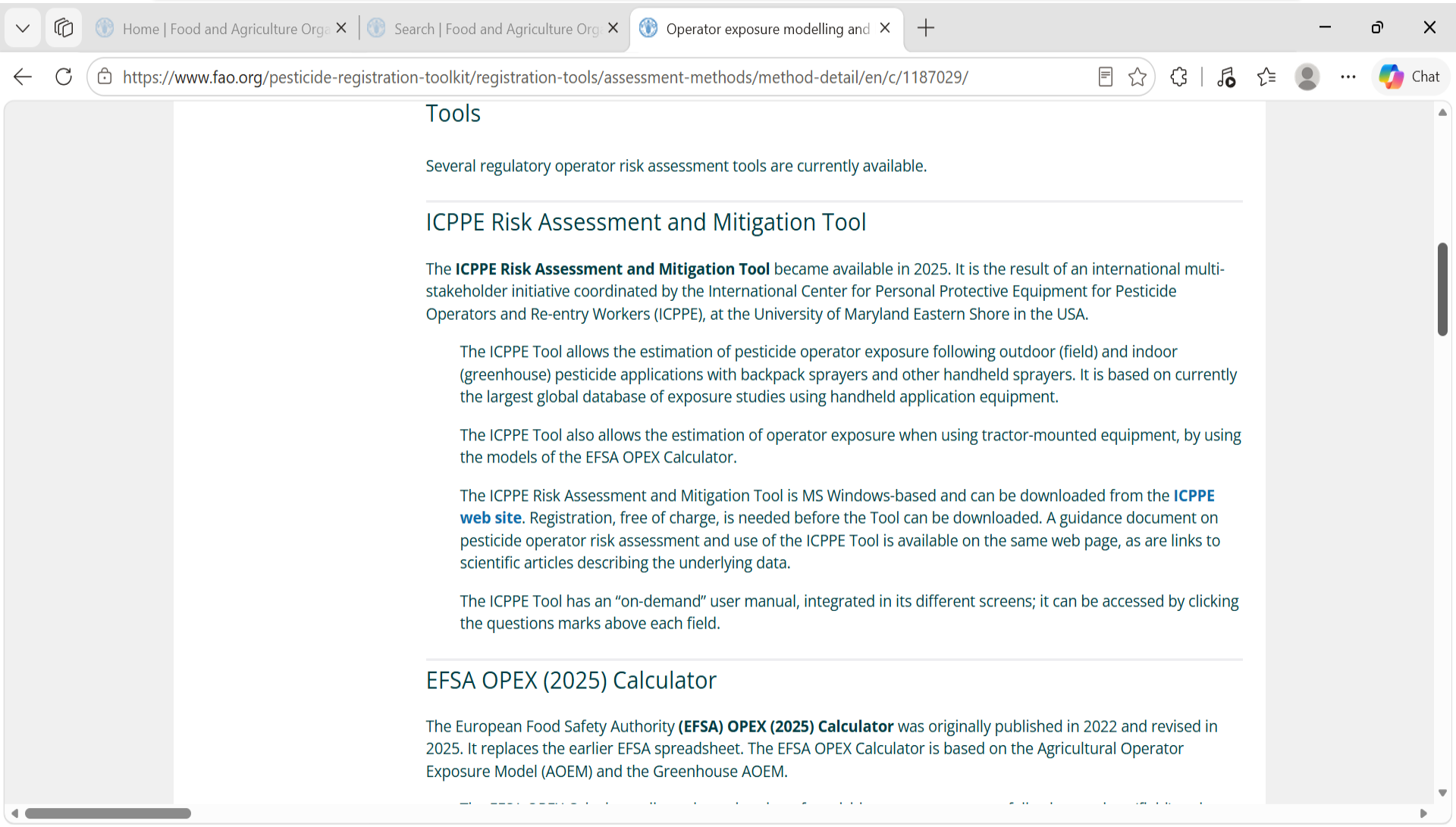
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Tools

Several regulatory operator risk assessment tools are currently available.

ICPPE Risk Assessment and Mitigation Tool

The **ICPPE Risk Assessment and Mitigation Tool** became available in 2025. It is the result of an international multi-stakeholder initiative coordinated by the International Center for Personal Protective Equipment for Pesticide Operators and Re-entry Workers (ICPPE), at the University of Maryland Eastern Shore in the USA.

> The ICPPE Tool allows the estimation of pesticide operator exposure following outdoor (field) and indoor (greenhouse) pesticide applications with backpack sprayers and other handheld sprayers. It is based on currently the largest global database of exposure studies using handheld application equipment.
>
> The ICPPE Tool also allows the estimation of operator exposure when using tractor-mounted equipment, by using the models of the EFSA OPEX Calculator.
>
> The ICPPE Risk Assessment and Mitigation Tool is MS Windows-based and can be downloaded from the **ICPPE web site**. Registration, free of charge, is needed before the Tool can be downloaded. A guidance document on pesticide operator risk assessment and use of the ICPPE Tool is available on the same web page, as are links to scientific articles describing the underlying data.
>
> The ICPPE Tool has an "on-demand" user manual, integrated in its different screens; it can be accessed by clicking the questions marks above each field.

EFSA OPEX (2025) Calculator

The European Food Safety Authority **(EFSA) OPEX (2025) Calculator** was originally published in 2022 and revised in 2025. It replaces the earlier EFSA spreadsheet. The EFSA OPEX Calculator is based on the Agricultural Operator Exposure Model (AOEM) and the Greenhouse AOEM.

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The ICPPE Risk Assessment and Mitigation Initiative

Launched 2021 → **Regulators • Scientists • Industry experts** → **Practical tool for handheld application**

Brings technical stakeholders together to address a recognised exposure-assessment gap.

Aims to provide a practical, scientifically sound approach for handheld pesticide application.

FAO has followed the process as an observer, supporting transparency, scientific integrity and practical relevance.

A living platform!

- New modules and models are added and existing information is regularly updated
- Feedback by pesticide registration staff
- Training programme
- Forum for Registrars/ Trainees
- Available also in French, Spanish, Arabic & Russian



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Capacity building for lifecycle management

- **7 regional and national trainings** on Pesticide Registration Toolkit and Biopesticides and waste management in South Africa, Uzbekistan, Paraguay, Tanzania, Costa Rica, Morocco. Up to now, **+900 pesticide registration** officers over **93 countries** trained.
- FAO review of the ICPPE operator exposure model for inclusion in the PRT in progress
- **New modules and 3 E-learning lessons** developed with support of KEMI, including Handheld application tools for exposure modelling
- **Pacific Regional Pesticide Registration Scheme** operationalization ongoing





Toolkit instruction

For most modules in the Toolkit, short **YouTube** instruction videos and **FAO Elearning Academy** lessons are available



FAO elearning ACADEMY

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FAO Pesticide Registration Toolkit (PRT): Training Updates

Recent face-to-face trainings

Nov 2025 – Rome, Italy
Global Training of Trainers (ToT): 20 pesticide-management and registration professionals from Africa, Asia, Europe and Latin America. Covered the full Toolkit, HHPs, GHS, risk mitigation and new approaches.

Dec 2025–Jan 2026 – Marrakech, Morocco
Regional training for 14 French-speaking African countries. Covered PRT modules, registration decisions, case studies, HHPs, GHS and introduction to the SPRINT Toolbox.

2026 training outlook

No additional 2026 regional PRT workshops are publicly scheduled on FAO's training page yet.

FAO can work with registration authorities to assess needs and develop tailored training programmes.

Training can focus on risk assessment, efficacy evaluation, risk reduction/management, and GHS classification & labelling.

Free, certified FAO e-learning is available on the PRT, using the Toolkit, and Highly Hazardous Pesticides.

SPRINT Toolbox: FAO is examining how newer exposure and risk-assessment approaches can support pesticide registration.

Source: FAO Pesticide Registration Toolkit – Training & eLearning pages (accessed September 2026)

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How FAO supports countries conducting pesticide evaluation

Guidance & tools

FAO Pesticide Registration Toolkit
- Registration guidance
- Risk-assessment resources
- Practical regulatory tools

Training & capacity

- Training for regulators
- Practical application of assessment methods
- Support to interpret and use tools

Knowledge exchange

- Share scientific and regulatory experience
- Learn from other countries
- Promote consistent, transparent approaches

Risk mitigation

- Identify exposure pathways
- Protect operators and re-entry workers
- Communicate measures clearly to users

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Toolkit home page

http://www.fao.org/pesticide-registration-toolkit



Key messages

FAO supports countries through guidance, tools, capacity development and knowledge exchange.

Sound pesticide evaluation must reflect real-world uses and exposure scenarios.

The ICPPE initiative is an example of collaboration addressing a practical assessment gap.

Training and accessible online resources help translate scientific methods into regulatory practice.

Protecting pesticide operators and re-entry workers must remain central.



Thank you for your attention!