

Implementation of the risk assessment of operators, workers, residents and bystanders in Brazil by Anvisa

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Introduction

Since 2017, Anvisa has assessed the exposure risks of pesticides for operators, reentry workers, residents and bystanders. It started with the pesticides 2,4-D¹ and Glyphosate² in the scenarios and crops approved, identifying the general risk mitigation measures needed for each active ingredient.

Methods

- The American and European exposure prediction models of measures from field studies were adapted to the reality of all exposure scenarios of 2,4D and Glyphosate application in Brazil: aerial, tractor application, handheld and backpack
- Worst case scenario: maximum application rate and minimum volume of water among all products
- Dermal absorption rates: determined based on studies with some formulations and, when not available, international standard values were used

Parameters for Exposure Assessment	2,4D	Glyphosate
Body weight		60 kg
Dermal absorption of product	0,08%	1% and 25% (emulsion oil in water-EW)
Dermal absorption of in-use dilution	4,03%	10% and 70% (EW)
Inhalation absorption of active substance		100%
AOEL / Acute dose	0,01 mg/kg/day	0,1 mg/kg/day
Application rate	maximum application rate	
Treated area for backpack application	1,38 ha/day	
Treated area for hand-held application	4 ha/day	
Treated area for tractor application	60 ha/day or 15 ha/day	
Treated area for tractor application (self propelled)	121 ha/day	
Treated area for aerial application	500 ha/day	
Number of applications	1	
50% Dissipation Time - DT50	9 days	30 days
Inicial Dislodgeable Foliar Residue (DFR)	3 µg active ingredient/cm ²	
Working hours	2h ou 8h	
Dermal transfer coefficient	EFSA, 2014	

Results

For 2,4-D and Glyphosate, general risk mitigation measures were imposed:

- specific reentry intervals for some crops
- buffer zone of 10 meters and drift reduction to protect residents and bystanders
- withdrawal of formulation types and application methods
- limitation of the maximum application rate
- restrictions of performing the activities of mixing/ loading and application by the same individual
- recommendations on Personal Protective Equipment (PPE) usage



Conclusions

There are still many challenges to improve and implement the pesticides risk assessment in Brazil:

- lack of legal requirements
- data gaps (hectares treated per day, absorption values, DT50 and DFR)
- need of refinement of risk estimates
- need of risk assessment by product
- need of risk assessment of residents/ bystanders on aerial application
- need of a guidance for the recommendation of PPE based on hazard classification
- better risk communication in the labels for safe use of operators

¹ <http://portal.anvisa.gov.br/consultas-publicas#/visualizar/310795>

² <http://portal.anvisa.gov.br/consultas-publicas#/visualizar/391760>