he Risk Quotient Method is the means used by EFED to integrate the results of exposure and cotoxicity data. For this method, Risk Quotients (RQs) are calculated by dividing exposure stimates by the scute and chronic ecotoxicity values (Le., RQ = EXPOSURE TOXICITY), have RQs are then compared to OPP's levels of concern (LOCs). These LOCs are criteria used to indicate potential risk to non-target organisms and the need to consider regulatory culon. EFED has defined LOCs for acute risk, potential restricted use classification, and for administrated species.

The oriteria indicate that a posticide used as directed has the potential to cause adverse effects or non-target organisms. LOCs currently address the following risk presumption emogeness.

acute - there is a potential for acute risk; regulatory action may be warranted in addition to restricted use classification;

neure restricted use - the potential for neure risk is high, but this may be margated through restricted use classification.

neute endangured species - the potential for neute risk to endangered species is injurregulatory action may be warranted; and

Appendix A

RQ Methods and LOC Definitions

he ecotoxicity test values (i.e., measurement endpoints) used in the actio and observe KUs are enved from required studies

examples of ecotoxicity values derived from short-term laborators studies that assess across designers are:

- LC to (lish, birds, and terrestrial invertebrates).
- [1] Sa (birds, maramals, and terrostrial invertebraics).
- EC.m (aquante plants and aquante investeerages), and
 - s First (numerium braues):

examples of toxicity test effect levels derived from the results of long-term laboratory studies but seems chronic effects are

the Lowest Observed Adverse Effect Concentration (LOAEC) (birds, fish, and equal)

the No Observed Adverse Effect Concentration (NOAEC) (butts, han and acounted invertebrates). The NOAEC is generally used as the contoxicity test value in assessment chronic effects.

The Risk Quotient Method is the means used by EFED to integrate the results of exposure and ecotoxicity data. For this method, Risk Quotients (RQs) are calculated by dividing exposure estimates by the acute and chronic ecotoxicity values (i.e., RQ = EXPOSURE/TOXICITY). These RQs are then compared to OPP's levels of concern (LOCs). These LOCs are criteria used by OPP to indicate potential risk to non-target organisms and the need to consider regulatory action. EFED has defined LOCs for acute risk, potential restricted use classification, and for endangered species.

The criteria indicate that a pesticide used as directed has the potential to cause adverse effects on non-target organisms. LOCs currently address the following risk presumption categories:

- <u>acute</u> there is a potential for acute risk; regulatory action may be warranted in addition to restricted use classification;
- <u>acute restricted use</u> the potential for acute risk is high, but this may be mitigated through restricted use classification;
- <u>acute endangered species</u> the potential for acute risk to endangered species is high, regulatory action may be warranted; and
- chronic risk the potential for chronic risk is high, regulatory action may be warranted.

Currently, EFED does not perform assessments for chronic risks to plants or chronic risks to non-target insects.

The ecotoxicity test values (i.e., measurement endpoints) used in the acute and chronic RQs are derived from required studies.

Examples of ecotoxicity values derived from short-term laboratory studies that assess acute effects are:

- LC50 (fish, birds, and terrestrial invertebrates),
- LD50 (birds, mammals, and terrestrial invertebrates),
- EC50 (aquatic plants and aquatic invertebrates), and
- EC25 (terrestrial plants).

Examples of toxicity test effect levels derived from the results of long-term laboratory studies that assess chronic effects are:

- the Lowest Observed Adverse Effect Concentration (LOAEC) (birds, fish, and aquatic invertebrates), and
- the No Observed Adverse Effect Concentration (NOAEC) (birds, fish and aquatic invertebrates). The NOAEC is generally used as the ecotoxicity test value in assessing chronic effects.

Risk presumptions, along with the corresponding RQs and LOCs, are summarized in Table A-1.

Table A-1. Risk Presumptions and LOCs

Risk Presumption	RQ		
Birds ¹			
Acute Risk	EEC/LC ₅₀ or LD ₅₀ /sq ft or LD ₅₀ /day		
Acute Restricted Use	EEC/LC ₅₀ or LD ₅₀ /sq ft or LD ₅₀ /day (or LD ₅₀ < 50 mg/kg)	0.2	
Acute Endangered Species	EEC/LC ₅₀ or LD ₅₀ /sq ft or LD ₅₀ /day	0.1	
Chronic Risk	EEC/NOAEC	1	
Wild Mammals ¹			
Acute Risk	EEC/LC ₅₀ or LD ₅₀ /sq ft or LD ₅₀ /day	0.5	
Acute Restricted Use	EEC/LC ₅₀ or LD ₅₀ /sq ft or LD ₅₀ /day (or LD ₅₀ $<$ 50mg/kg)	0.2	
Acute Endangered Species	EEC/LC ₅₀ or LD ₅₀ /sq ft or LD ₅₀ /day	0.1	
Chronic Risk	EEC/NOAEC	1	
Aquatic Animals ²			
Acute Risk	EEC/LC ₅₀ or EC ₅₀	0.5	
Acute Restricted Use	EEC/LC ₅₀ or EC ₅₀	0.1	
Acute Endangered Species	EEC/LC ₅₀ or EC ₅₀		
Chronic Risk	EEC/NOAEC	1	
Terrestrial and Semi-Aquatic Plants			
Acute Risk	EEC/EC ₂₅	1	
Acute Endangered Species	EEC/EC ₀₅ or NOAEC	1	
Aquatic Plants2			
Acute Risk	EEC/EC ₅₀	1	
Acute Endangered Species	EEC/EC ₀₅ or NOAEC	1	
Terrestrial Invertebrates		N VIII	
Acute Risk	EEC/LD ₅₀ or LC ₅₀	0.05	

 $^{^{1}\}text{LD}_{50}/\text{sq ft} = (\text{mg/sq ft}) / (\text{LD}_{50} * \text{ wt of animal})$ $\text{LD}_{50}/\text{day} = (\text{mg of toxicant consumed/day}) / (\text{LD}_{50} * \text{ wt of animal})$ $^{2}\text{EEC} = (\text{ppm or ppb}) \text{ in water}$

presumptions, along with the corresponding ROs and LOCs, are summarized in Tuble A-1

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