

# Examination of the Acute Oral versus Sub-Acute Dietary Testing in Avian Risk Assessment Conclusions

## INTRODUCTION

### AVIAN REGULATORY TEST

40 CFR Section 158 outlines two requirements for avian acute effects testing: two single oral dose LD50 studies (commonly quail or mallard and a songbird)<sup>1</sup>, and two subacute dietary LC50 studies (commonly quail and mallard)<sup>2</sup>. Pesticide risk assessments conduct estimation of risk quotients using both lethal effects study types using the most sensitive endpoint from each type of study. The EPA and PETA collaborated on a retrospective analysis of avian risk assessments, and the following questions were asked:

- Can we confidently assess acute risk for birds using a reduced suite of effects studies focusing on the single oral dose protocol?
- How often have subacute dietary risk quotients (RQs) quantitatively driven risk assessment conclusions?
- How often have subacute dietary risks qualitatively altered the risk conclusions?

### RQ Calculation

$$RQ = \frac{\text{Estimated Environmental Concentration (EEC)}}{LD_{50} \text{ or } LC_{50}}$$

Risk is presumed if  $RQ \geq LOC^3$

### Northern Bobwhite Quail



### Mallard Duck



## METHODS

### DATA COLLECTION

**A** EPA Pesticide Chemical Search interface showing search filters and results.

**B** Document review interface showing a pesticide label for Cymoxanil.

**C** Table 12. T-REX Calculated EECs at Food Residues for Terrestrial Animals from Cymoxanil Labeled Uses.

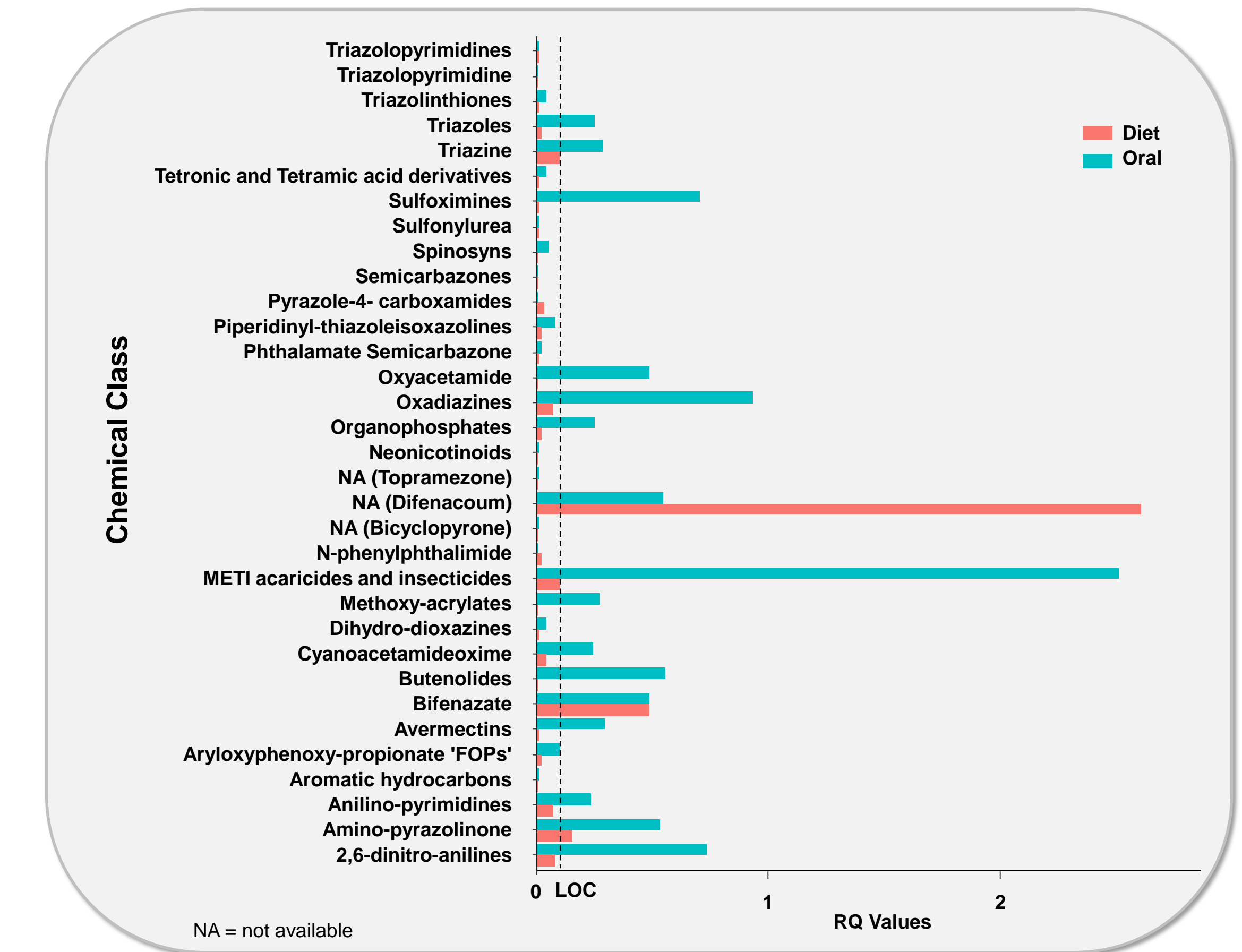
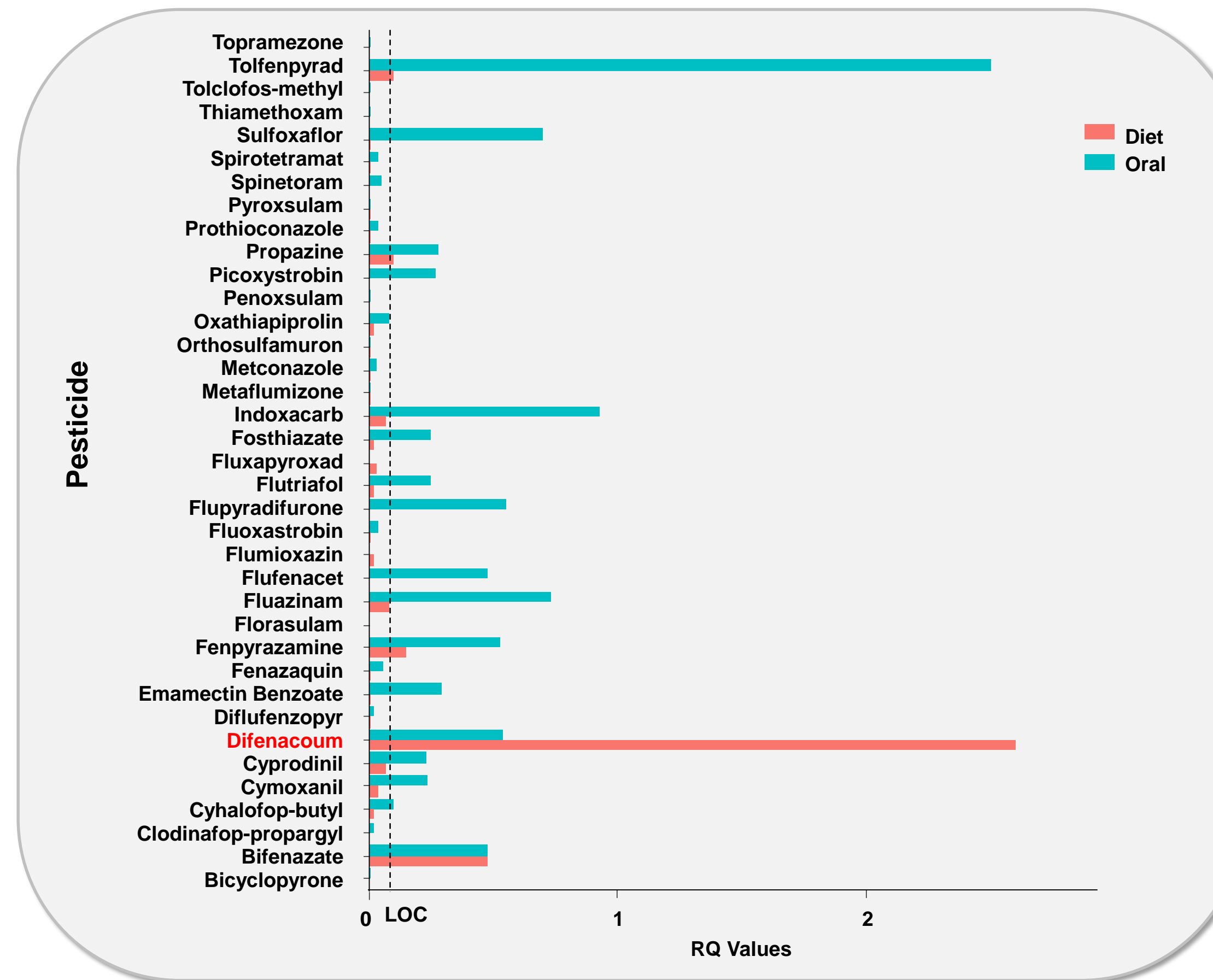
Food Type	Based (ppm) (mammals and birds)	Dose Based (mg/kg-day)		Dose Based (mg/kg-day)			
		Small (100 g)	Large (1000 g)	Small (100 g)	Large (1000 g)		
Short grass	250	244	142	72.6	238	164	38.1
Tall grass	114	130	93.2	32.3	480	75.4	17.5
Brassical plants	140	140	91.2	40.8	134	92.5	21.5
Fruity pods/seeds	151	174	101	43.4	14.9	80.3	2.36
Alfalfa	67.3	112	62.5	26.4	62.2	64.4	14.8
Seeds	N/A	3.02	2.22	1.03	3.31	2.29	0.53

**D** Spreadsheet showing data analysis results for various pesticides.

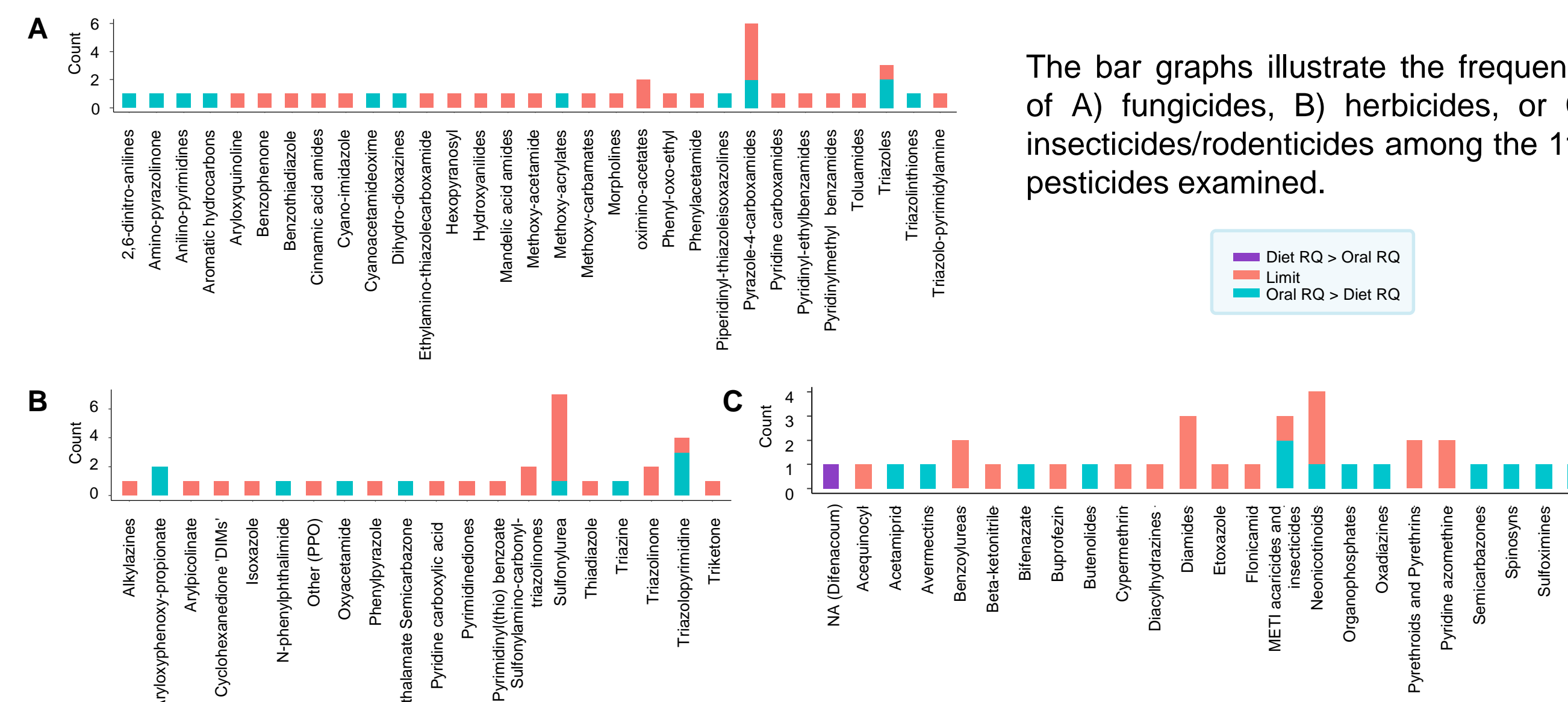
EPA identified 181 pesticides new to the Agency from the annual reports from 1998 to 2016. 119 chemicals had ecological risks assessments available to PETA for analysis. Data were collected using the following systematic method: A) pesticide search, B) document review, C) data collection, and D) data analysis. Data were downloaded from the EPA Office of Pesticide Programs Pesticide Chemical Search website.<sup>4</sup>

## RESULTS

### RISK QUOTIENT COMPARISON



### CHEMICAL CLASS



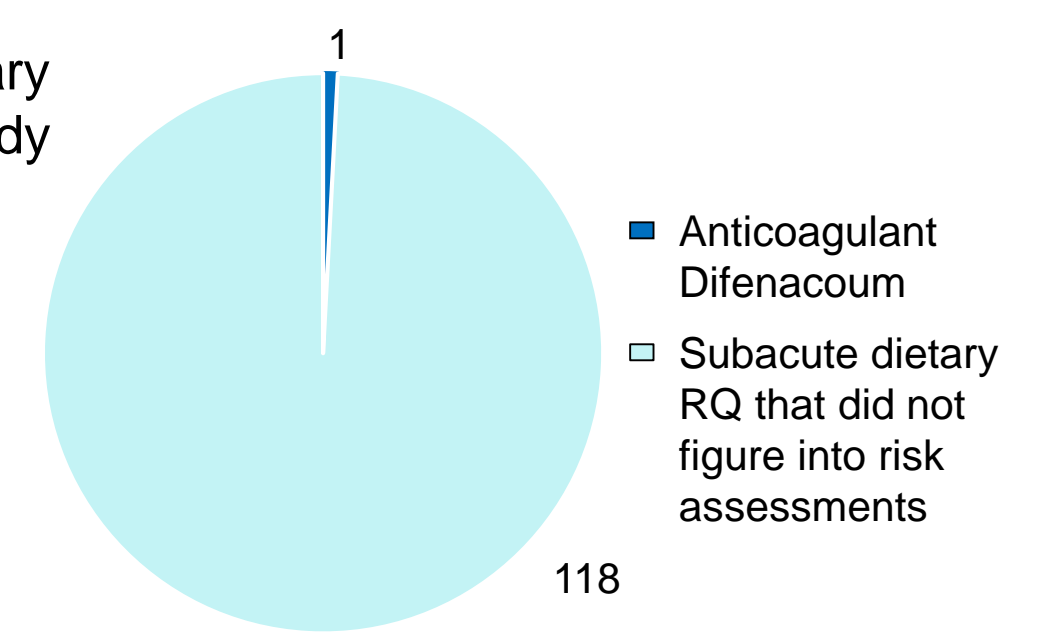
The bar graphs illustrate the frequency of A) fungicides, B) herbicides, or C) insecticides/rodenticides among the 119 pesticides examined.

## CONCLUSIONS

In 99% of cases (118 of 119) the subacute dietary approach did not change risk conclusions already reached using oral, dose-based RQs.

Next steps:

- Peer-reviewed scientific journal publication
- Developing policy/guidance
- Outreach to international and other partners
- Release draft policy for public comment



## REFERENCES

1. EPA. (2012). OCSPP 850.2100: Avian Acute Oral Toxicity Test [EPA 712-C-025], 2018: [www.regulations.gov/document?D=EPA-HQ-OPPT-2009-0154-0010](http://www.regulations.gov/document?D=EPA-HQ-OPPT-2009-0154-0010)
2. EPA. (2012). OCSPP 850.2200: Avian Dietary Toxicity Test [EPA 712-C-024], 2018: [www.regulations.gov/document?D=EPA-HQ-OPPT-2009-0154-0011](http://www.regulations.gov/document?D=EPA-HQ-OPPT-2009-0154-0011)
3. EPA. (2017). "Technical Overview of Ecological Risk Assessment: Risk Characterization.", 2018: [www.epa.gov/pesticide-science-and-assessing-pesticide-risks/technical-overview-ecological-risk-assessment-risk](http://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/technical-overview-ecological-risk-assessment-risk)
4. EPA. (2018). Office of Pesticide Programs, Pesticide Chemical Search, 2018: <https://iaspub.epa.gov/apex/pesticides/f?p=chemicalsearch:1>