Animal reduction metrics used by EPA OPP

MONIQUE PERRON, SC.D.

HEALTH EFFECTS DIVISION/OFFICE OF PESTICIDE PROGRAMS

U.S. ENVIRONMENTAL PROTECTION AGENCY

Data Needs for Pesticides

- US EPA's Office of Pesticide Programs (OPP) regulates use of all pesticides in the United States and establishes maximum levels for pesticide residues in food
- Regulatory statutes allow EPA to require data and relevant information from pesticide registrants
- 40 CFR Part 158 outlines data requirements for pesticides

https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-E/part-158

Data Needs for Pesticides

- Unlike industrial chemicals, to register a pesticide in the US, substantial toxicology and exposure testing is required.
  - Cost to register a new conventional pesticide is >$100 million
  - To register a new conventional pesticide, large number of animals (10,000-15,000) are used
    - Rats, mice, rabbits, dogs, guinea pigs, birds, fish & invertebrates
- OPP is working with multiple national/international organizations and numerous stakeholders to:
  - Evaluate studies conducted for pesticides and identify those studies that do not impact decision making for public health and the environment
  - Advance the use of new approach methodologies (NAMs) in regulatory risk assessment

Data Requirement Flexibility

- Flexibility in implementing Part 158 data requirements (§158.30):
  - *Waivers* may be granted as permitted by 40 CFR Part 158.45
  - Additional data beyond the 158 data requirements may be important to the risk management decision (§158.75), *alternative approaches* can be accepted, and other data can be used

Study Waivers

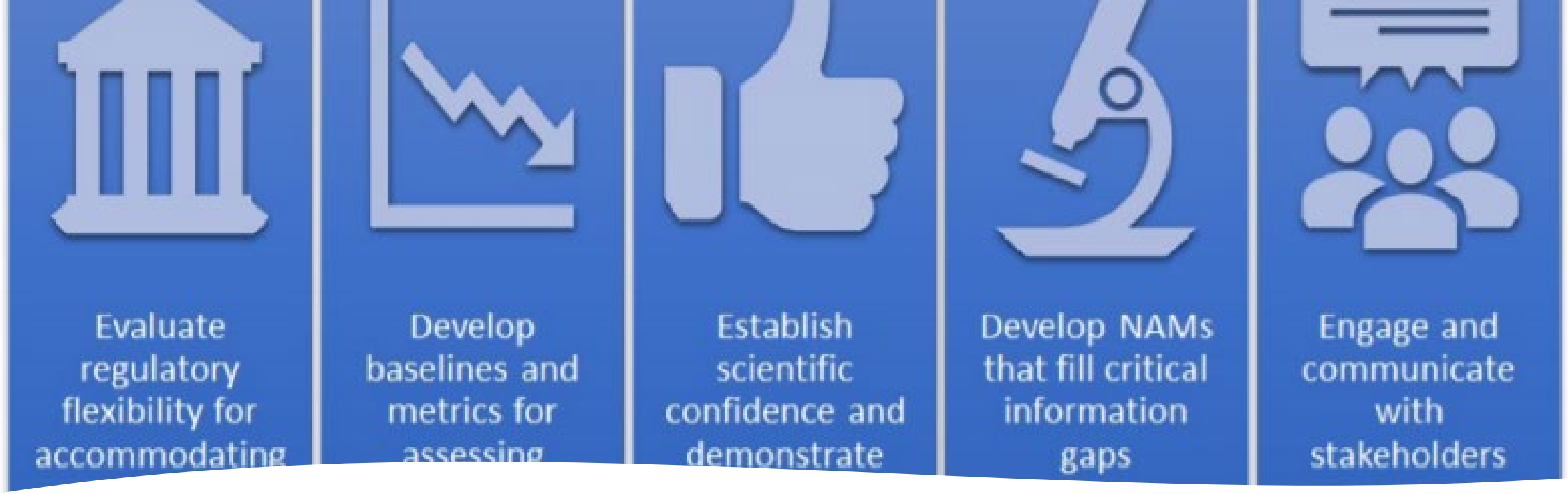
- Risk-based decision making considering both hazard and exposure in a weight of evidence (WOE) approach
- Guiding Principles for Data Needs for Pesticides

  https://www.epa.gov/pesticide-registration/guiding-principles-data-requirements
- Hazard and Science Policy Council (HASPOC)
  - Part 158 Toxicology Data Requirements: Guidance for Neurotoxicity Battery, Subchronic Inhalation, Subchronic Dermal and Immunotoxicity Studies

  https://www.epa.gov/sites/production/files/2014-02/documents/part158-tox-data-requirement.pdf
- Chemistry and Acute Toxicology Science Advisory Council (CATSAC)
  - OPP guidance documents

  https://www.epa.gov/pesticide-registration/bridging-or-waiving-data-requirements
  - OECD guidance document on considerations for waiving or bridging mammalian acute toxicity tests

  http://www.oecd.org/env/ehs/testing/mono%202016%2032.pdf



EPA NAM Workplan

- Original EPA NAMs Work Plan released in June 2020, which laid out the Agency's objectives and strategies
- Committed to regularly reviewing the work plan and acknowledge the work plan will evolve as EPA's knowledge and experience grows, and as outside experts offer their perspectives and contributions
- Work plan recently updated in December 2021
  - Main objectives and strategies were left unmodified

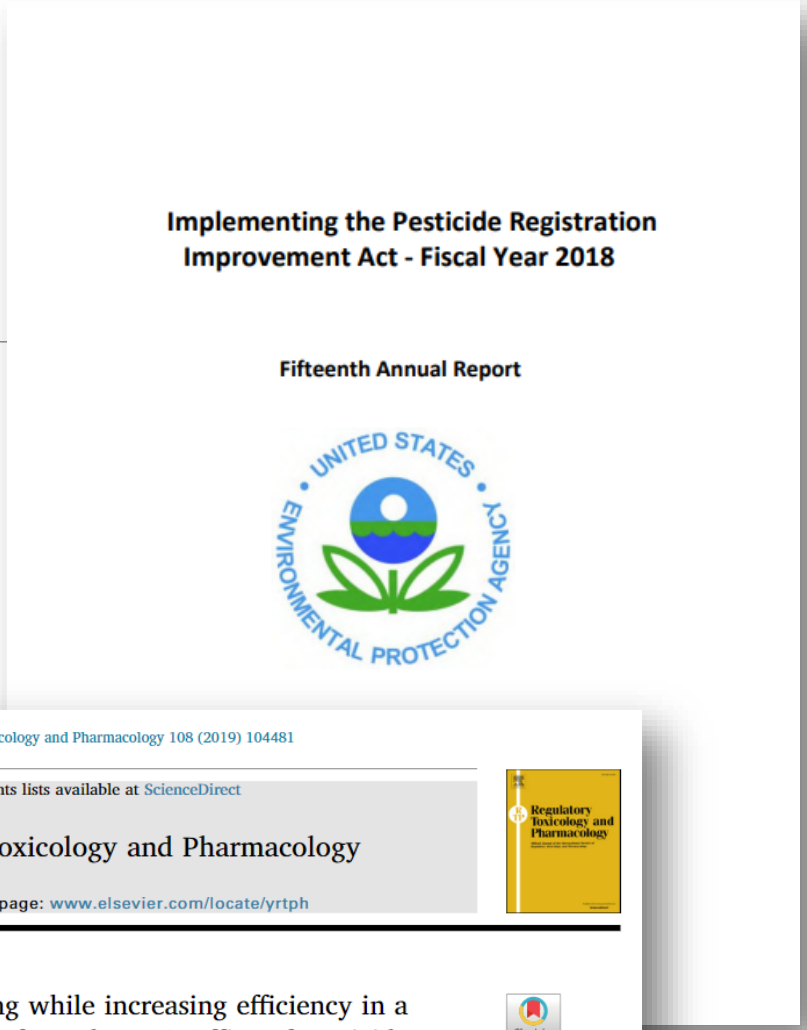
https://www.epa.gov/chemical-research/epa-new-approach-methods-work-plan-reducing-use-vertebrate-animals-chemical

Progress on Metrics

- Annual reports
  - EPA must publish a report each year on the implementation of the Pesticide Registration Improvement Act (PRIA)

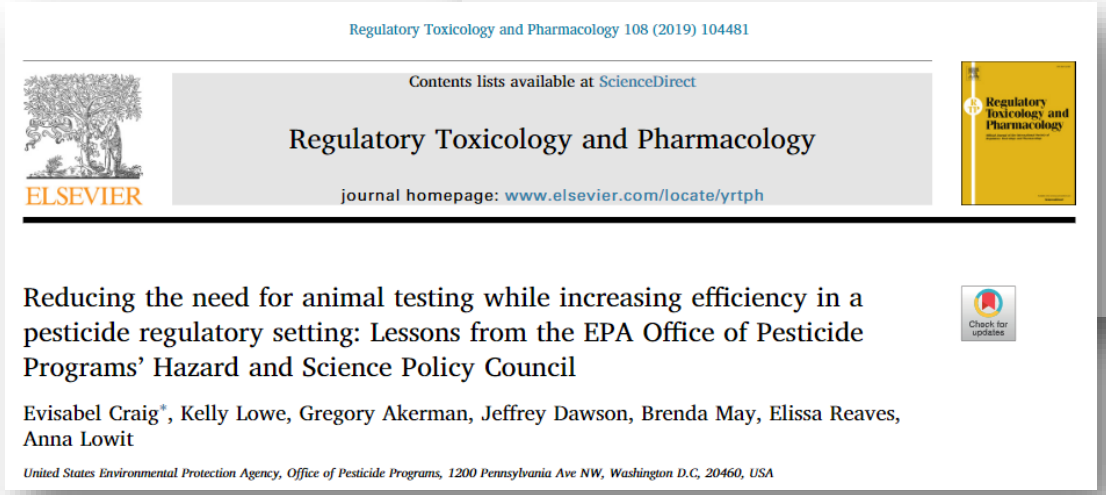
https://www.epa.gov/pria-fees/annual-reports-pria-implementation

- Waiver requests and recommendations from 2012 to 2018 described in Craig et al. (2019)


Implementing the Pesticide Registration Improvement Act - Fiscal Year 2018

Fifteenth Annual Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY


Regulatory Toxicology and Pharmacology 108 (2019) 104481

Contents lists available at ScienceDirect

Regulatory Toxicology and Pharmacology

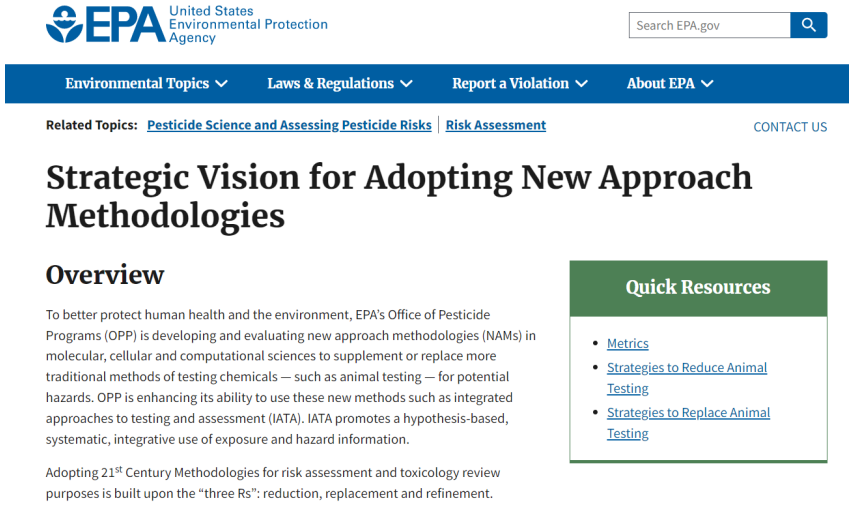
journal homepage: www.elsevier.com/locate/yrtph

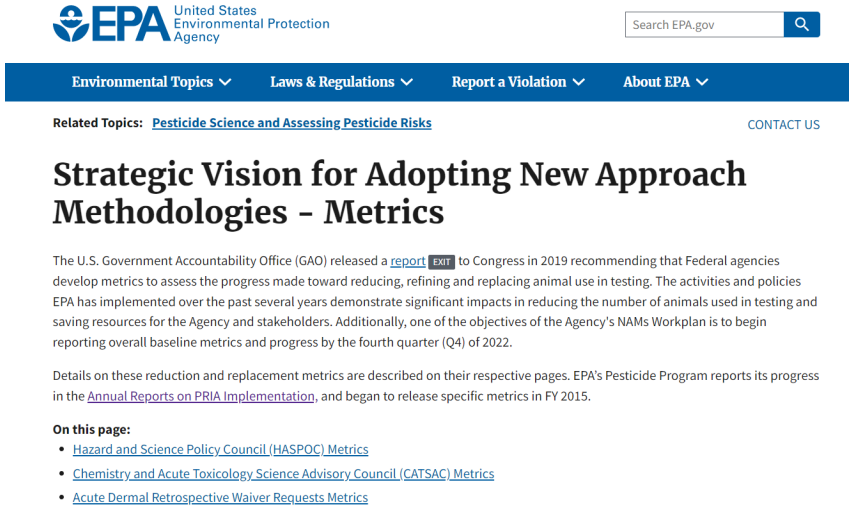
ELSEVIER

Reducing the need for animal testing while increasing efficiency in a pesticide regulatory setting: Lessons from the EPA Office of Pesticide Programs' Hazard and Science Policy Council

Evisabel Craig*, Kelly Lowe, Gregory Akerman, Jeffrey Dawson, Brenda May, Elissa Reaves, Anna Lowit

United States Environmental Protection Agency, Office of Pesticide Programs, 1200 Pennsylvania Ave NW, Washington D.C, 20460, USA





EPA-OPP Metrics Site

Main page: https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/strategic-vision-adopting-new-approach-methodologies

Metrics page:

https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/strategic-vision-adopting-new-approach-0

Hazard and Science Policy Council (HASPOC) Metrics

HASPOC reviews data waiver requests for subchronic, chronic, developmental and reproductive toxicity for technical-grade active ingredients related to human health risk assessment. The council uses a weight-of-evidence evaluation to determine data needs that will adequately inform regulatory decision-making, guided by the Part 158 Toxicology Data Requirements: Guidance for Neurotoxicity Battery, Subchronic Inhalation, Subchronic Dermal and Immunotoxicity Studies (May 1, 2013).

Fiscal year	Granted	Animal Reduction	Cost Savings*
2018	62	16,500	$8,900,000
2019	57	22,000	$8,500,000
2020	36	11,800	$3,500,000
2021	70	29,500	$9,100,000

Chemistry and Acute Toxicology Science Advisory Council (CATSAC) Metrics

CATSAC evaluates substantial similarity claims, data citations, and waiver requests for the acute toxicity "six-pack" to support the registration of pesticide products. Learn more about the standard evaluation procedure used by the council to guide these evaluations .

Fiscal Year	Studies Saved	Animal Reduction	Cost Savings*
2018	18	171-384	$170,400
2019	24	255-590	$284,900
2020	12	102-178	$56,500
2021	18	165-410	$221,700

Acute Dermal Retrospective Waiver Request Metrics

Waivers granted under the 2016 Guidance for Waiving Acute Dermal Toxicity Tests for Pesticide Formulations & Supporting Retrospective Analysis.

Fiscal Year	Waivers Granted	Animal Reduction	Cost Savings*
2018	31	310-930	$201,500
2019	37	370-1110	$240,500
2020	30	300-900	$195,000
2021	56	560-1680	$364,000

**** Cost savings is based on the number of studies and/or waivers granted.***

In Vitro Assay Metrics

The number of in vitro assays that were submitted to address the acute toxicity data requirements and support the registration of new pesticide products and the registration review of currently registered pesticides.

Fiscal Year	*in vitro* eye irritation assays	*in vitro* skin irritation assays	*in vitro* skin sensitization assays
2018	19	11	1
2019	12	7	0
2020	13	7	3
2021	32	28	12

Summary

- EPA OPP reports data waivers granted each year
- Recent annual savings reported on metrics website with historical values available in PRIA reports
- Aim to also track metrics associated with individual guidance documents published to reduce or replace animal tests
- Reporting on NAMs metrics requires extensive collaboration between science assessment branches across multiple divisions within OPP

Thank you!