



Animal reduction metrics used by EPA OPP

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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>



Evaluate
regulatory
flexibility for
accommodating



Develop
baselines and
metrics for
assessing



Establish
scientific
confidence and
demonstrate



Develop NAMs
that fill critical
information
gaps



Engage and
communicate
with
stakeholders

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

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



Regulatory Toxicology and Pharmacology 108 (2019) 104481

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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

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Strategic Vision for Adopting New Approach Methodologies

Overview

To better protect human health and the environment, EPA's Office of Pesticide Programs (OPP) is developing and evaluating new approach methodologies (NAMs) in molecular, cellular and computational sciences to supplement or replace more traditional methods of testing chemicals — such as animal testing — for potential hazards. OPP is enhancing its ability to use these new methods such as integrated approaches to testing and assessment (IATA). IATA promotes a hypothesis-based, systematic, integrative use of exposure and hazard information.

Adopting 21st Century Methodologies for risk assessment and toxicology review purposes is built upon the "three Rs": reduction, replacement and refinement.

Quick Resources

- [Metrics](#)
- [Strategies to Reduce Animal Testing](#)
- [Strategies to Replace Animal Testing](#)

Strategic Vision for Adopting New Approach Methodologies - Metrics

The U.S. Government Accountability Office (GAO) released a [report](#) [EXIT](#) to Congress in 2019 recommending that Federal agencies develop metrics to assess the progress made toward reducing, refining and replacing animal use in testing. The activities and policies EPA has implemented over the past several years demonstrate significant impacts in reducing the number of animals used in testing and saving resources for the Agency and stakeholders. Additionally, one of the objectives of the Agency's NAMs Workplan is to begin reporting overall baseline metrics and progress by the fourth quarter (Q4) of 2022.

Details on these reduction and replacement metrics are described on their respective pages. EPA's Pesticide Program reports its progress in the [Annual Reports on PRIA Implementation](#), and began to release specific metrics in FY 2015.

On this page:

- [Hazard and Science Policy Council \(HASPOC\) Metrics](#)
- [Chemistry and Acute Toxicology Science Advisory Council \(CATSAC\) Metrics](#)
- [Acute Dermal Retrospective Waiver Requests Metrics](#)

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 | <i>in vitro</i> eye irritation assays | <i>in vitro</i> skin irritation assays | <i>in vitro</i> 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!
