Interagency Coordinating Committee on the Validation of Alternative Methods

Measuring U.S. Federal Agency Progress Toward Implementation of Alternative Methods in Toxicity Testing

ICCVAM Metrics Workgroup Report
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Agency for Toxic Substances and Disease Registry • Consumer Product Safety Commission • Department of Agriculture
Department of Defense • Department of Energy • Department of the Interior • Department of Transportation Energy
Department of Veterans Affairs Office of Research and Development • Environmental Protection Agency • Food and Drug Administration
National Institute for Occupational Safety and Health • National Institutes of Health • National Cancer Institute
National Institute of Environmental Health Sciences • National Institute of Standards and Technology • National Library of Medicine
Occupational Safety and Health Administration

Why a Metrics Report?

- In 2019, the U.S. Government Accountability Office (GAO) published a report on Animal Use in Research in Federal Government.
- This report found that federal agencies actively promote the use of alternative methods in a variety of ways but didn't have metrics that demonstrate how their efforts affect animal use.
- ICCVAM formed a Metrics Workgroup (MWG) to provide guidance that will assist federal agencies in assessing and monitoring progress toward the implementation of alternatives to live animal use in toxicity testing.

MWG Findings

- Regulated industries can and do take steps to replace, reduce, or refine animal use in the early stages of product development (e.g., discovery, candidate selection, biomaterial screening).
- U.S. federal agencies encourage the use of alternatives to animal testing, but do not have the authority to ban the use of animal test methods.
- Because U.S. agencies ask for all available data, the companies would still send their animal data to the U.S. agency.

MWG Findings

- In vitro and in silico testing approaches can characterize or predict specific aspects of toxicity, and have been successfully applied to predicting toxicity for acute endpoints such as eye irritation or skin sensitization.
- However, few alternatives are currently capable of completely replacing an animal test directly on a one-to-one basis.
- This is especially true for animal tests that include repeated dosing, implantation (e.g., medical devices, where biological response may be a result of device function as well as chemistry), and multiple endpoints

MWG Conclusions

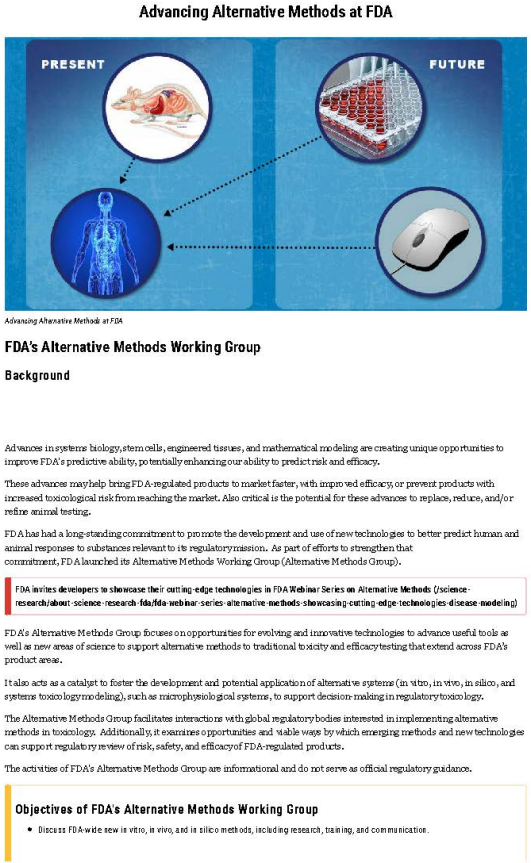
- The MWG found that no one set of metrics can be used by all ICCVAM member agencies.
- The MWG instead recommends that each agency develop its own metrics that are relevant and practical to their unique situation.
- The MWG recommends that agencies use quantitative and qualitative metrics separately or together to assess progress in implementing alternatives in toxicity testing.
- The MWG encourages that the metrics used by each federal agency be communicated to the public through both the NICEATM website and, if available, the websites of individual federal agencies.

Recommended Metrics

- Quantitative metrics could include
  - Counting the number of animals used in toxicity testing
    - However, as stated above, a company may still provide animal data even if not used for regulatory action
    - The number of animals used depends on the indication, etc. so it would be difficult to assess a true movement toward alternatives from year to year
  - Recording the number of educational opportunities (e.g., training, webinars, and publications) provided.
- Qualitative metrics could include
  - Development or implementation of alternatives
  - The provision of educational opportunities that raise awareness regarding alternatives. Educational opportunities include training, publications, and presentations given by agency scientists.

Here now

- FDA now has an external webpage entitled **Advancing Alternative Methods at FDA**
- Essentially a webpage for the Alternatives Methods Working Group
  - Objectives
- Information on the FDA Webinar Series on Alternative Methods
- Page will be updated periodically
- Contact information: alternatives@fda.hhs.gov



Advancing Alternative Methods at FDA

Advancing Alternative Methods at FDA

FDA's Alternative Methods Working Group

Background

Advances in systems biology, stem cells, engineered tissues, and mathematical modeling are creating unique opportunities to improve FDA's predictive ability, potentially enhancing our ability to predict risk and efficacy.

These advances may help bring FDA-regulated products to market faster, with improved efficacy, or prevent products with increased toxicological risk from reaching the market. Also critical is the potential for these advances to replace, reduce, and/or refine animal testing.

FDA has had a long-standing commitment to promote the development and use of new technologies to better predict human and animal responses to substances relevant to its regulatory mission. As part of efforts to strengthen that commitment, FDA launched its Alternative Methods Working Group (Alternative Methods Group).

FDA invites developers to showcase their cutting-edge technologies in FDA Webinar Series on Alternative Methods (/science-research/about-science-research-fda/fda-webinar-series-alternative-methods-showcasing-cutting-edge-technologies-disease-modeling)

FDA's Alternative Methods Group focuses on opportunities for evolving and innovative technologies to advance useful tools as well as new areas of science to support alternative methods to traditional toxicity and efficacy testing that extend across FDA's product areas.

It also acts as a catalyst to foster the development and potential application of alternative systems (in vitro, in vivo, in silico, and systems toxicology modeling), such as microphysiological systems, to support decision-making in regulatory toxicology.

The Alternative Methods Group facilitates interactions with global regulatory bodies interested in implementing alternative methods in toxicology. Additionally, it examines opportunities and viable ways by which emerging methods and new technologies can support regulatory review of risk, safety, and efficacy of FDA-regulated products.

The activities of FDA's Alternative Methods Group are informational and do not serve as official regulatory guidance.

Objectives of FDA's Alternative Methods Working Group

- Discuss FDA-wide new in vitro, in vivo, and in silico methods, including research, training, and communication.

FDA's Alternative Report

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