

US EPA ARCHIVE DOCUMENT

Pesticide Program Dialogue Committee

21st Century Toxicology/New
Integrated Testing Strategies
Workgroup

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Pesticides: Science and Policy



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Strategic Direction for New Pesticide Testing and Assessment Approaches

To better protect human health and the environment, EPA is developing and evaluating new technologies in molecular, cellular, and computational sciences to supplement or replace more traditional methods of toxicity testing and risk assessment.

This Web page illustrates the approach EPA's Pesticide Program is using to pursue new technologies that predict and characterize potential human health and environmental hazards and exposures from pesticides. This page describes the current status as well as future plans for this rapidly changing area of research and regulatory science.

On this page:

- [Vision for Enhancing Integrated Approaches to Testing and Assessment](#)
- [Understanding Integrated Approaches to Testing and Assessment](#)
- [Tools Matrix](#)
- [Partnerships](#)

The new technologies will result in:

- A broader suite of computer-aided methods to better predict potential hazards and exposures, and to focus testing on likely risks of concern,
- Improved approaches to more traditional toxicity tests to minimize the number of animals used while expanding the amount of information obtained (See [Tools Matrix \(PDF\)](#) (7 pp, 92k, [About PDF](#)) for examples),
- Improved understanding of toxicity pathways to allow development of non-animal tests that better predict how exposures relate to adverse effects, and
- Improved diagnostic biomonitoring and surveillance methods to detect chemical exposures and identify causes of toxic effects

No single new technology can address all situations. However, by using a suite of tools and approaches in combination, EPA's Pesticide Program will be able to improve hazard and exposure assessments that form the basis for understanding potential pesticide risks. With these improvements EPA can better achieve its goal of ensuring reliable protection of human health and the environment from adverse effects resulting from pesticide use.

Quick Resources

- [In the Spotlight](#)
- [Glossary of Terms](#)
- [ToxCast™ Research Program](#)
- [Overview of National Research Council Toxicity Testing Strategy](#)
- [National Academy of Sciences Report on Toxicology Testing in the 21st Century \(PDF\)](#)
(4 pp, 418k, [About PDF](#))
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Workgroup Presentations

- Metrics of Success Subgroup – E. Brown
- Stakeholder Issues Subgroup – K. Sullivan
- Biomarkers Subgroup – M. Keifer

Metrics of Success Subgroup

- Is recommending specific metrics to consider for communicating progress toward incorporating newer technologies in molecular and computational sciences and implementation of enhanced integrative toxicity testing strategies. The subgroup is also suggesting metrics to evaluate the success of the new paradigm in achieving more effective and efficient protection of human health and the environment.

Stakeholder Issues Subgroup

- Is preparing a list of typical questions and concerns regarding integrative testing and assessment from the stakeholder community. These will provide advice on issues to emphasize to improve understanding of new emerging methods and their potential applications.

Biomarkers Subgroup

- Is developing a matrix of current and future biomarkers of effect and exposure that could be used in population health surveillance and biomonitoring as envisioned in the 2007 NAS on Toxicity Testing in the 21st Century. This subgroup is also summarizing discussions from its October 13th seminar on the specific issue of diagnostic biomarkers to identify health outcomes from exposed populations.