RAMBØLL Bright ideas. Sustainable change.

Redefining (eco)toxicological testing with *in silico* solutions

Enabling smarter, safer and more sustainable chemical risk assessments

What are *in silico* approaches?

In silico modelling is a key New Approach Methodology (NAM) that uses computational tools such as (Q)SARs, read-across, category formation, expert rule-based platforms and weight-of-evidence integration to help predict toxicological and ecotoxicological hazards, mechanisms of toxicity and modes of action based on chemical structure and existing data. In doing so, they support the 3Rs principles: Replacement, Reduction and Refinement.

The impact of *in silico* approaches? – Predict safety. Protect resources.

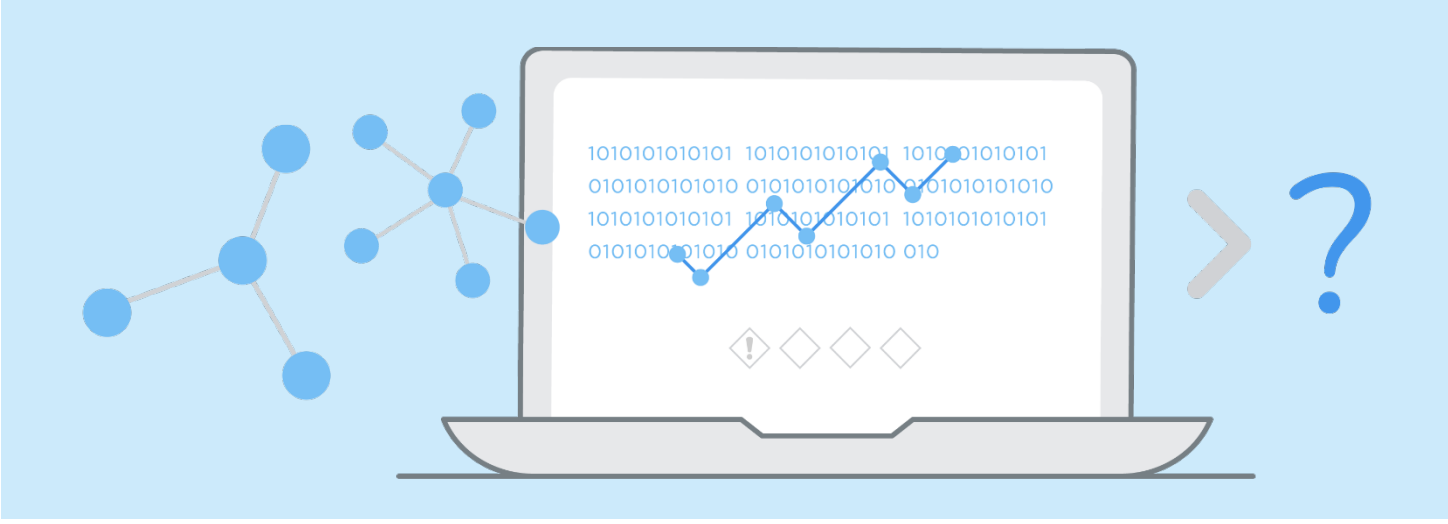
By applying computational science, we strengthen chemical safety assessments and enable clients to allocate their resources more effectively. *In silico* (eco)toxicology delivers measurable benefits across four key impact areas:

- **Ethical**: Replaces or reduces animal testing while supporting the 3Rs and meeting rising societal expectations for humane science.
- **Efficient & cost-effective**: Rapid screening of large chemical inventories and pinpointing priorities.
- **Insightful**: Predicts hazard mechanisms, including genotoxicity, endocrine disruption, bioaccumulation, and ecotoxicity, before laboratory resources are committed.
- **Regulatory-ready**: Generates scientifically justified predictions, uncertainty analyses and weight-of-evidence packages aligned with authority expectations worldwide.

Our capabilities at a glance

Our experts combine validated models, scientific judgement and regulatory experience to build defensible *in silico* strategies.

- **(Q)SAR and consensus modelling**: OECD QSAR Toolbox, VEGA, Danish (Q)SAR, Derek Nexus, Leadscope, OPERA, Toxtree, U.S. EPA T.E.S.T./EPI Suite/ECOSAR, Endocrine Disruptome with full applicability-domain and uncertainty checks.
- **Read-across and category formation**: Analogue identification, similarity and uncertainty assessment and robust scientific justifications.
- **Data-gap strategy**: Gap analysis, targeted testing plans and weight-of-evidence integration.
- **Submission support**: Ready-to-file annexes, expert statements and regulatory defence during authority and notified body interactions.



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Sectors we serve

We support clients across regulated product areas where robust hazard prediction, read-across and weight-of-evidence approaches can strengthen decision-making.

- Plant protection products
- Biocides
- Industrial chemicals
- Novel foods, food ingredients, flavourings, and food contact materials
- Cosmetics
- Feed additives
- Medical devices
- Pharmaceuticals

Typical Ramboll deliverables

We translate complex model outputs into clear, submission-ready documentation that supports regulatory and business decisions.

- Concise *in silico* report with model outputs, reliability and regulatory fit.
- Read-across and category justification files.

Why partner with Ramboll?

Ramboll brings together multi-disciplinary technical expertise and practical regulatory insight to help clients make confident, defensible decisions.

- Solutions tailored to your specific use case.
- Multidisciplinary toxicology, ecotoxicology, exposure, and risk experts.
- Peer-reviewed workflows that maximise regulatory acceptance.
- Global reach across EU, UK, the Americas, and APAC.
- Proven track record in delivering defensible assessments and end-to-end submission support.

Strategic and regulatory insights

As expectations for non-animal test methods evolve, Ramboll helps clients align scientific innovation with regulatory requirements.

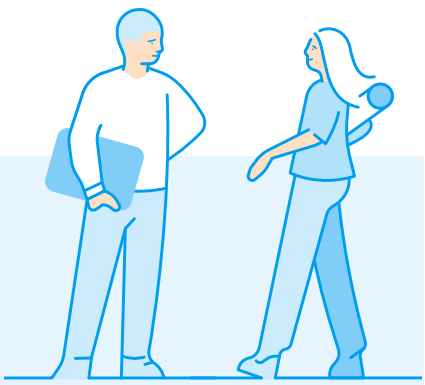
- Reduced animal testing through non-animal test methods and regulatory alignment.
- Continuous monitoring of emerging *in silico* tools, models and their acceptance by regulatory authorities to keep assessments current and defensible.
- Regulatory strategy guidance to align alternative testing approaches with evolving requirements.

Transition to a safer future

Embrace a future of toxicity testing with methods more relevant to human health and reducing reliance on animal studies. Partner with Ramboll for smarter, faster, and ethically responsible scientific solutions.

Ramboll supports clients with data-driven, ethical and efficient scientific solutions that strengthen chemical safety strategies and support regulatory confidence.

Join us on the path to revolutionising toxicological testing!



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