

*Since
1999*

*YEARS
of LRI*

PIONEERING RESEARCH
TO ADVANCE
CHEMICAL SAFETY &
SUSTAINABILITY

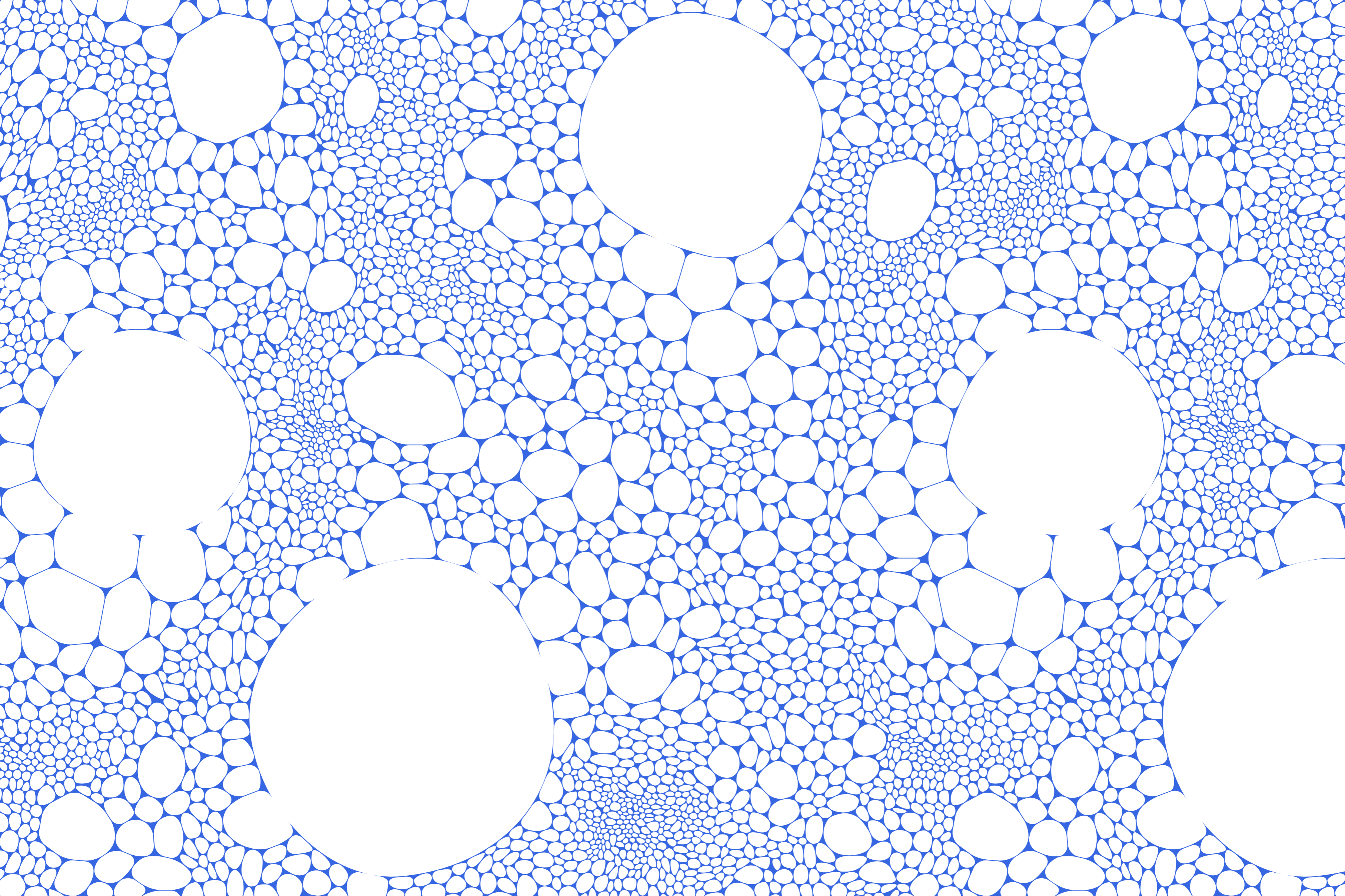


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LOOKING AHEAD

BY MARCO MENSINK

FOREWORD

FROM THE
PRESIDENT
OF CEFIC



ILHAM KADRI

President of
Cefic and CEO
of Syensqo

25
years
ago,

the Long-Range Research Initiative (LRI) was established by Cefic together with its international counterparts the American Chemistry

Council (ACC) and Japan Chemical Industry Association (JCIA). The goal? To respond to society's most pressing challenges by supporting independent research. LRI has since been pushing the boundaries of scientific knowledge, and in turn supporting Cefic's goal: to transition to chemicals that are not only safe for people and the planet, while also contributing to a sustainable future.

Cefic has long supported scientific integrity alongside independent and transparent research. The creation of LRI, over two decades ago, underlines the crucial role of these values in shaping chemical safety and sustainability in Europe.

Our industry is working towards a more sustainable world by 2050 and the only way to reach that objective is through continuous innovation. This innovation must be grounded in rigorous, forward-thinking research. It must also be safe and sustainable. By proactively initiating research and engaging in forward-thinking projects, LRI has consistently proven that the future of sustainability begins in the lab, where safe and reliable methods are developed to assess the impact of chemicals on health and the environment.

At the heart of LRI's success are dedicated researchers and the unwavering commitment to transparency, collaboration and innovative, high-quality science. Over the years, LRI has brought together stakeholders from industry, academia, and regulatory bodies to enhance chemical safety and reduce risks to human health and the environment. This cooperation has resulted in groundbreaking tools, improved chemical risk assessments, and an increased understanding of chemical exposure

and its effects. These developments have not only provided significant cost savings, they have also contributed to science-based decision making, including those required under REACH.

LRI's contribution to key regulatory bodies like the European Chemicals Agency's (ECHA) guidance documents and software applications, and the Organisation for Economic Co-operation and Development (OECD) test guidelines are testaments to the scientific rigor and enduring value behind LRI. The programme's contributions are trusted by regulators across Europe and serve as a benchmark for excellence in both the public and private sectors.

As President of Cefic and CEO of Syensqo, I am incredibly proud of what LRI, and the scientific community have accomplished. LRI's vision and collaborative spirit are fundamental to responsible innovation. Here's to 25 years of remarkable achievements — and to many more years of scientific excellence for chemical safety and sustainability.



As President of Cefic and CEO of Syensqo I am incredibly proud of what LRI, and the scientific community have accomplished. LRI's vision and collaborative spirit are fundamental to responsible innovation.

ILHAM KADRI

PRESIDENT OF CEFIC AND CEO OF SYENSQO

Looking ahead, LRI will continue to evolve to meet new societal challenges, with a steadfast focus on improving health and environmental safety. The achievements over the past 25 years set a powerful example of how research can drive positive change.

Cefic - LRI in Data

Since 1999, LRI, Cefic's Long-Range Research Initiative Programme has been addressing societal challenges with science to improve safety and sustainability of chemicals.

LRI has awarded approximately €90 million to over 250 projects that address European public health strategy priorities. These peer-reviewed and transparent studies are designed to:

- Understand everyday and occupational exposure to chemicals;
- Investigate the effects of exposure to chemicals on human health;
- Develop tools and approaches to improve chemical risk assessment;
- Reduce animal use in chemical testing.

LRI also addresses many of the environmental objectives of the EU, including:

- Linking environmental factors to health effects;
- Understanding and reducing chemical risks to the environment.

Over 25 years, we have developed state-of-the-art tools, initiated groundbreaking research projects and fostered international collaboration.

25 years
OF RESEARCH PROJECTS

750+ PEER-REVIEWED PUBLICATIONS

25+ TOOLS & DATABASES DEVELOPED

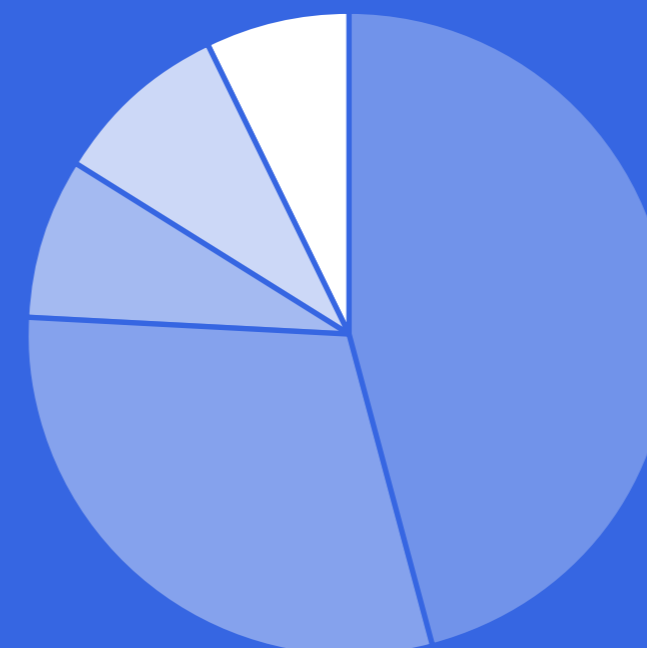
10+ PROJECTS CONTRIBUTED TO OECD TEST GUIDELINES

15+ PROJECTS CONTRIBUTED TO ALTERNATIVES TO ANIMAL TESTING

2550+

Projects WHICH WERE LED BY:

46% ACADEMIA
30% RESEARCH INSTITUTES
8% GOVERNMENT
9% INDUSTRY
7% CONSULTANTS



15+ INDIVIDUAL SCIENCE AWARDS

15+ COUNTRIES AWARDED RESEARCH GRANTS

150+ LEAD RESEARCHERS

990+ Research Institutes / Organisations

BUILDING

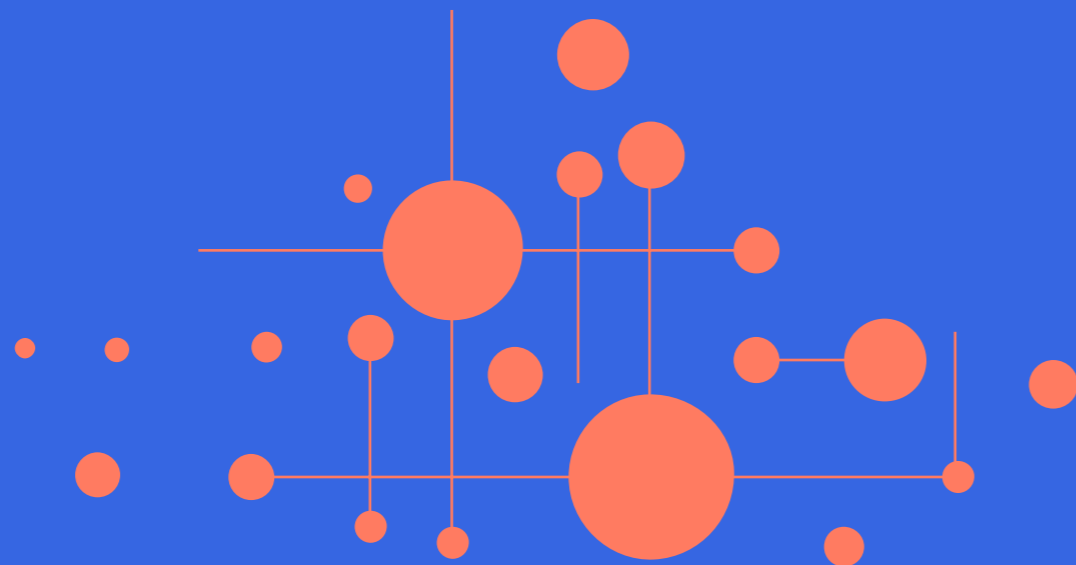
A SUSTAINABLE FUTURE

through
TRANSPARENT
&
CUTTING-EDGE
SCIENCE

**For the
past
quarter of
a century**

Cefic's Long-Range Research Initiative (LRI) has consistently upheld a commitment to transparency, independence and high-quality science. Our focus has always been on ensuring that research outcomes are robust and free from influence, a principle embedded in our programme.

We understand that questions may arise, and we welcome them as part of our dedication to open dialogue. LRI has and will continue to remain steadfast in maintaining the integrity that has defined us throughout our history.



FUTURE PROOFING

FOR SAFETY & SUSTAINABILITY



At LRI, we start with the future in mind. Our goal is to anticipate the challenges ahead and produce the tools and knowledge to meet them head-on. It's not just about reacting to risks; it's about being proactive, ensuring that chemical safety and sustainability go hand in hand with innovation. Through global collaboration and research tailored to real-world challenges, we develop solutions that safeguard both human health and the environment.

DR. KATHERINE SANTIZO
CEFIC-LRI PROGRAMME MANAGER

LRI scans the horizon and convenes diverse stakeholders to meet emerging chemical safety challenges, connecting research to practice and policy. With robust, high-quality data, we support science-based policy developments with true global impact.

Our efforts help to harmonise methods that can save time and resources for both industry and regulators. By anticipating potential risks associated with chemicals, we provide valuable information for the decision-

making process and mitigate potential effects. This proactive approach is a clear demonstration of industry responsibility and commitment to safety.

LRI's research agenda is purposely aligned with European public health and sustainability priorities. Yet our impact is global as seen with the collaboration with the other regional LRI programmes and in the software tools that have emerged from LRI to become internationally recognised methods for chemical safety assessment.

BUILT-IN TRANSPARENCY



Excerpt from Cefic-LRI contracts with researchers

Researchers are encouraged to publish in peer-reviewed journals and make widely and readily available their results, software database and validated tests methods in order for them to be freely brought to the knowledge of the public large and to be distributed and exploited widely as possible.

The chemical industry has committed itself to addressing any potential risk associated with its products or operations that may become evident from the results.

The Research Programme will be conducted and reported in line with its Governing Principles:

- Apply the most rigorous scientific principles and practices;
- Research conducted without sponsor influence;
- Timely publication of results;
- Timely and appropriate response to results.

Excerpt from the monitoring team terms of reference

The researchers shall have:

- Scientific independence;
- Proprietary right to interpret and release research results from projects funded under LRI.

Monitoring Team members shall not influence the interpretation of the results other than by the process of normal scientific debate.

Monitoring Team members co-authoring with the research team on publications directly relating to the LRI project results/outcomes is not encouraged, but may be considered on a case-by-case basis on approval by the Cefic-LRI Programme Manager.



The long-standing collaboration between ECETOC and LRI has been instrumental in safeguarding the independence and transparency of scientific research in chemical safety. By ensuring that research is openly debated across the chemical industry, regulatory bodies, and academia, we have fostered an environment of trust and accountability. This model has not only advanced our understanding of chemical risks but also enhanced public confidence in our findings, allowing us to respond to evolving concerns while continuously improving safety assessments.

DR. BLANCA SERRANO RAMÓN
SECRETARY GENERAL, ECETOC

LRI is assisted by the European Centre for Ecotoxicology and Toxicology (ECETOC) to help safeguard the integrity and transparency of research. We are jointly committed to maintaining open research that is free from influence.

The proof of this promise is in the timely public release of project results and the enthusiastic encouragement of robust debate amongst the chemical industry, regulators and academia.

Responding to public and stakeholder concerns has been a top priority for LRI since our founding, and our collaboration with ECETOC has helped to ensure we engage with diverse experts. With open dialogue built-in to our culture and practices, confidence and trust in our research has continued to grow.

PUSHING BOUNDARIES

WITH CUTTING-EDGE RESEARCH



LRI Building a Sustainable Future

There's no shortage of innovative ideas to solve the challenges we face today, but those ideas need funding and support.

LRI promotes innovative research by developing new methods and tools to assess the safety of chemicals, helping to better protect human health and the environment. By working on reducing health effects and exposure of chemicals, the initiative supports sustainable development goals. Risk assessments are fundamental to ensuring the sustainability of a long, healthy, quality life and environmental resources.

We are committed to innovate and advance our scientific understanding of chemicals for human health and the environment.

For example, we continuously work towards new methods to reduce the need for animal testing, finding other ways to test chemical safety that are efficient, reliable and enhance our ethical standards.

We have successfully helped push forward new approaches that reduce animal testing and ensured their acceptance for chemical safety assessment. In addition, we have projects that have used advanced methods to model chemical safety, human and environmental exposure.



Through our research projects and by funding researchers at all career stages, we aim to strengthen and embolden the scientific community.

Over the years, the LRI Innovative Science Award has catalysed the careers of some of Europe's most promising scientific minds, stimulating cutting-edge research, 'out-of-the-box' thinking and new approaches which will advance the development and application of new and existing approaches in the assessment of chemical safety.

DR. DANIEL WITTHAUT
EXECUTIVE DIRECTOR INNOVATION, Cefic

CEFIC - LRI

OVER

the

YEARS

1999

International Council of Chemical Associations (ICCA) launches the Long-range Research Initiative with the support of Cefic, the American Chemical Industry (ACC), Japan Chemical Industry Association (JCIA)

- Multiple international organisations raise concerns over the endocrine-disrupting properties of chemicals in the mid-to-late 1990s;
- The first Cefic LRI workshop focuses on endocrine modulation, marking the launch of these projects.



2001

ICCA LRI programmes host their first international workshop focused on genomics, the study on organisms' genetic material

2008

- Launched several human biomonitoring projects.

25 Years

2010

Launched Advanced REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) tool to help simplify chemical safety assessments for inhalation exposure

2012

Hosted expert workshop with ECHA (European Chemicals Agency) on Read-Across Assessments, an alternative approach that uses data from one substance to help predict information of another substance.

2014

Hosted a workshop on scientific developments in bioaccumulation research with the ECHA.

2019
20 Year Anniversary

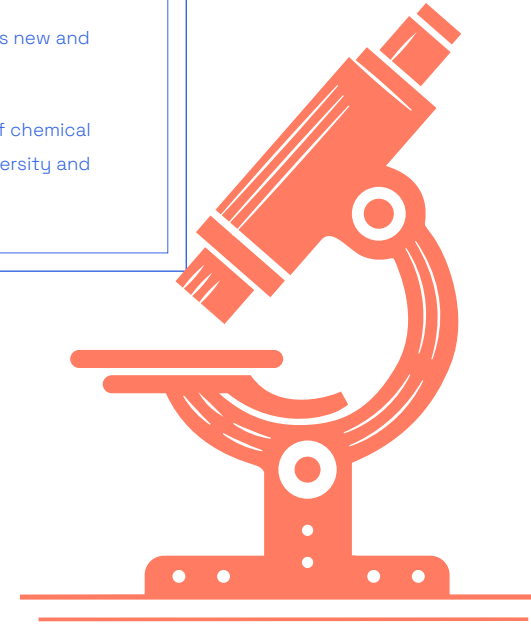
Launched the first microplastics research project for an open-source model to evaluate the movement of microplastics in rivers.

2021

ICCA launches a microplastics research programme with support from LRI to understand the risks to the environment and human health.

FUTURE PROGRESS

- The impact of the twin transition - digital and green - on conventional safety assessments;
- Innovative methods to assess new and difficult to test substances;
- Expand our understanding of chemical exposure including on biodiversity and along value chains.



ENDOCRINE DISRUPTORS AND OECD GUIDELINES

CHEMICAL SAFETY

ASSESSMENT TOOLS

SHIFTING TOWARDS NON-ANIMAL TESTING

MICROPLASTICS RESEARCH

2000

Research expands to cover environmental emissions and ecotoxicity



2004
First LRI Research Award

- First award given to Dr Roger Godschalk at the University of Maastricht in the Netherlands for toxicological work on paternal carcinogen exposures and their genetic risks to offspring.

NEW APPROACH
METHODOLOGIES

2007

Animal testing alternatives

- OECD adopts projects supported by LRI in test guidelines, contributing to internationally recognised standards that reduce trade barriers and animal testing;
- Launched AMBIT, an open cheminformatics software to support chemical safety assessments;
- Launched the first project to identify alternatives to animal testing.

2009
Celebrated 10 years of LRI

Four projects contributed to adopted OECD test guidelines in this milestone year.

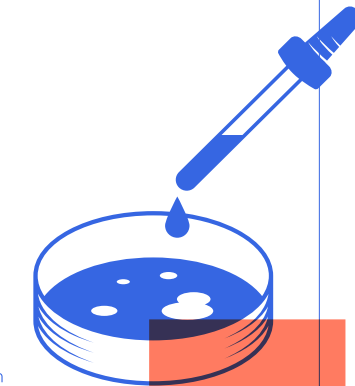


of



2013

Hosted a workshop on skin sensitisation training with non-animal testing strategies in collaboration with the European Partnership for Alternatives to Animal Testing (EPAA).



2015

Launched INTEGRA (Integrated External and Internal Exposure Modelling Platform), a unified computational platform to integrate environmental fate, exposure, and internal dose dynamically over time.

2018

Annual workshop to commemorate 20 years of LRI contributions to safety risk assessments

2020



- Contribution to an in vitro eye irritation test to replace animal testing included in OECD TG437 as well as a guideline for defined approaches on eye irritation;
- Launched GUTS (General Unified Threshold Model of Survival) tool to provide an overarching framework for published TKTD models on mortality driven by exposure.

2022

- Supported the Persistence Assessment Tool (PAT) that provides a methodology to systematically capture and store information on persistence using weight of evidence determination;
- Hosted first workshop for microplastics advanced research and innovation Initiative, providing a platform to discuss risk assessments.

2024
25-year anniversary

OECD adopted an LRI supported test to evaluate bioconcentration in aquatic environments without the use of laboratory animals in TG321. LRI to date has contributed to more than 10 test guidelines.

SINCE
1999

LIGHTS

THE

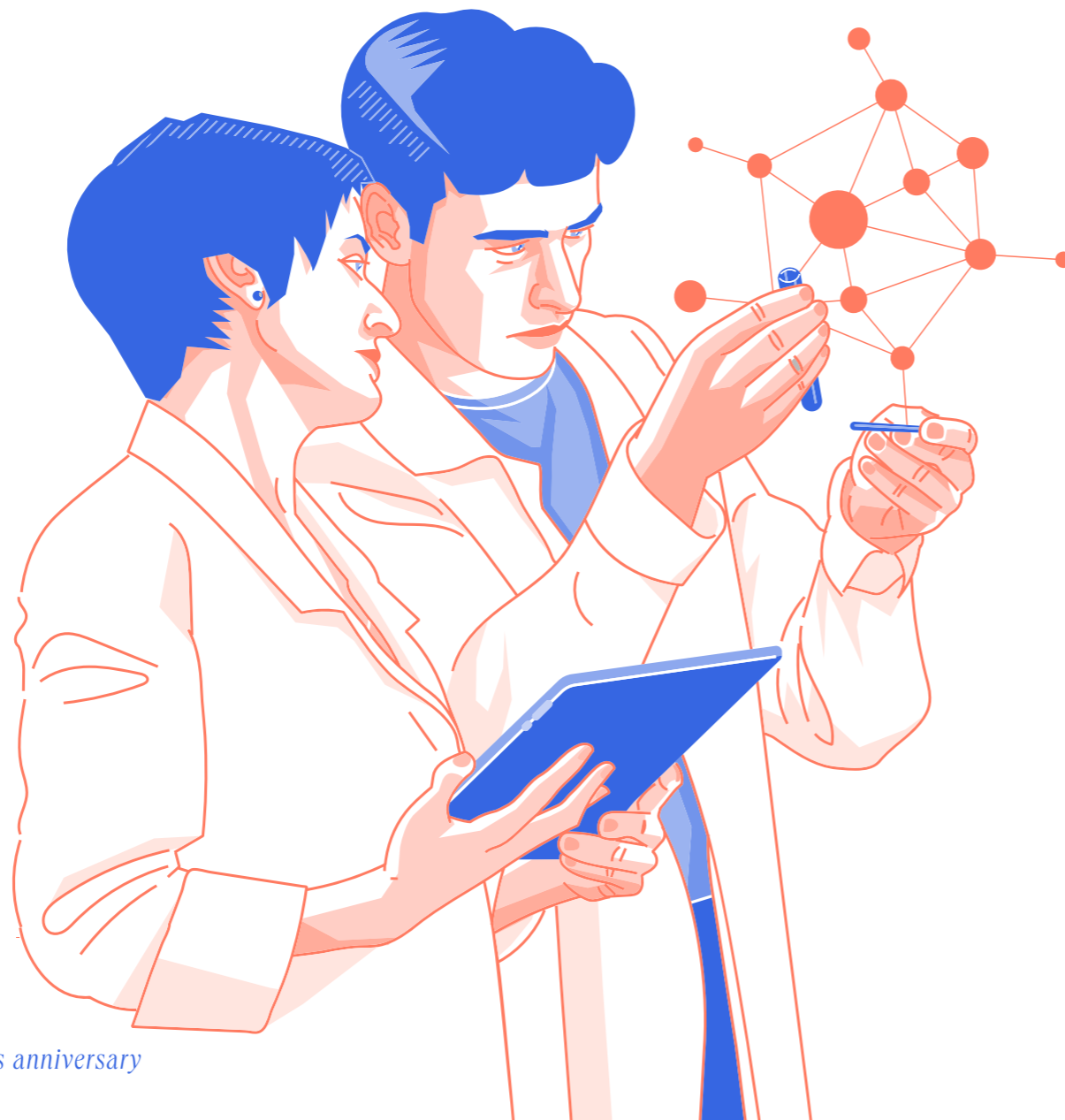
PIONEERING
ROBUST,
CREDIBLE

&
TRANSPARENT
SCIENCE

Cefic-LRI is crucial for industrial risk assessment. It successfully closes gaps in funding applied science, seeking to differentiate between areas of concern and those of lower priority. It is inspiring to observe the collaborative spirit and mutual benefit when scientists from academia, and chemical industry and regulatory agencies join forces to advance solutions for public health and environmental protection.

DR. HELI HOLLNAGEL

LRI CHAIR & REGULATORY TOXICOLOGIST, DOW



For the past 25 years,

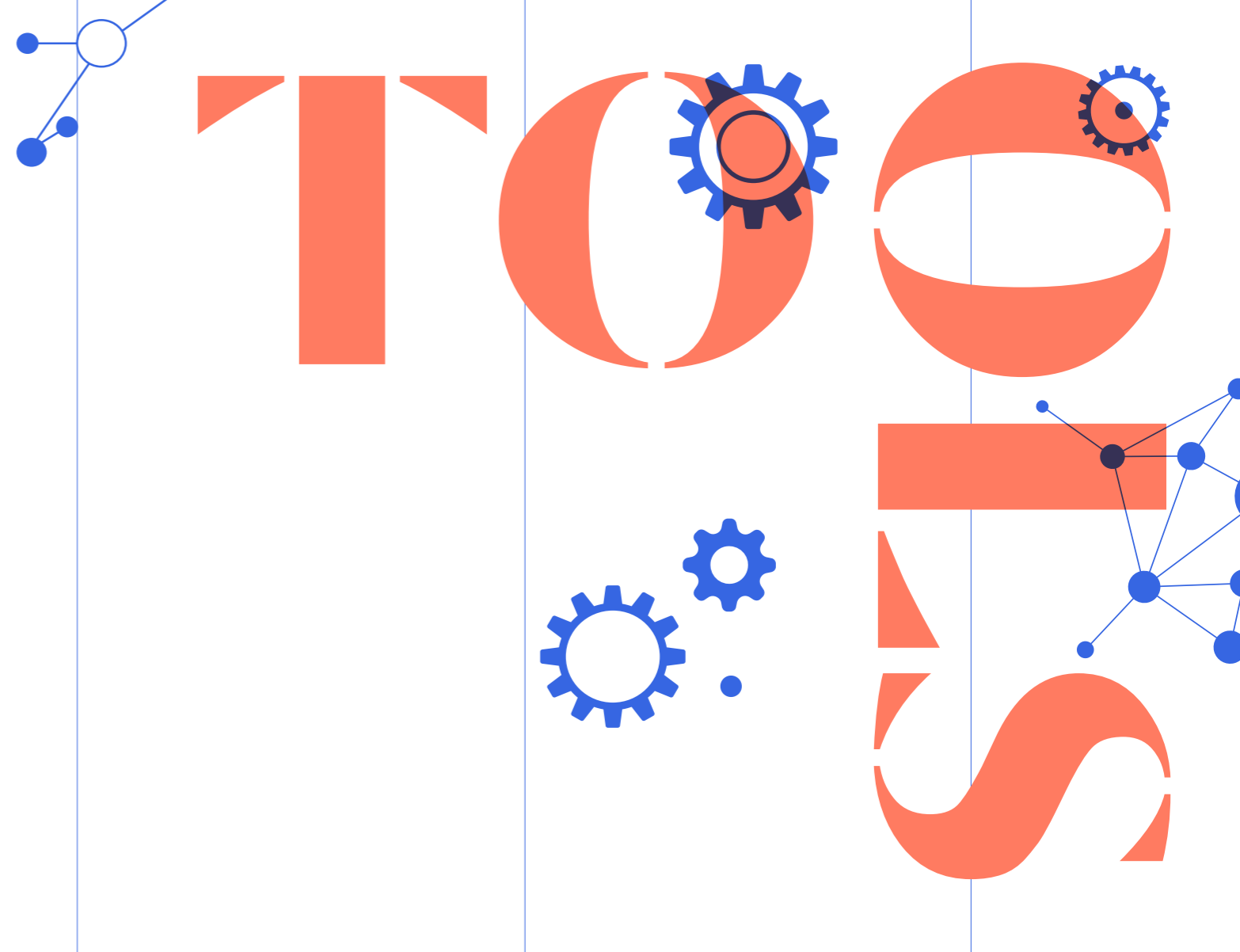
the Long-Range Research Initiative (LRI) has been at the forefront of advancing chemical safety, contributing significantly to human and environmental health. We develop state-of-the-art tools, initiate groundbreaking research projects and foster international collaboration.

Our efforts have not only saved tens of millions of euros and reduced animal testing but have also enabled better research, analysis, and data interpretation on a global scale. Today LRI's contributions are relied on by industry and trusted by European and national regulatory agencies as well as academia.

LRI research is instrumental in advancing chemical safety and sustainability including for REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) among others. Our inclusion in the ongoing EU's Partnership for the Assessment of Risk from Chemicals (PARC) Safe and Sustainable by Design (SSbD) toolbox reflects LRI's scientific rigor, credibility and enduring value. Today, LRI initiatives are widely valued across the public and private sectors, supporting research, regulatory compliance and sustainable practices.

The projects that follow are some of the highlights from our years in pursuit of our mission, illustrating LRI's reach and impact in Europe and beyond.

DATA SOLUTIONS FOR INDUSTRY & REGULATORS



AMBIT

CHEMICAL INFORMATION TOOL

An open chemoinformatic system designed to support chemical safety assessments

- Used in over 50 countries and integrates with European Chemical Agency's (ECHA) International Uniform Chemical Information Database;
- Assists in read-across and grouping of chemicals;
- Contains REACH datasets for over 14,000 substances, accessible through ECHA;
- Included in the EU's Partnership for the Assessment of Risk from Chemicals Safe and Sustainable by Design toolbox.

INTEGRA

EXPOSURE MODELLING TOOL

Assesses the source-to-dose continuum for the entire life cycle of chemical substances

- Combines all available information to cover an extensive chemical space;
- Acts as a unified computational platform;
- Integrates environmental fate, exposure, and internal dose dynamically over time;
- Included in the EU's Partnership for the Assessment of Risk from Chemicals Safe and Sustainable by Design toolbox.

BAT

BIOACCUMULATION ASSESSMENT TOOL

Supports consistent frameworks for bioaccumulation assessment decision-making

- Provides a quantitative weight of evidence framework to aid bioaccumulation assessments;
- Included in ECHA's Guidance on Information Requirements and Chemical Safety Assessment Chapter R.11;
- Facilitates systematic and transparent integration of information;
- Led in collaboration with the American Chemical Council.

PAT

PERSISTENCE ASSESSMENT TOOL

Supports in the weight of evidence framework for persistence assessment

- Addresses challenges faced by the global chemicals industry to meet regulatory measures with persistence assessment;
- Provides a clear methodology to capture and store information on persistence of chemicals;
- Provides a structured approach to assess persistence;
- Led in collaboration with International Collaboration for Cosmetics Safety, Oil Companies' European Association for Environment, Health and Safety in Refining and Distribution, and European Centre for Ecotoxicology and Toxicology of Chemicals.

GUTS

GENERAL UNIFIED THRESHOLD MODEL OF SURVIVAL

An overarching framework for toxicokinetic-toxicodynamic models on mortality

- Free and open-source software;
- Included in European Food Safety Authority (EFSA) risk assessments for bees since 2023;
- Described as potential tool in EFSA guidance for birds and mammals;
- Provides species and compound specific information to determine exposure effects on damage and mortality;

REACH

ADVANCED REACH TOOL

Helps simplify chemical safety assessment for inhalation exposure

- Provides realistic exposure estimates by providing multiple scenario options;
- Incorporated in ECHA's tool for Chemical Safety Assessment and Reporting;
- Included in the EU's Partnership for the Assessment of Risk from Chemicals Safe and Sustainable by Design Toolbox;
- Led in collaboration with UK Health and Safety Executive, the Dutch government, the French Agency for Environmental and Occupational Health Safety, Shell, Eurometaux, British Occupational Hygiene Society and GlaxoSmithKline.

PROJECTS TO ADDRESS

We continuously scan for emerging concerns and challenges related to chemical safety and sustainability at LRI. Together with different stakeholders, we initiate research projects that can respond to these priorities.

Collaboration is based on a shared goal to improve the world's understanding of the potential impact of chemicals and develop innovative methods for safety assessments. Below are some of the areas where LRI and our partners have been at the forefront of this science and research.

Human biomonitoring

After identifying knowledge gaps and challenges, LRI began initiating human biomonitoring (HBM) projects in 2008. These efforts led to a tool launched in 2013 that aids in data interpretation. Initial projects supported key EU Commission human biomonitoring projects in the following years.

Phasing out animal testing

LRI first launched projects in 2007 to identify and prioritise research needs for animal testing alternatives. These efforts have led to further regulatory acceptance of New Approach Methodologies (NAM), including a fish replacement test for bioaccumulation (OECD 321) and Omics Reporting Framework publication (OECD 390). LRI also contributed to another OECD publication that provides an in vitro eye irritation test to replace animal testing.

EMERGING SCIENCE & CONCERNS

Environmental risk assessment

LRI funds projects focused on Persistence, Bioaccumulation, and Toxicity (PBT) assessments required under REACH that can be presented to ECHA's PBT expert group, helping to ensure regulatory relevance. Projects harmonise data in ways that can enhance:

- ACCURACY;
- ACCESSIBILITY;
- APPLICABILITY;
- RELEVANCE OF METHODS & DATA.



CONTRIBUTING TO OECD TEST GUIDELINES

The Organisation for Economic Co-operation and Development (OECD) plays a significant role in promoting chemical safety internationally. By harmonising chemical regulations and standards among member countries, it facilitates international trade and protects human health and the environment. In support of this important mission, LRI has transparently contributed to the creation and maintenance of robust, science-based OECD test guidelines.

The OECD sets international standards to level the playing field.

OECD. (N.D.). HOW WE WORK. OECD.

RETRIEVED OCTOBER 22, 2024,
FROM www.oecd.org/en/about/how-we-work.

The biodegradation of chemicals is also an area of science and research where LRI is contributing knowledge. It involves studying how microorganisms such as bacteria or fungi can break down chemical substances into less harmful or non-toxic compounds. Two LRI (bio)degradation projects are currently contributing to OECD efforts to update related test guidelines.

LRI's work began in response to the gap in international knowledge on chemicals with potential endocrine-disrupting properties. The working group of experts, we convened has contributed to seven testing guidelines to date that aim to identify chemical properties that can potentially interact with the endocrine system.

LRI projects have contributed to more than 10 OECD guidelines.

When it comes to animal testing, the OECD promotes alternative methods and works to ensure that when animal testing is necessary, it is scientifically valid. LRI fully supports this approach and has contributed to the efforts including in OECD's in vitro Developmental Neurotoxicity (DNT) Battery publication (No. 377) as well as fish alternative for bioaccumulation guideline (TG 321).



LEARNING & EXCHANGING

INTERNATIONAL WORKSHOPS

LRI workshops are known for convening interdisciplinary experts to advance chemical safety and sustainability. They provide dynamic forums where participants go beyond knowledge sharing to explore partnerships and projects that can help solve pressing global challenges regarding chemical safety.

Since launching our international workshop programme in 2001, we have

convened representatives from industry, academia, government, civil society and more in shared spaces for vigorous learning and transparent cooperation. In recognition of LRI's global reach, participants come from around the world.

The impact of LRI workshops can be seen in the many multi-stakeholder projects that have emerged from these gatherings as well as in the successful dissemination and uptake of information and insights. Our diverse, multidisciplinary participants continue to help shape research with practical, trusted and sustainable priorities.

The fruitful collaborative development of the Advanced Reach Tool (ART) by renowned research institutes, universities and industries across Europe together with the regulatory acceptance by European and National regulatory bodies has led to the successful implementation and use of this exposure assessment tool.

DR. WOUTER FRANSMAN

PRINCIPAL INVESTIGATOR, TNO (NETHERLANDS
ORGANISATION FOR APPLIED SCIENTIFIC RESEARCH)

IN THE PURSUIT OF SCIENCE

MARII

The understanding of the impact of small plastic particles (microplastics) on the environment and human health requires international cooperation. This is due to the global nature of the problem and the interconnectedness of ecosystems and economies.

Led by the International Council of Chemical Associations (ICCA), the microplastics research programme is responding to this call by contributing best-in-class research.

Embedded within Cefic-LRI, this initiative aims to develop models for holistic environmental risk assessments of micro- and nano- plastics.

The Cefic-LRI MARII (Microplastics Advanced Research and Innovation Initiative) projects have hugely advanced our understanding of this topic.

We have developed models of how microplastics behave in the environment, including a detailed mechanistic model of degradation and fragmentation, an important but poorly understood subject.

This work takes us closer to microplastic risk assessments in the environment that support broader aims to prevent pollution.

DR. SAM HARRISON

RESEARCH SCIENTIST, UKCEH
(UK CENTRE FOR ECOLOGY & HYDROLOGY)

LRI 20 YEARS

*20 years of LRI Advancing
Risk Assessment*

14 - 15 NOVEMBER 2018, BRUSSELS





LRI INNOVATIVE SCIENCE AWARDEES *Over the Years*

2004

**DR. ROGER
GODSCHALK**

*Associate Professor at Maastricht
University*

Paternal carcinogen exposures and
genetic risks in their offspring



2005

**DR. PAUL
VAN DEN
BRINK**

Professor at Wageningen University

Predicting the response of aquatic
invertebrates to chemical stress
using species traits and stressor
mode of action



The LRI Innovative Science Award is an initiative of Cefic (European Chemical Industry Council), in conjunction with Society of Environmental Toxicology and Chemistry (SETAC), Association of European Toxicologists and European Societies of Toxicology (EUROX), and International Society of Exposure Sciences (ISES).

Over the years, it has offered 100,000€ to stimulate innovative research, 'out-of-the-box' thinking and new approaches which will advance the development and application of new and existing approaches in the assessment of chemical safety.

2019

**DR. KAROLINA
NOWAK**

*Research Scientist at Helmholtz Centre
for Environmental Research - UFZ*

Deuterium Isotope Probing: A new
diagnostic tool for the assessment of
biodegradation and Non-Extractable
Residues (NER) formation in regulatory
testing of organic chemicals



2018

**DR. DAVID
PAMIES**

Professor at Lausanne University

Quantitative evaluation of the Key
Events Relationships (KERs) resulting
in impairment of learning and memory
abilities [OECD AOP13] to support
regulatory decision-making



2008

**DR. EMMA
TAYLOR**

Mechanistically anchored testing for
male epigenetic transgenerational
chemical toxicity using in vivo and in
vitro stem cell based systems



2007

**DR. ROMAN
ASHAUER**

Sygenta Fellow

Improving the definition for water
quality criteria: linking organism
recovery times to mechanism of
action and acute to chronic ratios



2006

**DR. ELLEN
FRITSCHÉ**

*Director of the Swiss Centre for
Applied Human Toxicology (SCAHT)*

Validation of a human in vitro model for
testing developmental neurotoxicity



2012

**DR. ANDREAS
BENDER**

*Professor at University of Cambridge
CITO at Pangea Bio*

Determining Biologically Relevant Effects
of Compound Exposure by Chemical,
Biological and Phenotypic Data Integration



2014

**DR. ALEXANDRA
ANTUNES**

Professor at CQE-IST

Covalent Modification of Histones
by Carcinogens: a novel proteomic
approach toward the assessment of
chemically-induced cancers



2017

**DR. SPYROS
KARAKTSIOS**

*Researcher at University of
Thessaloniki*

DOREMI (DOse REsponse of Mixtures)



2009

**DR. HECTOR
KEUN**

Professor at Imperial College London

Using Metabolomic biomarkers to
bridge the gap between environmental
exposure and human disease



2010

**DR. JUANA
MARIA
DELGADO
SABORIT**

*Head of Environmental Health Research
Laboratory at University Jaume I*

In quest of new fingerprints of exposure
to VOC from consumer products



2011

**DR. THOMAS G.
PREUSS**

Team Leader, Bayer AG

Improving mechanistic understanding
of population recovery for aquatic
macroinvertebrates



2013

**DR. SABINE
A.S. LANGIE**

Professor at Maastricht University

Environmental programming of
respiratory allergy in childhood: the
applicability of saliva to study the
effect of environmental exposures on
DNA methylation



2015

**DR. ALICE
LIMONCIEL**

*Chief Scientific Officer at
biocrates life sciences ag*

Establishment of thresholds of
activation of stress responses
pathways and ligand-activated
receptors for chemical classification



2016

**DR. WIBKE
BUSCH**

*Group Leader at Helmholtz Centre
for Environmental Research - UFZ*

Determining key events and
mechanisms of action by genome
wide profiling of molecular
responses related to toxicokinetic
and toxicodynamic processes
as basis for AOPs for major
environmental pollutants (KeyAct)

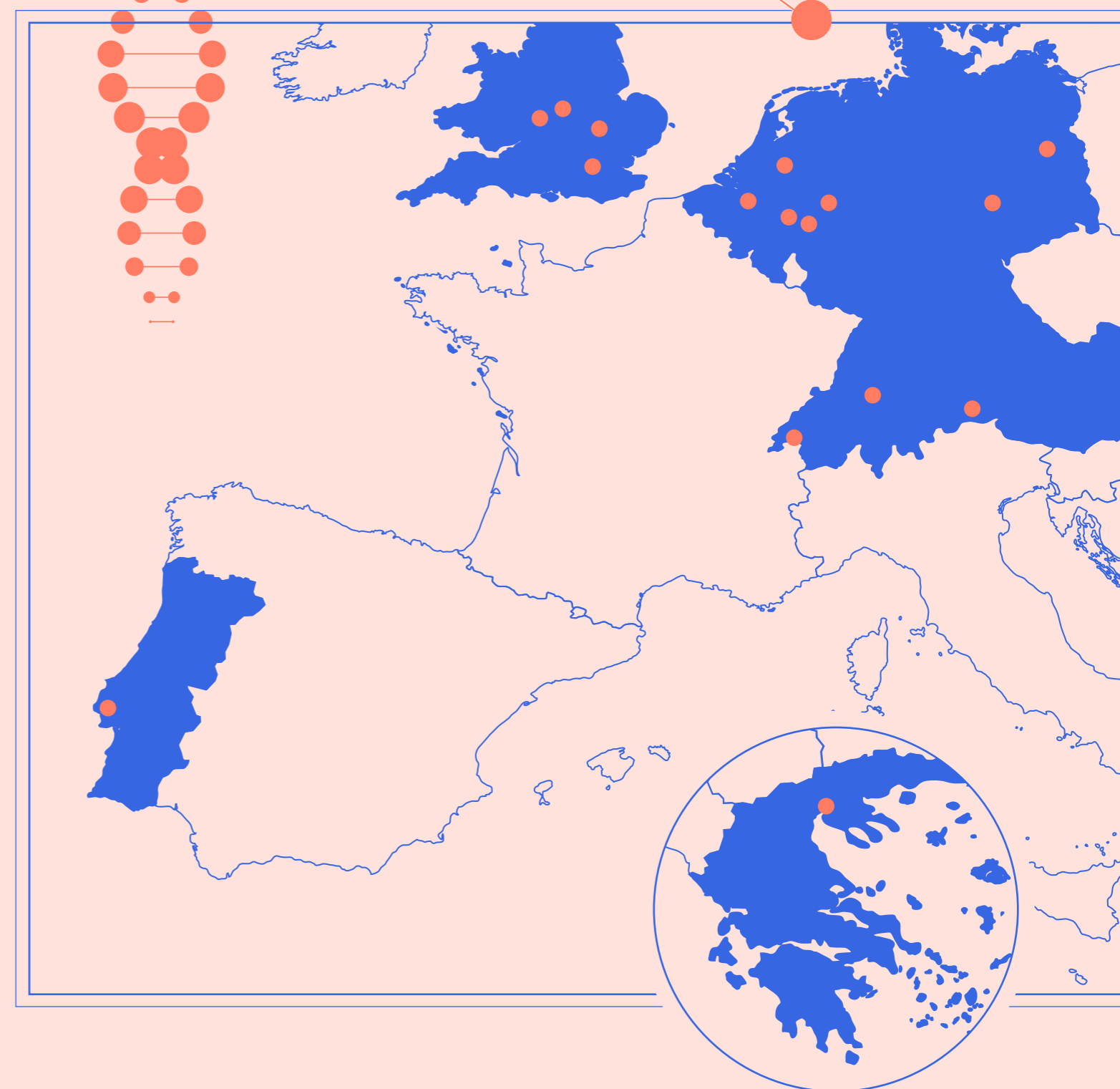


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CEFIC-LRI AWARDEES

ACROSS EUROPE

YEAR WON	NAME	ORIGINAL AFFILIATION	WINNING TITLE
2004	Dr. Roger Godschalk	Maastricht University, NL	Paternal carcinogen exposures and genetic risks in their offspring
2005	Dr. Paul van den Brink	Alterra/Wageningen University, NL	Predicting the response of aquatic invertebrates to chemical stress using species traits and stressor mode of action
2006	Dr. Ellen Fritsche	Heinrich-Heine University, DE	Validation of a human in vitro model for testing developmental neurotoxicity
2007	Dr. Roman Ashauer	Swiss Federal Institute of Aquatic Science and Technology, CH	Improving the definition for water quality criteria: linking organism recovery times to mechanism of action and acute to chronic ratios
2008	Dr. Emma Taylor	MRC/Leicester University, UK	Mechanistically anchored testing for male epigenetic transgenerational chemical toxicity using in vivo and in vitro stem cell based systems
2009	Dr. Hector Keun	Imperial College, London, UK	Using metabolomic biomarkers to bridge the gap between environmental exposure and human disease
2010	Dr. Juana Maria Delgado Saborit	University of Birmingham, UK	In quest of new fingerprints of exposure to VOC from consumer products
2011	Dr. Thomas G. Preuss	RWTH Aachen University, DE	Improving mechanistic understanding of population recovery for aquatic macroinvertebrates
2012	Dr. Andreas Bender	University of Cambridge, UK	Determining biologically relevant effects of compound exposure by chemical, biological and phenotypic data integration
2013	Dr. Sabine A.S. Langie	Flemish Institute for Technological Research, BE	Environmental programming of respiratory allergy in childhood: the applicability of saliva to study the effect of environmental exposures on DNA methylation
2014	Dr. Alexandra Antunes	Structural Chemistry Center (CQE-IST), PT	Covalent modification of histones by carcinogens: a novel proteomic approach toward the assessment of chemically-induced cancers
2015	Dr. Alice Limonciel	Medical University of Innsbruck, AT	Establishment of thresholds of activation of stress responses pathways and ligand-activated receptors for chemical classification



2016	Dr. Wibke Busch	Helmholtz Centre for Environmental Research (UFZ), DE	Determining key events and mechanisms of action by genome wide profiling of molecular responses related to toxicokinetic and toxicodynamic processes as basis for AOPs for major environmental pollutants (KeyAct)
2017	Dr. Spyros Karaktsios	University of Thessaloniki, GR	DOREMI (Dose REsponse of Mixtures)
2018	Dr. David Pamies	Lausanne University, CH	Quantitative evaluation of the Key Events Relationships (KERs) resulting in impairment of learning and memory abilities (OECD AOP13) to support regulatory decision-making
2019	Dr. Karolina Nowak	Technical University of Berlin, DE	Deuterium Isotope Probing: A new diagnostic tool for the assessment of biodegradation and Non-Extractable Residues (NER) formation in regulatory testing of organic chemicals

2004

DR. ROGER GODSCHALK

Associate Professor at Maastricht University



NATIONALITY	Dutch
PROJECT COUNTRY	The Netherlands
EXPERTISE	Toxicology
RESEARCH FOCUS	Genetic toxicology & molecular epidemiology

After receiving the Cefic-LRI award, I was selected for the talent program of our institute at Maastricht University which led to me becoming Associate Professor.

The great interest that the subject of my successful LRI award proposal generated in the research community led to my participation in the EU-project NEWGENERIS as well as a fruitful collaboration with the Dutch institute of public health and the environment (RIVM). This was due to potential new approaches in testing germ-line mutagenicity requiring a lower number of laboratory animals than with traditional methods. The studies funded by my Cefic-LRI

award are continuing. RIVM doubled the 100,000€ received from Cefic to 200,000€. With this level of funding, I was able to appoint a PhD student for four years with at least 4-5 scientific publications in peer reviewed journals.



Paternal carcinogen exposures and genetic risks in their offspring

“ The great interest that the award generated in the research community led to my participation in the EU-project NEWGENERIS as well as collaboration with the Dutch institute of public health and the environment.

NEWGENERIS

2006

DR. ELLEN FRITSCHKE

Director of the Swiss Centre for Applied Human Toxicology (SCAHT)



Validation of a human in vitro model for testing developmental neurotoxicity

NATIONALITY	German
PROJECT COUNTRY	Germany
EXPERTISE	Developmental Neurotoxicity
RESEARCH FOCUS	Environmental Toxicology and Developmental Neurotoxicity

As a result of this award, I have published my work in high-impact publications, built a team of over 20 researchers, and earned another significant accolade—the Ursula M. Haendel Animal Welfare Award from the German Research Council.

This prestigious recognition not only valued the importance of my research but also enhanced my credibility within the scientific community.

The award broadened my network, leading to collaborations with leading experts and provided access to platforms where I could share my findings and contribute to the broader scientific discourse. It provided me with the resources and support to delve deeper into the development of non-animal NAMs for testing developmental neurotoxicity (DNT).

My research addresses a critical gap in testing compounds for their effects on the developing brain. The DNT in vitro battery offers a solution, enabling data generation with significantly fewer resources and a much shorter timeframe.

These scientifically validated methods, initially sponsored by the Cefic-LRI Innovation Award, are now publicly available, bringing significant societal benefits.

The outcomes of this research highlight the value of innovation and scientific exploration in creating a safer, healthier, and more sustainable future without relying on animal testing.

“ The LRI Innovation Award has been a cornerstone of my scientific journey, helping me achieve new career heights and allowing me to make meaningful contributions to both the scientific community and society.

FOR

2010



In quest of new fingerprints of exposure to VOC from consumer products

DR. JUANA MARIA DELGADO SABORIT

Head of the Environmental Health Research Laboratory at University Jaume I



NATIONALITY	Spanish
PROJECT COUNTRY	United Kingdom
EXPERTISE	Toxicology
RESEARCH FOCUS	Effects of environmental factors on human health

Winning this award has been pivotal in my research and professional career. It's allowed me to create my research group, manage my own research budget and work alongside two PhD students in the project.

It's also given me the opportunity to attend conferences and research meetings allowing me not only to meet new scientists, but also establish fruitful collaborations with other research groups, such as the Center for Bioelectronics and Biosensors at Arizona State University (USA) and the Molecular and Cell Biology Research group at the University of Birmingham (UK).

The LRI award has been a great catalyst to attract more funding to expand and put

into practice my research ideas in the field of human exposure to nanoparticles, biomarkers of oxidative stress and the use of real time sensors to characterise exposures and lung doses. In the latter field of research, I have received the very prestigious Health Effects Institute 2011 Walter A. Rosenblith New Investigator Award.

Overall, the LRI Award has provided me with substantial professional growth and independence. I look forward to the scientific and professional results that the project continues to generate.

♥♥ *The LRI award has been a great catalyst to attract more funding to expand my research. Overall, the award has provided me with substantial professional growth and independence.*

2019

DR. KAROLINA NOWAK

Research Scientist at the Helmholtz Centre for Environmental Research



NATIONALITY	Polish
PROJECT COUNTRY	Germany
EXPERTISE	Environmental Chemistry
RESEARCH FOCUS	Chemical fate transport in complex environments

My research focuses on the hidden nature of 'non-extractable' residues (NERs) in soil. It is currently a challenge to test how long synthetic organic chemicals persist in the environment. Traditional methods, like carbon isotope labeling, struggle to tell the difference between potentially harmful soil-bound chemicals and harmless natural compounds produced by soil microbes.

My award-winning research introduces a new method—hydrogen isotope labeling—that shows soil microbes retain very little hydrogen, meaning most NERs are likely synthetic chemicals. By measuring the total hydrogen in

soil, we can more easily quantify these chemicals. This breakthrough will speed up the identification of safe synthetic chemicals, benefiting society by improving environmental safety testing.



Deuterium Isotope probing as a new diagnostic tool for the assessment of biodegradation & NER formation in regulatory testing of organic chemicals

♥♥ *The LRI award enabled me to develop a new independent approach as well as establish a small team of students. The outstanding results obtained have opened my career prospects in academia and beyond.*

LRI AWARDS

CATALYSING CHEMICAL RESEARCH

OUR MISSION

Improving chemical safety methods, reducing uncertainty, and boosting confidence in science-based policy processes for public health and environmental protection through international cooperation.

LONG-RANGE RESEARCH INITIATIVE

International Council of Chemical Associations (ICCA)

European Chemical Industry Council (Cefic)

American Chemistry Council (ACC)

Japan Chemical Industry Association (JCIA)

FROM EUROPE, THE US & JAPAN

LRI is a global program implemented through three ICCA member organisations – the European Chemical Industry Council (Cefic), the American Chemistry Council (ACC), and the Japan Chemical Industry Association (JCIA).

LRI programmes are part of the industry's commitment to Responsible Care®, a global initiative to improve health, safety, environmental, and security performance,

and to communicate with stakeholders about products and processes.

LRI aligns with the Responsible Care Global Charter in safeguarding people and the environment, strengthening chemicals management systems, and contributing to sustainability.

The three-region LRI approach recognises the independent management of each region as well as the diversity in scientific communities, regulatory requirements and societal issues among the three geographies.

This structure also allows the LRI to pool diverse knowledge on critical industry issues and effectively respond to public and regulatory demands. This regional co-ordination also enables researchers to adeptly identify and address future issues of relevance for chemical safety assessments.

Over the past decades, ICCA-LRI Workshops have provided dynamic forums for industry and academic researchers, governmental agencies, non-governmental organisations, and regulatory decision makers to explore emerging health and environmental issues, share advanced chemical assessment methods, and identify research needs.

The three priority research areas of the programs

	Innovating Chemical Testing	Understanding Everyday Exposures	Translating Research Outcomes for Product Safety
CEPIC	<ul style="list-style-type: none"> Develop novel assessment and data interpretation approaches for complex substances; Investigate reliability and domain of applicability of New Approach Methodologies (NAMs) with an aim of regulatory uptake. 	<ul style="list-style-type: none"> Evaluate effects of cumulative and aggregate exposures in real life scenarios, including biodiversity; Enhance knowledge about use and exposure of chemicals throughout the value chain. 	<ul style="list-style-type: none"> Apply new concepts enhancing ecological relevance of risk assessment; Reduce complexity and robustly predict health effects using pragmatic approaches.
ACC	<ul style="list-style-type: none"> Catalyse applications of Scientific Confidence Principles for establishing the readiness of NAMs for regulatory and product stewardship uses; Accelerate in vitro respiratory tract NAMs to pave the way towards risk assessments without requiring inhalation testing in lab animals. 	<ul style="list-style-type: none"> Develop and improve predictive exposure models for safety evaluations and develop case study comparisons to regulatory default models; Improve exposure methods for workers consumers, sensitive subpopulations and fence line communities. 	<ul style="list-style-type: none"> Evaluate the scientific basis of cumulative impact assessment approaches and identify research needs to improve integration of chemical and non-chemical stressors; Advance new approaches to test for, and to evaluate, modes of action to strengthen the scientific basis of risk assessments.
JC1A	<ul style="list-style-type: none"> Develop Adverse Outcome Pathways (AOPs) for adverse health outcomes and AOP based toxicity prediction methods as NAMs; Advance new approaches to evaluate health impacts on emerging issues in chemical safety assessment. 	<ul style="list-style-type: none"> Develop predictive models to estimate external/internal exposure for human health risk assessment; Improve methods for exposure assessment of chemicals via the environment. 	<ul style="list-style-type: none"> Evaluate the safety of chemicals with new properties for future technological developments; Advance new approaches to evaluate the effects of chemical products on humans and the environment.

LRI *in the* PRESS

Chemical Watch
4 May 2016

Cefic launches AMBIT toxicology prediction tool

Chemical Watch
25 June 2020

Case study finds 'promise' in freshwater shrimp for bioconcentration testing

Cefic Website
November 2000

Endocrine Modulators Study Group – An LRI Project

Chemical Watch
26 May 2020

Cefic-LRI adds four free risk assessment tools to website

Chemical Watch
28 November 2016

Early promise of toxicogenomics 'not yet realised'
Panel Discussion at Cefic-LRI Meeting

Chemical Watch
16 October 2018

EU industry project focuses on assessment of cationic polymers

CHEMIE.DE
17 November 2006

Cefic launches new research strategy to address societal concerns and embrace REACH challenges

Chemical Watch
20 November 2019

How to meet the challenge of assessing worker exposure to solids in liquids

Chemical Watch
20 February 2024

Ring trial boosts ECHA's confidence in using omics for grouping chemicals

Chemical Watch
22 April 2016

Taking read-across to the next level

Environment Journal
19 April 2023

World-first tool assesses chemical persistence in environment

CEPIC - LRI

FUTURE OUTLOOK

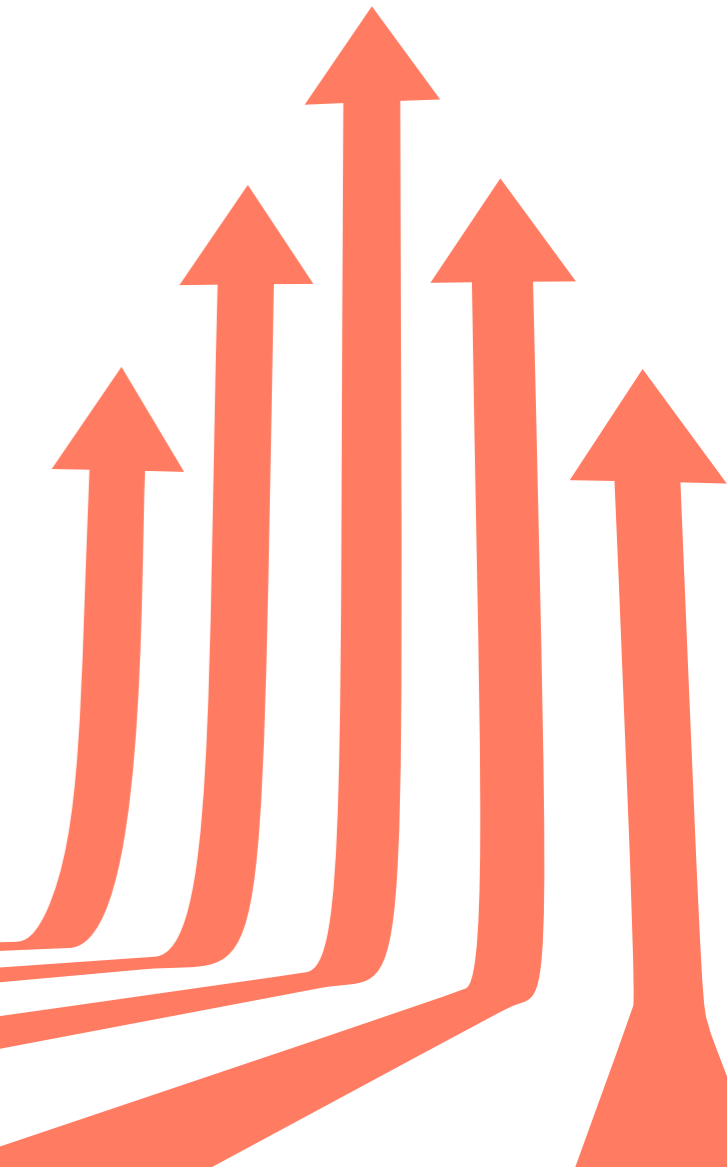
Information.
Innovation.
Impact.
Infinite Possibilities.

The continuous advancement of science and knowledge fuels our discovery at Cefic-LRI. We're committed to continue collaborating across our vibrant community, pooling resources and expertise to meet our ambitious safety and sustainability goals. The future is exciting with infinite possibilities, and as the world evolves around us, we will build upon our core objectives, aiming to:

- Understand everyday and occupational exposure to chemicals;
- Investigate the effects of exposure to chemicals on human health;
- Develop tools and approaches to improve chemical risk assessment;
- Reduce animal use in chemical testing.

Future research will focus on:

- The impact of the twin transition - digital and green - on conventional safety assessments;
- Innovative methods to assess new and difficult to test substances;
- Expand our understanding of chemical exposure including on biodiversity and along value chains.



LOOKING

FROM CEFIC'S GENERAL DIRECTOR



AHEAD

*Thank
YOU*

for taking the time to reflect on the 25-year journey and ongoing contributions of the Long-Range Research Initiative (LRI). We hope that this overview has given you a deeper understanding of how LRI has benefited society over the past quarter of a century. The role of science is more crucial than ever. Innovation will be the key to finding the solutions we need to navigate the green and digital transition towards a sustainable future.

This anniversary has been an opportunity to showcase the brilliant minds that have been instrumental in advancing chemical safety. Through the ideas, dedication and research of these individuals, LRI has fostered the development of innovative tools and data-driven solutions that address emerging societal concerns. Their collective contributions, highlighted throughout this book, have played a crucial role in shaping global guidelines and ensuring a safer, more sustainable future.

Yet, there is still more to be done. With the EU Green Deal goals in sight, the next 25 years will be fundamental. Our ambitions are high and will continue to grow, as will the role of science and LRI's work on the transition to safe and sustainable chemicals. These goals can only be achieved with a clear understanding of the role and impact of chemicals on society.

It is time to push boundaries, to think creatively and to collaborate across industries, sectors and borders. Let us not forget about the importance of people in this equation. LRI has shown that by bringing together academia, industry and regulatory bodies, we can develop powerful tools and solutions that benefit society.

To meet the challenges ahead, we are going to need a highly-skilled workforce to scale up scientific research on chemicals and support the green and digital transition. The focus on researchers will play an increasingly crucial role.

With this, I call on you, the next generation of scientists, researchers and innovators to seize this moment. Let's encourage, inspire and invest in the talent of the current and future generation. The ideas, expertise and passion of the scientific community are what will drive us forward.

LRI provides the platform to contribute to the future of chemical safety and sustainability, empowering us to make a real, lasting impact for people and the environment. I am excited to see what the next years have in store for us, and I'm confident today's minds will create tomorrow's solutions.

MARCO MENSINK
DIRECTOR GENERAL,
CEFIC

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LONG-RANGE
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EU Transparency Register
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