

# References - NAMS Roadmap (2023)

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Attewell, P., 1992. Technology diffusion and organizational learning: The case of business computing. *Organization science*, 3(1), pp.1-19.

Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) [Committee on Toxicity | Committee on Toxicity \(food.gov.uk\)](#)

Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) Scoping paper Environmental, health and safety alternative testing strategies: Development of methods for potency estimation TOX/2019/70 [Developing methods for potency estimation \(food.gov.uk\)](#).

Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) Minutes December Meeting (2019) [COT December 2019 Final Minutes \(food.gov.uk\)](#).

Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) Exploring Dose Response Workshop Report (2020) [Exploring Dose Response Workshop Report \(food.gov.uk\)](#).

Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) PBPK for Regulators Workshop Summary (2020) [Blank style sheet for COT Papers 2014 \(food.gov.uk\)](#).

Cronin, M.T., Madden, J.C., Yang, C. and Worth, A.P., 2019. Unlocking the potential of in silico chemical safety assessment–A report on a cross-sector symposium on current opportunities and future challenges. Computational Toxicology, 10, pp.38-43

Department for Environment, Food & Rural Affairs and Government Office for Science research programme launched to inform Defra policy making (2019) [Science research programme launched to inform Defra policy making - GOV.UK \(www.gov.uk\)](#).

Department Health Social Care- Better, broader, safer: using health data for research and analysis Independent Report [Better, broader, safer: using health data for research and analysis - GOV.UK \(www.gov.uk\)](#).

Department for Business, Energy and Industrial Strategy (BEIS) white paper on Regulation for the Fourth Industrial Revolution (2019) [Regulation for the Fourth Industrial Revolution: White Paper \(publishing.service.gov.uk\)](#).

Department for Business, Energy and Industrial Strategy (BEIS) Report-The use of emerging technologies for regulation (2020) [The Use of Emerging Technologies for Regulation \(publishing.service.gov.uk\)](#).

Environment Protecting Agency-Accelerating the Pace of Chemical Risk Assessment (APCRA) [Accelerating the Pace of Chemical Risk Assessment \(APCRA\) | US EPA](#)

European Food Safety Authority Open Food Tox. [Chemical Hazards Database \(OpenFoodTox\) | EFSA \(europa.eu\)](#).

Díaz, S., Demissew, S., Carabias, J., Joly, C., Lonsdale, M., Ash, N., Larigauderie, A., Adhikari, J.R., Arico, S., Báldi, A. and Bartuska, A., 2015. The IPBES Conceptual Framework—connecting nature and people. *Current opinion in environmental sustainability*, 14, pp.1-16.

EU FOOD 2030 Pathways for Action, Food Systems and Data (2018) [Language selection | European Commission \(europa.eu\)](#).

Food Standards Agency (FSA). [Homepage | Food Standards Agency](#)

Food Standards Agency Incidents [Food incidents, product withdrawals and recalls | Food Standards Agency](#).

Food Standards Agency Chief Scientist Data Science Report (2017) [Chief Scientific Adviser's Science Report \(food.gov.uk\)](#).

Food Standards Strategy [Our strategy | Food Standards Agency](#).

Geels, F.W., 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research policy*, 31(8-9), pp.1257-1274.

Global Summit on Regulatory Science (GSR517) was Emerging Technologies for Food and Drug Safety Report (2017). [2022-12-16 08:12 | Archive of FDA \(pagefreezer.com\)](#).

Goel, V. and Pirolli, P., 1992. The structure of design problem spaces. *Cognitive science*, 16(3), pp.395-429.

Goel, V. and Pirolli, P., 1989. Motivating the notion of generic design within information-processing theory: The design problem space. *AI magazine*, 10(1), pp.19-19.

Government Food Strategy [Government food strategy - GOV.UK \(www.gov.uk\)](#).

Government -The Green Book: appraisal and evaluation in central government [The Green Book: appraisal and evaluation in central government - GOV.UK \(www.gov.uk\)](#).

Government for Science Rebuilding a resilient Britain [Rebuilding a resilient Britain - GOV.UK \(www.gov.uk\)](#).

Government for Science Rebuilding a Resilient Britain: Data and Evaluation Areas of Research Interest across Government

[Data and Evaluation AR1 summary paper.pdf \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/71222/Data_and_Evaluation_AR1_summary_paper.pdf).

Hartung, T., 2010. Lessons learned from alternative methods and their validation for a new toxicology in the 21st century. *Journal of Toxicology and Environmental Health, Part B*, 13(2-4), pp.277-290.

Judson, R., Richard, A., Dix, D.J., Houck, K., Martin, M., Kavlock, R., Dellarco, V., Henry, T., Holderman, T., Sayre, P. and Tan, S., 2009. The toxicity data landscape for environmental chemicals. *Environmental health perspectives*, 117(5), pp.685-695.

Kavlock, R., Chandler, K., Houck, K., Hunter, S., Judson, R., Kleinstreuer, N., Knudsen, T., Martin, M., Padilla, S., Reif, D. and Richard, A., 2012. Update on EPA's ToxCast program: providing high throughput decision support tools for chemical risk management. *Chemical research in toxicology*, 25(7), pp.1287-1302.

Lie, M. and Sørensen, K.H. eds., 1996. *Making technology our own?: domesticating technology into everyday life*. Scandinavian University Press.

Malloy, T., Zaunbrecher, V., Beryt, E., Judson, R., Tice, R., Allard, P., Blake, A., Cote, I., Godwin, H., Heine, L. and Kerzic, P., 2017. Advancing alternatives analysis: the role of predictive toxicology in selecting safer chemical products and processes. *Integrated environmental assessment and management*, 13(5), pp.915-925.

National Centre for the Replacement, Refinement and Reduction (NC3Rs). [The 3Rs | NC3Rs](https://www.nc3rs.org.uk/).

Newell, A., Yost, G.R., Laird, J.E., Rosenbloom, P.S. and Altmann, E., 1993. Formulating the problem space computational model. In *The Soar papers (vol. II) research on integrated intelligence* (pp. 1321-1359).

Pain, G., Hickey, G., Mondou, M., Crump, D., Hecker, M., Basu, N. and Maguire, S., 2020. Drivers of and Obstacles to the Adoption of Toxicogenomics for Chemical Risk Assessment: Insights from Social Science Perspectives. *Environmental health perspectives*, 128(10), p.105002.

Rogers, E.M. (2003). *Diffusion of innovations*, 5th Ed. New York, NY.

Royal Society of Chemistry Drivers and scope for a UK chemicals framework (2021) [rsc-uk-chemical-framework-drivers-scope-2020.pdf](https://www.rsc.org/chemical-framework/drivers-scope-2020.pdf).

Russell, W.M.S. and Burch, R.L., 1959. The principles of humane experimental technique. Methuen.

Simon, H.A., 2019. The sciences of the artificial. MIT press. Science Council [Science Council | Science Council \(food.gov.uk\)](#).

Science Council Working Group on Data Usage and Digital Technology Report (2020) [Final Report from the Science Council Working Group on Data Usage and Digital Technology \(food.gov.uk\)](#).

Slikker Jr, W., de Souza Lima, T.A., Archella, D., de Silva Junior, J.B., Barton-Maclaren, T., Bo, L., Buvinich, D., Chaudhry, Q., Chuan, P., Deluyker, H. and

Domselaar, G., 2018. Emerging technologies for food and drug safety. Regulatory Toxicology and Pharmacology, 98, pp.115-128.

Solomon, K.R., Wilks, M.F., Bachman, A., Boobis, A., Moretto, A., Pastoor, T.P., Phillips, R. and Embry, M.R., 2016. Problem formulation for risk assessment of combined exposures to chemicals and other stressors in humans. Critical Reviews in Toxicology, 46(10), pp.835-844.

Sturla, S.J., Boobis, A.R., FitzGerald, R.E., Hoeng, J., Kavlock, R.J., Schirmer, K., Whelan, M., Wilks, M.F. and Peitsch, M.C., 2014. Systems toxicology: from basic research to risk assessment. Chemical research in toxicology, 27(3), pp.314-329.

Synthesis and Integration of Epidemiological and Toxicological Evidence Subgroup (SETE) -Draft report on the synthesis and integration of epidemiological and toxicological evidence in risk assessments (2021).

[TOX-2021-37 Draft Report of the SETE subgroup of the COT and COC](#)

UK GOV Policy Paper- Genome UK: the future of healthcare (2020). [Genome UK: the future of healthcare - GOV.UK \(www.gov.uk\)](#).

UK GOV Global Britain in a competitive age The Integrated Review of Security, Defence, Development and Foreign Policy [Global Britain in a Competitive Age the Integrated Review of Security Defence Development and Foreign Policy.pdf](#).

UK GOV UK Research and Development Roadmap [UK Research and Development Roadmap \(publishing.service.gov.uk\)](#).

UKRI Non-animal technologies in the UK: a roadmap, strategy and vision [Non-animal technologies in the UK: a roadmap, strategy and vision - UKRI](#).

UKRI Strategy 2022-2027 [Our strategy 2022 to 2027 – UKRI](#).

Unwin, A., Hawkins, G., Hofmann, H. and Siegl, B., 1996. Interactive graphics for data sets with missing values—MANET. *Journal of Computational and Graphical Statistics*, 5(2), pp.113-122.

Wang, Z., Walker, G.W., Muir, D.C. and Nagatani-Yoshida, K., 2020. Toward a global understanding of chemical pollution: a first comprehensive analysis of national and regional chemical inventories. *Environmental science & technology*, 54(5), pp.2575-2584.

Worth, A.P., 2019. The future of in silico chemical safety... and beyond. *Computational Toxicology*, (10) pp 60-62.