

One Substance, One Assessment – Unachievable ambition or an opportunity for NAMs not to be missed?

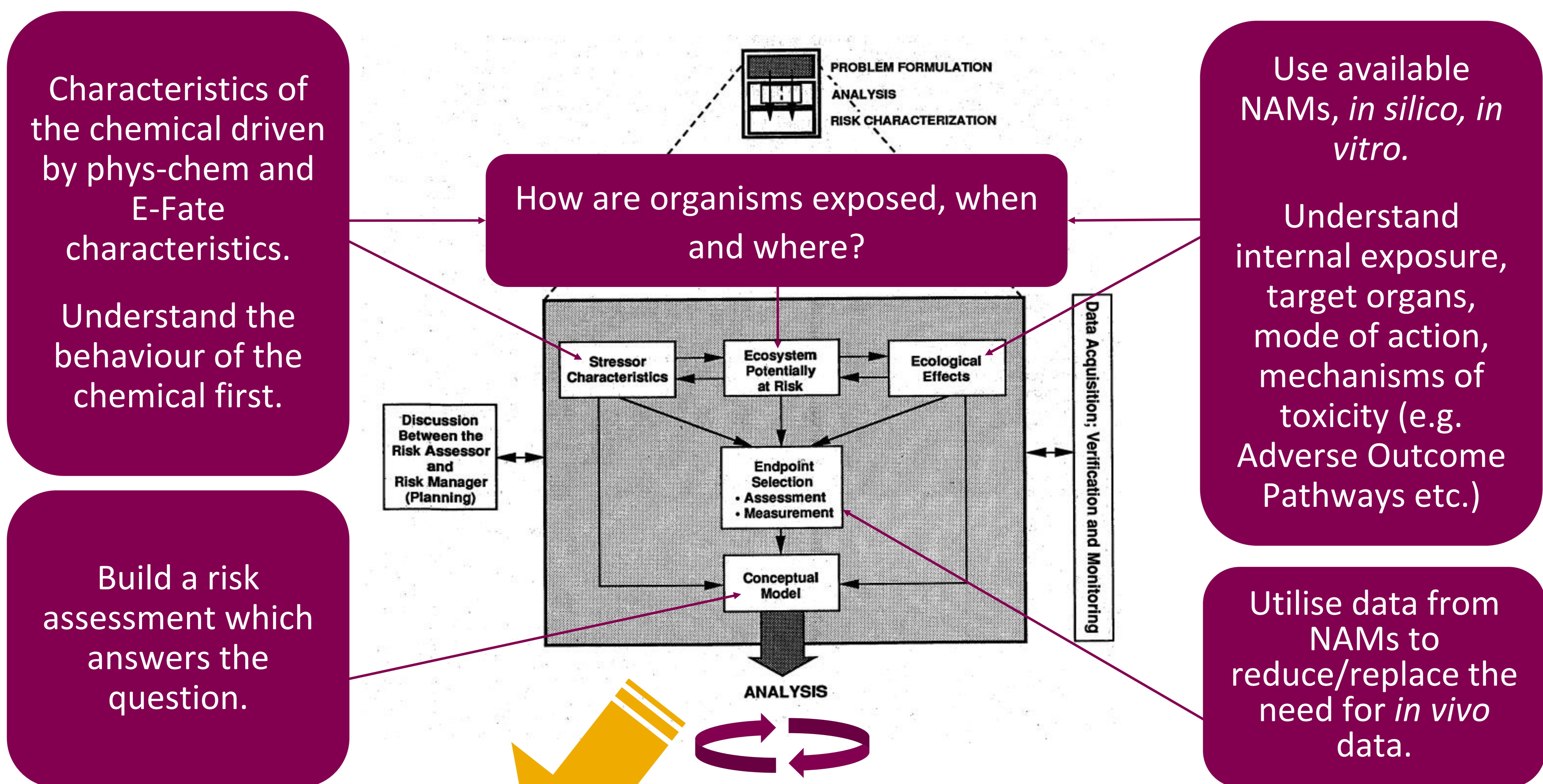
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Introduction

As part of the *EU's Zero Pollution Strategy* within the *Chemicals Strategy for Sustainability* there is a proposal for the implementation of a “*One Substance, One Assessment*” approach. Such an aim is ambitious given the divergence of regulatory frameworks, data requirements, exposure scenarios and underpinning guidance in the various chemical sectors (e.g. general chemicals, pesticides, pharmaceuticals).

All forms of risk assessment should start with problem formulation; a central principle acknowledged for over 30 years. Here we present a chemical-specific problem formulation approach that can drive the robust implementation of **New Approach Methodologies (NAMs)** within risk assessment. Leveraging problem formulation to drive the early generation of non-animal data and utilise NAMs, such as physical chemical properties and environmental fate as well as *in vitro* and *in silico* approaches, enables the design of substance specific approaches (i.e. meeting the objective of the One Substance, One Assessment ambition) whilst reducing/replacing our reliance on *in vivo* data.



Environmental Risk Assessment

Problem Formulation

Identification of exposure drivers
Mechanistic / target identification
NAMs & non-animal

Data Generation

Exposure Characterisation

Minimise *in vivo* Effects Testing

& Analysis

Uncertainty Characterisation / WoE / Data Gaps

Risk Characterisation

More effective use of NAMs in problem formulation

By accounting for various uses of a molecule during problem formulation, incorporating exposure and mechanistic effects, we believe NAMs and other non-animal data (e.g. phys-chem and fate) could be used to minimize/replace the requirements for vertebrate and other animal models.

Conclusions

The current focus on direct replacement of *in vivo* models with NAMs is not always possible or appropriate and fails to utilize all the advantages offered by these advanced tools. Here we propose an alternative risk assessment approach making fuller use of the insights generated using NAMs. Specifically, we propose utilising **problem formulation** to inform **molecule specific testing strategies** and data requirements (particularly vertebrate data).

References

Schematics adapted from:

1. EPA/630/R-92/001 February 1992 FRAMEWORK FOR ECOLOGICAL RISK ASSESSMENT