

A globally harmonised strategy towards a science-based carcinogenicity assessment for agrochemicals

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INTRODUCTION

The rodent cancer bioassay is one of the key elements in the current standard approach for assessing human carcinogenic potential for agrochemicals, food additives, industrial chemicals, and pharmaceuticals. The length of time to perform the bioassay and the limited ability to address human carcinogenicity has led to the development of alternative approaches to progress the modernisation of carcinogenicity assessment away from the lifetime rodent cancer bioassays. For example, alternative approaches that include weight of evidence (WoE)-based assessment of in vitro, in silico, and short-term in vivo tests, have the potential to substantially reduce animal use while still protecting public health and better determining human carcinogenic hazard and risk. As a result, multiple international initiatives are actively developing structured frameworks for regulatory decision-making that will ultimately enable the replacement of the rodent cancer bioassays.

METHODOLOGY

Frameworks to evaluate alternative approaches for carcinogenicity assessment of agrochemicals are being developed by the ReCAAP and EPAA workgroups. In this context, the authors came together and recognised the need to map international efforts to develop and adopt new approach methodologies (NAMs) for carcinogenicity assessment and found several ongoing initiatives, including (but not limited to) ICH S1, EPAA, OECD IATA for chemical non-genotoxic carcinogens, ReCAAP, and the NTP Health Effects Innovation. Given the overlapping objectives of these initiatives to reduce use of the rodent cancer bioassay, the authors formulated a roadmap, which outlines opportunities and challenges associated with achieving a globally harmonised animal-free human carcinogenicity assessment for agrochemicals.

RESULTS

A roadmap that serves as the first step to gain international regulatory harmonisation for NAMs to fulfil the need to evaluate chemical carcinogenicity and replace the standard testing requirements.

1. Mapping international initiatives using alternative approaches to modernise carcinogenicity assessment has led to the identification of commonalities across projects.
2. Conducting a workshop that provides a forum for cross-sector engagement will identify opportunities for alignment.
3. These efforts will lead to the finalisation of the Roadmap, capturing how to move forward to achieve a globally harmonised approach for carcinogenicity hazard and risk assessment.
4. The final step would be a discussion among Regulatory Agencies to determine how to achieve a uniform approach to eliminate the cancer bioassay.

DISCUSSION

The roadmap will serve as a foundation that brings together international experts from governments, industry, academic, and non-government organisations who are actively working to modernise approaches to carcinogenicity assessment. Bringing these groups together will more rapidly identify opportunities to integrate initiatives, with the goal of developing a single roadmap to propose a unified global approach to inform regulatory carcinogenicity assessment and recommendations that lead to acceptance and implementation of alternative approaches for agrochemical carcinogenicity assessment.