

ADDITIONAL VOLUNTARY GUIDANCE MATERIALS TO SUPPORT CASE-BY-CASE RISK ASSESSMENT OF LMOs CONTAINING ENGINEERED GENE DRIVES



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BACKGROUND (1)

- **2018 COP-MOP 9**, decision 9/13 on risk assessment and risk management
- Parties decided to consider at COP-MOP 10 whether additional guidance materials are needed for (a) LMOs containing engineered gene drives (EGD), and (b) LM fish
- Process in annex I

- **2020 RARM AHTEG** worked on two commissioned studies and recommended that guidance materials should be developed for LMOs containing EGDs

- **2022 COP-MOP 10**, decision 10/10 on risk assessment and risk management
- Parties decided to develop additional voluntary guidance materials that 1) should cover general considerations of LMOs containing EGDs and 2) have a focus on EGD mosquitos

BACKGROUND (2)

- **2022 COP-MOP 10**, decision 10/10 on risk assessment and risk management (cont.)
- An AHTEG is established
- A detailed outline for the guidance materials was commissioned and drafted by ICGEB
- **2023** Online discussions in April and August
- First AHTEG meeting 1-3 November 2023
- Small drafting groups worked intensively through November 2023 to early January 2024
- Combining the drafts (Chair, Secretariat) by the end of January
- Final commenting and the meeting document in February
- Second AHTEG meeting 27 February-1 March 2024



BACKGROUND (3)

HOW WE WORKED?

- Five groups:
- A) General issues, B) Mosquitos, C) Related Issues, D) Monitoring, and E) List of terms
- Each group had a Party Co-Chair that was assisted by one of the experts (Except group E)
- Each Group organized themselves, meetings attended by the Chair and the Secretariat
- Built upon existing documents from WHO, OECD, EFSA, NASEM and scientific literature

- Second AHTEG meeting:
 - Going through the document
 - Finalizing text in plenary but also in groups

- Very intensive work, very long days but a very committed group



OVERVIEW OF THE DOCUMENT (1)



Section 1 objective and scope, overview of decision CP-10/10

Section 2 introduces EGD-LMOs, explains precautionary approach and establishes the context

Section 3 details on engineered gene drive strategies, as well as opportunities and risk concerns

OVERVIEW OF THE DOCUMENT (2)

Section 4 outlines the general risk assessment considerations for EGD-LMOs

- Addresses steps of the problem formulation approach
- Testing risk hypotheses, including:
 - Sources and quality of information
 - Modelling
 - Comparators
 - Tiered-based testing
 - Limits of concern
 - Weight of evidence and uncertainties



OVERVIEW OF THE DOCUMENT (3)



Section 5 considers recommendation of acceptability of risk and identification of risk management strategies

Section 6 addresses monitoring of EGD-LMOs - general surveillance and case-specific monitoring

Section 7 describes related issues to risk assessment

Bibliographic references are included in section 8

OVERVIEW OF THE DOCUMENT (4)



Section 7 Related issues

- Risk assessment and assessing the benefits as components of the decision-making process
- Consideration of benefits to human health
- Socio-economic, cultural and ethical considerations
- Free, prior and informed consent of IPLCs



OVERVIEW OF THE DOCUMENT (5)



Section 7 Related issues (cont.)

- Public awareness, education and participation (e.g., full and effective participation of IPLCs), access to information and risk communication
- Comparison of novel and alternative strategies
- Transboundary movements
- Consideration of liability and redress elements



OVERVIEW OF THE DOCUMENT (6)



Annexes

- Modelling
- Uncertainties
- The WHO guidance framework for testing genetically modified mosquitoes
- Taxonomic classification of Culicidae
- Mosquito vectors of diseases
- Current landscape for the development of EGD-LMOs for disease vector control
- Engineered gene drive systems

A list of terms with citations

MOSQUITOES

- Mosquito specific issues are presented in boxes within the above-introduced sections
- E.g. Engineered gene drive systems for living modified mosquitoes
- Characterisation of the living modified mosquito containing an engineered gene drives and its likely potential receiving environments
- Postulated adverse effects of living modified mosquitoes containing engineered gene drives



PROBLEM FORMULATION (1)



1. The identification of protection goals and definition of assessment endpoints
2. The identification of potential adverse effects on assessment endpoints (hazard identification)
3. The derivation of plausible pathways to harm that describe how the intentional release of an EGD-LMO could be harmful

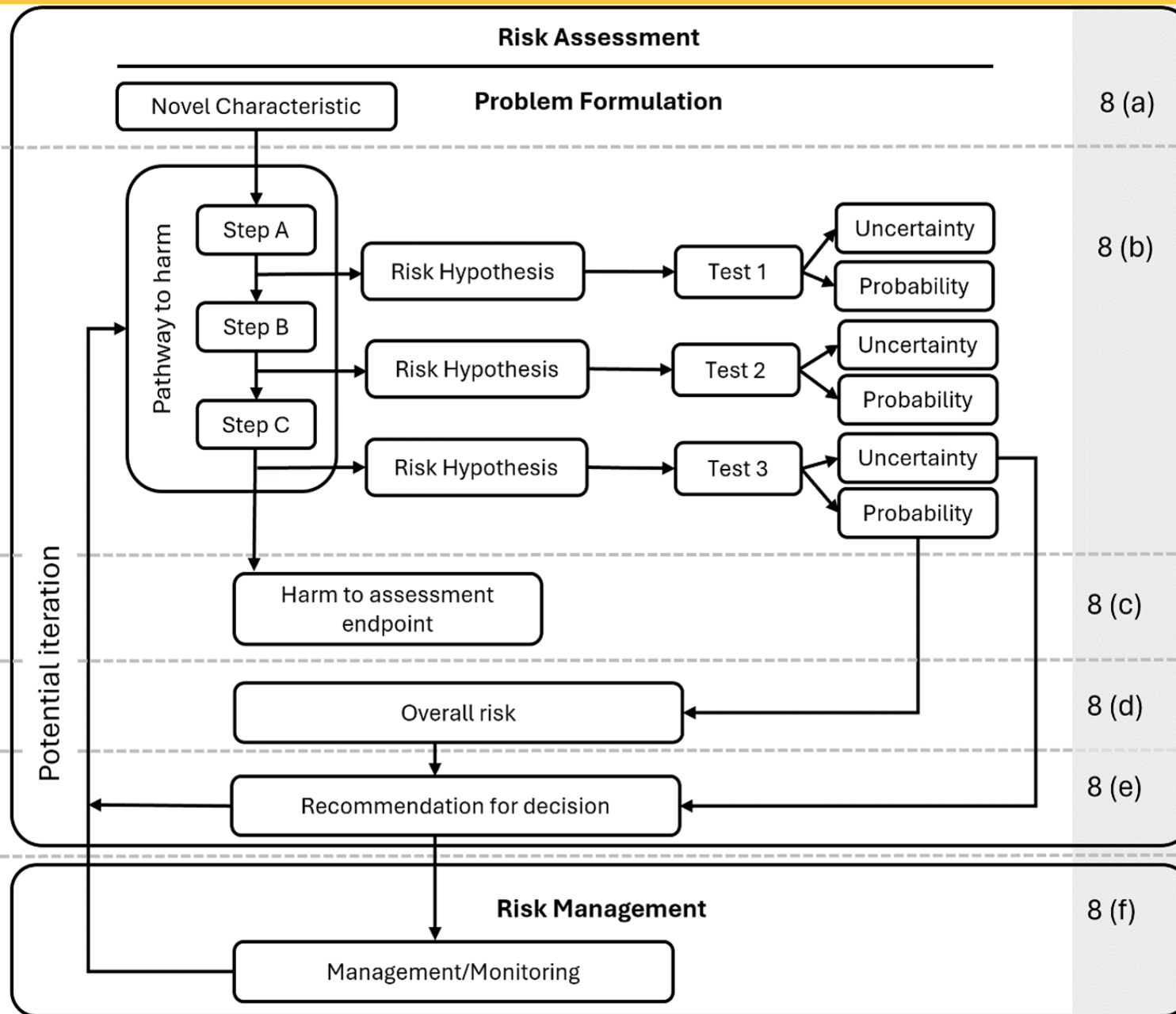
PROBLEM FORMULATION (2)



4. The formulation of risk hypotheses about the likelihood and consequences of such events
5. The participation and engagement of stakeholders and indigenous peoples and local communities can be included at all points in the process, as appropriate

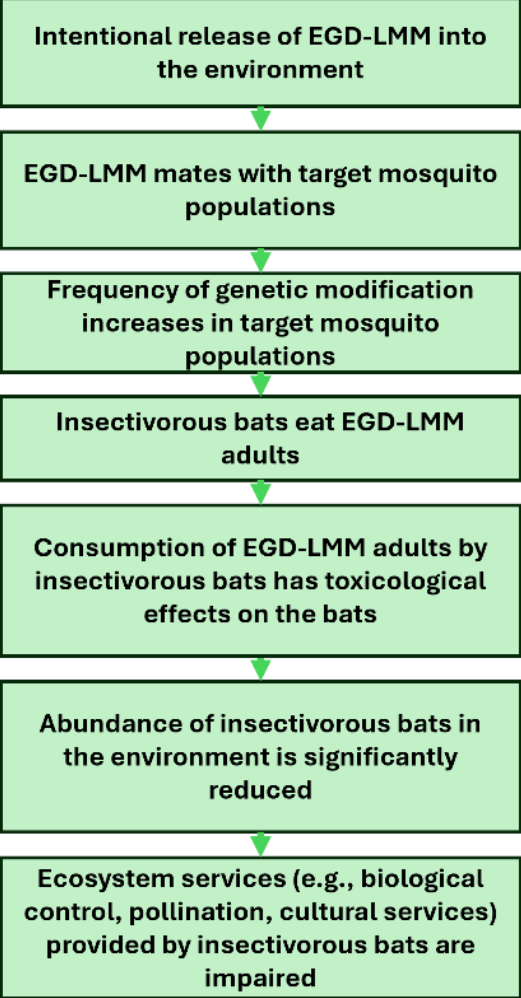


COMPARING CP ANNEX III AND PROBLEM FORMULATION



AN ILLUSTRATIVE PATHWAY TO HARM AND HOW TO TEST THE UNDERLYING RISK HYPOTHESES

Plausible pathway to harm



Risk hypotheses

Consumption of EGD-LMM adults by insectivorous bats has no greater toxicological effects than from feeding on non-EGD-LMM adults

Testing of risk hypotheses

