Paving the Way to UVCB Risk Assessment
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Background
- UVCBs are substances of Unknown or Variable composition, Complex reaction products and Biological materials

You said UVCBs?
Taking on the Challenges

UVCBs pose characterization and risk assessment challenges

November 2016: multi-stakeholder workshop to discuss issues associated with UVCB

January 2018: kick-off of a HESI UVCB Committee

December 2018: HESI convened a workshop with experts from many sectors and background

A substance characterization framework was developed to work towards a fit-for-purpose risk assessment
Workshop Overview

Towards a Risk Assessment Framework
A Characterization Framework

**Mapping** of the UVCB universe to inform substance characterization and identification

Development of a **tiered approach** going from coarse to more refined information on composition, exposure and hazard

**Ground-truthing** through case studies
High Level "Mapping"

- Known Reactants
- UVCB X
- Natural Substance
- Organic Synthesis
- Chemical Treatment
- Extraction
- UVCB 1
- UVCB 2
- UVCB 3
An Example from ECCC

Substance Distribution
Towards a Risk Assessment Framework

Start with a low tier/screening level assessment based on basic and readily available information regarding:

- Molecular Weight cutoffs
- Water solubility
- Persistence of known components
- Intended uses
- Use volumes
- Pathways
- Starting material
- Substance specs
- Process information
- QA information
- Mode of Action for known hazardous components
- Elemental information
- Functional groups
- LL<sub>50</sub>/EL<sub>50</sub> for analogue
- Component-based:
  - Available in vivo data (e.g., Acute LC<sub>50</sub>/EC<sub>50</sub>)
  - Available in vitro data (e.g., Toxcast)
  - In silico
A Characterization Framework

Reveals the presence/absence of hazard or persistence flags

Informs the possibility for blocking or grouping components

Focuses characterization efforts towards uncertainties or potential “flags”

Targets enough precision for a risk-based decision
Merit of the Framework

A Multi-sectorial framework at Tier 0

Uses **easily accessible information**

**Fit-for-purpose**: provides sufficient compositional information for a robust risk assessment
Next Steps

- Develop Case Studies / Manuscript
- Evaluate Exposure
- Outreach
- Discuss Uncertainty
- Move to Higher Characterization / Identification Tiers
Engagement Through HESI
A Strong Community of Practice
Join the Team!

- The exposure assessment phase will require expertise in
  - Environmental fate and transport
  - Exposure modeling
  - Mixture toxicity
- We always seek for more chemistries to be represented within the team

To join the UVCB Committee or for more information, contact Sandrine Deglin (sdeglin@hesiglobal.org) or Michelle Embry (membry@hesiglobal.org)
Thank you!!