



Identifying chemical combinations of concern

A pragmatic tool





Identifying chemical combinations of concern : a pragmatic tool.

The European chemical industry offers a pragmatic approach for identifying and assessing potential combination effects of chemical substances (man-made and natural) present at low levels in our environment. These are sometimes referred to as 'mixtures' or 'cocktail effect'.

Introduction

The concern over if, and how, cumulative exposure to multiple chemicals present at low levels in our environment could interact and lead to adverse effects on human health and the environment has been identified as an emerging policy issue. As a consequence, the question arises whether the protection offered by current legislation that evaluates chemicals is sufficient, or if there is a need for addi-

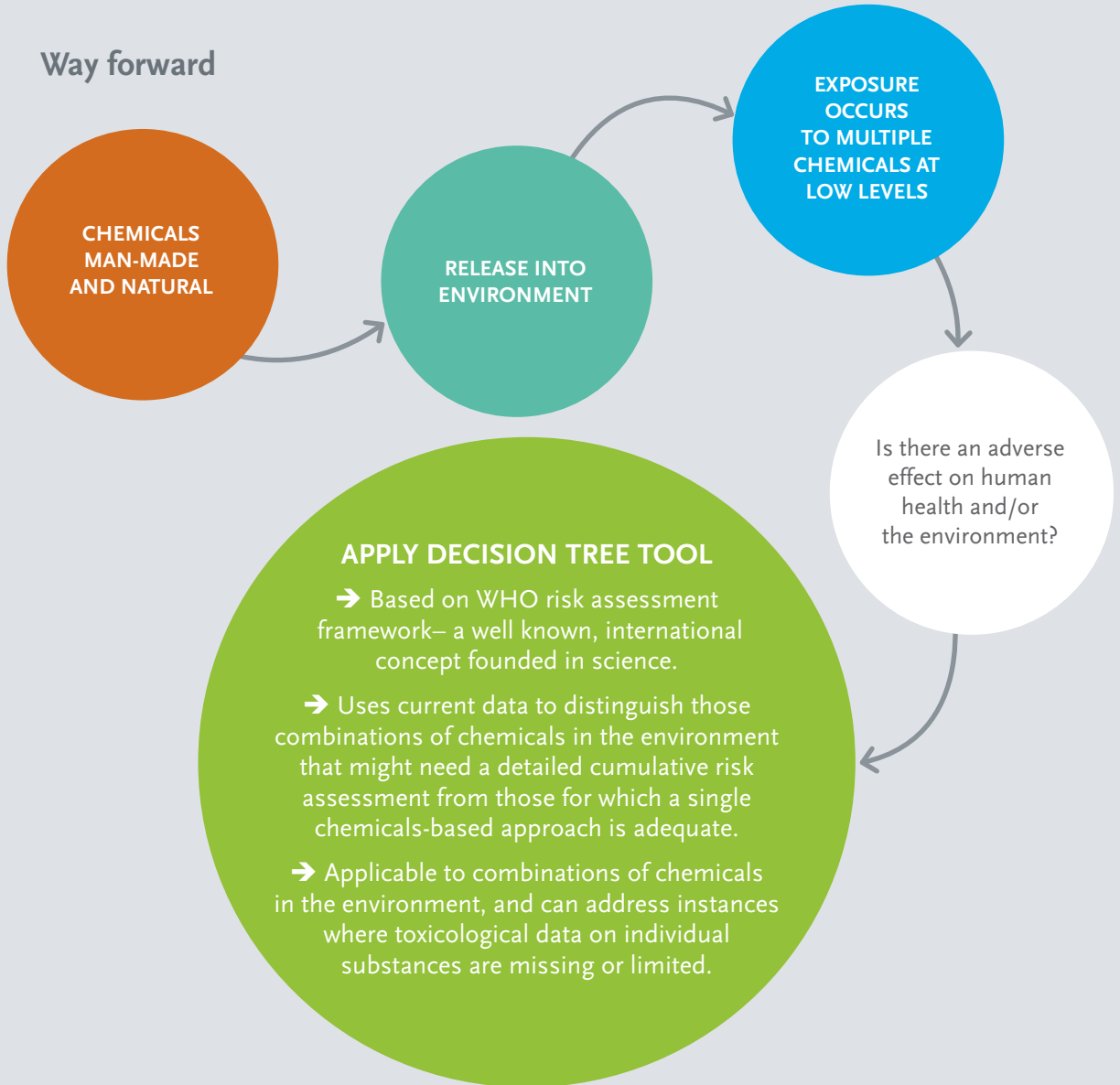
tional measures to specifically address these potential combination effects.

What sounds like an easy question is in reality extremely complex to answer, especially considering the numerous chemicals we come into contact with every day. The number of potential combinations is enormous. What we need to know is which combinations of chemicals, if any, will jointly create

toxic effects on human health and/or the environment. Therefore, we need a screening tool that will allow us to identify the combinations of concern.

The following **decision tree screening tool** developed by the chemical industry is based on the WHO risk assessment framework, and aims to help answer the above question.

Way forward



This decision tree tool...

**... SUPPORTS
GOVERNMENT AND INDUSTRY
TO EVALUATE THE POTENTIAL RISKS
OF THE COMBINED EFFECTS
OF CHEMICALS BY**

Distinguishing combinations of chemicals for which a single chemical risk assessment is sufficient from those which might need a more detailed cumulative risk assessment to determine whether combination effects are likely to occur.

**... IMPROVES
OUR UNDERSTANDING AND ALLOWS US
TO IDENTIFY COMBINATIONS
OF CHEMICALS IN THE ENVIRONMENT**

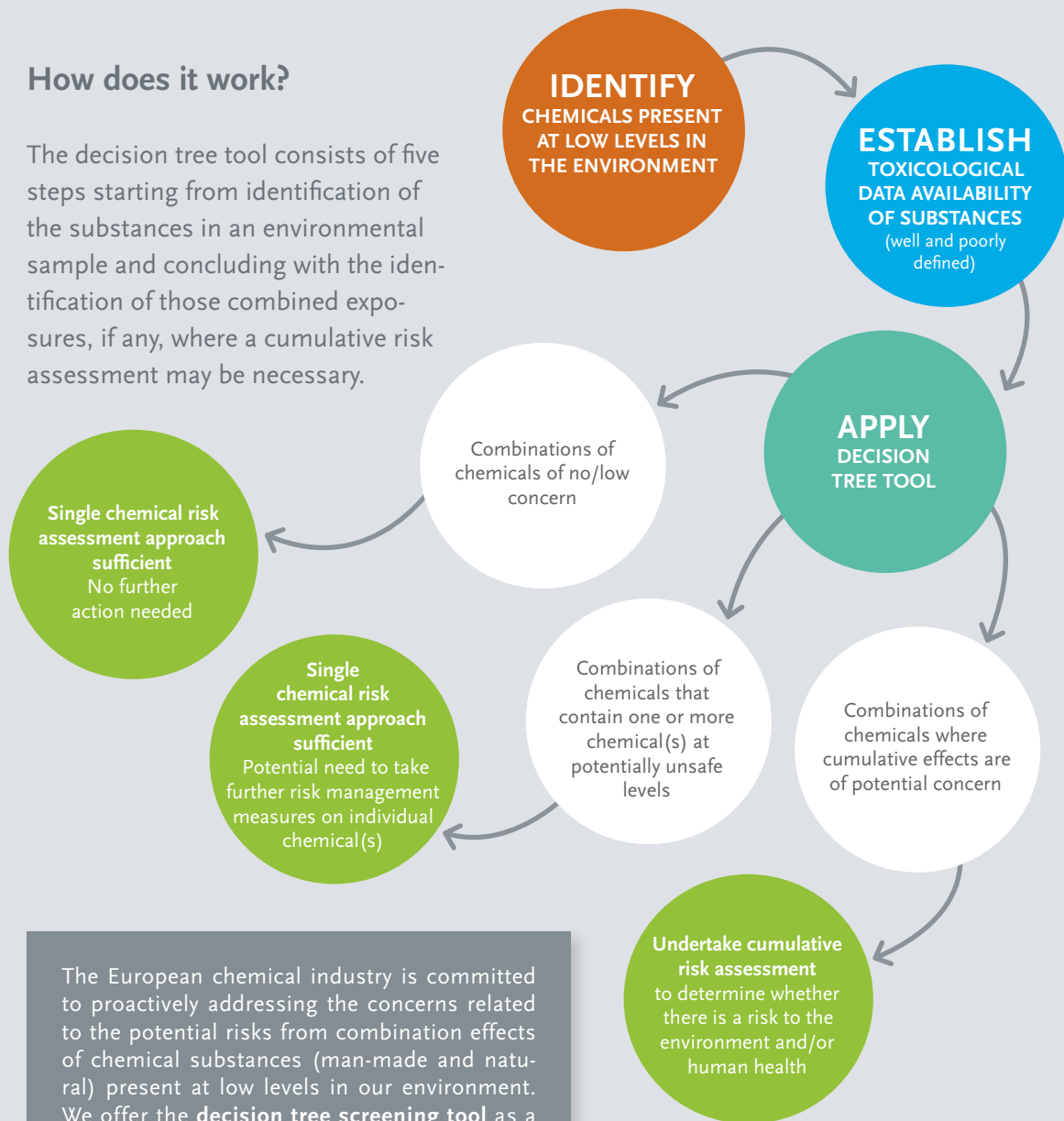
- That are of no/low concern;
- Where one (or a few) particular component(s) is/are of concern; and/or
- Those that might need a cumulative risk assessment.

FOR FURTHER SCIENTIFIC READING

- **“Risk Assessment of Combined Exposure to Multiple Chemicals: A WHO/IPCS framework”**, Regulatory Toxicology and Pharmacology 60 (2011) S1–S14
- **“Maximum Cumulative Ratio (MCR), a tool for assessing the value of cumulative risk assessments”**, Int. J. Environ. Res. Public Health 2011, 8(6), 2212-2225
- **SETAC website:** <http://sessso3.setac.eu/>

How does it work?

The decision tree tool consists of five steps starting from identification of the substances in an environmental sample and concluding with the identification of those combined exposures, if any, where a cumulative risk assessment may be necessary.



The European chemical industry is committed to proactively addressing the concerns related to the potential risks from combination effects of chemical substances (man-made and natural) present at low levels in our environment. We offer the **decision tree screening tool** as a pragmatic approach for risk assessors.

For further information contact

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Cefic - The European Chemical Industry Council

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Cefic is the Brussels-based organisation representing national chemical federations and chemical companies in Europe. Cefic represents, directly or indirectly, around 29,000 large, medium and small companies in Europe, which employ about 2 million people and account for more than 30% of world chemicals production.

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