ProScale Conference

A method for assessing the toxicological potentials of product systems in a life cycle perspective

Brussels, Hôtel Métropole | 5 October 2017 9.30 to 17.00

ProScale in practice: method & tool use

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PROSCALE IN PRACTICE: METHOD & TOOL USE

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Agenda

- Description of tool
- Introduction to Excel Template
- Do-It-Yourself Exercise
- Presentation of ProScale assessment
- Q&A Session

Description of tool

- Presentation of input of component
- Entering and calculating of a process
- Transfer of data into the database

Description of tool

⇒ Change to ProScale Excel Template on Screen

Introduction to Excel Template

- Presentation of template layout
  - Background data sheets
- Explanation of calculation

Introduction to Excel Template

⇒ Change to ProScale Excel Template on Screen

Do-It-Yourself Exercise

- Time for personal experiences with the tool
- Formation of small groups
- Check of data availability

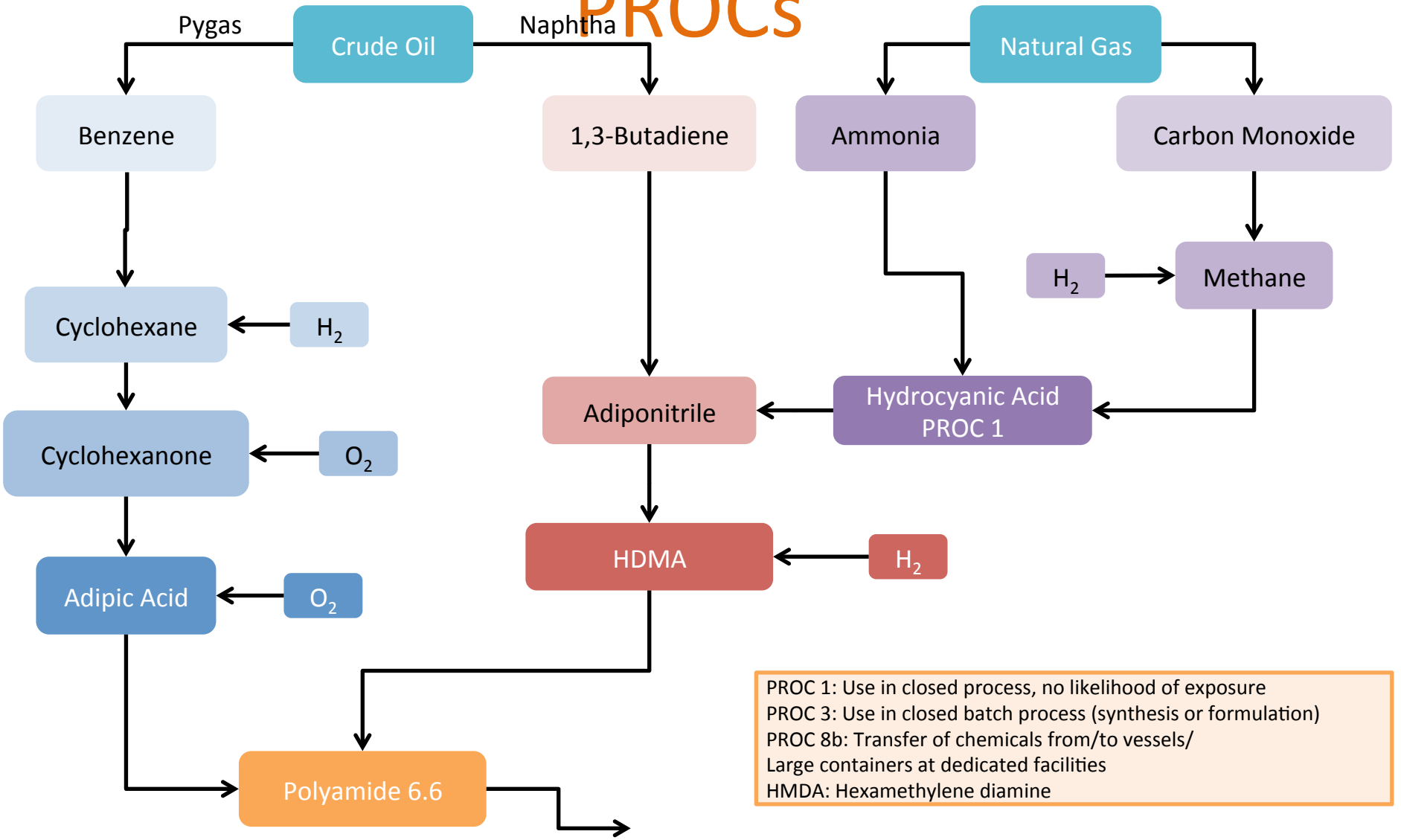
$\Longrightarrow$ Differentiation of PROCs and RMM

Presentation of ProScale assessment

Polyamide 6.6 (PA 6.6) as example process

- Polymer consisting of an equimolar ratio of adipic acid and hexamethylene diamine
- Established and published data was used for approximation of the process
- Limitations:
  - A complete reaction was assumed in all reactive stages
  - No additives or catalysts were taken into account
  - Impurities in the substrates were not considered

ProScale Assessment: PA 6.6 PROCs



PROC 1: Use in closed process, no likelihood of exposure
PROC 3: Use in closed batch process (synthesis or formulation)
PROC 8b: Transfer of chemicals from/to vessels/
Large containers at dedicated facilities
HMDA: Hexamethylene diamine

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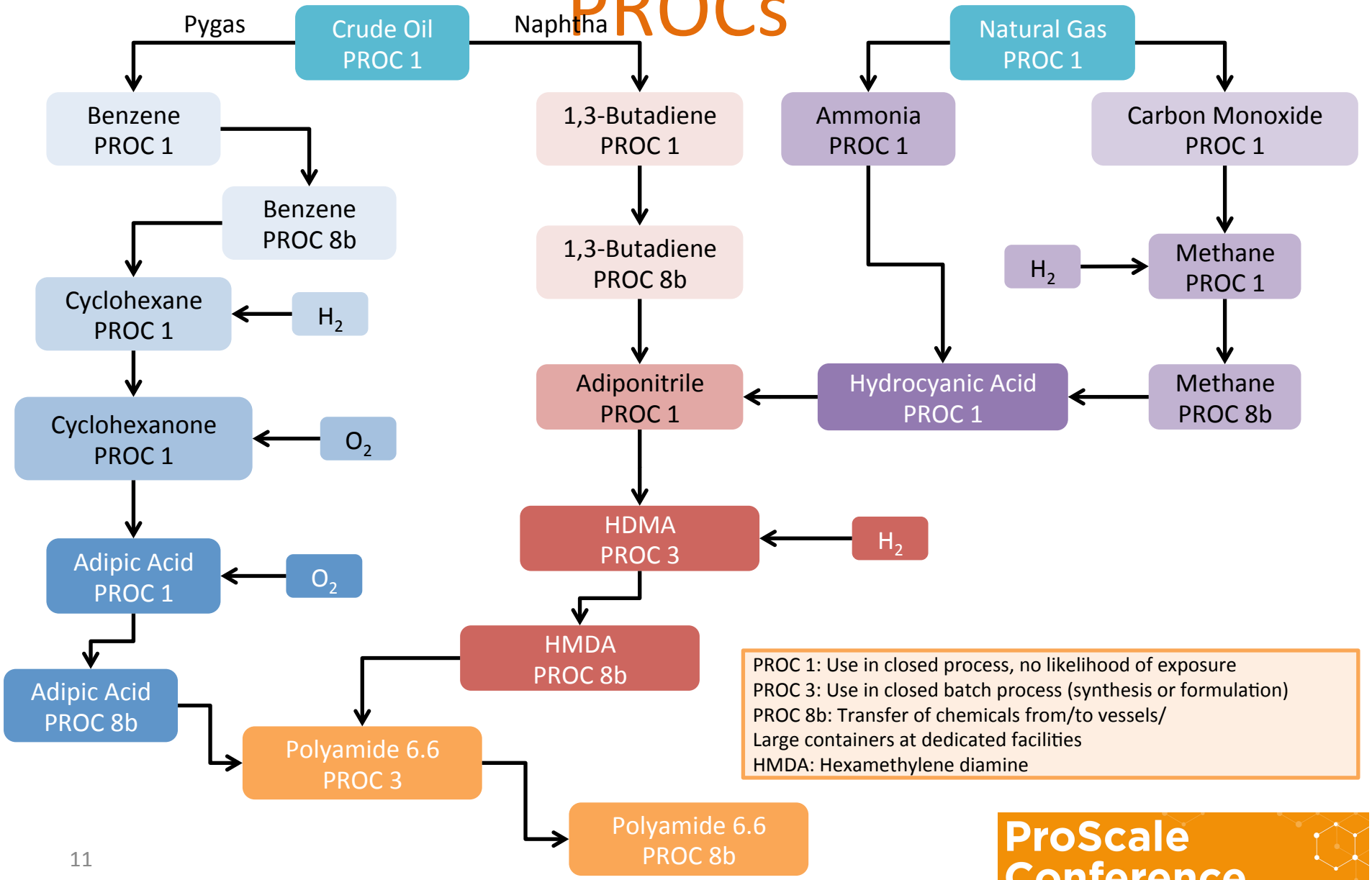
ProScale Assessment: PA 6.6 PROCs



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ProScale Assessment: PA 6.6

- Closed process (PROC 1) for majority of production steps assumed
- HDMA and PA 6.6 formation approximated as batch process
- Filling process for Benzene, Butadiene, Methane, Adipic Acid, HMDA and PA 6.6 integrated
- Production of 1 kg PA 6.6 defined as functional unit

ProScale Assessment: Polyamide 6.6

Scenarios and resulting impact

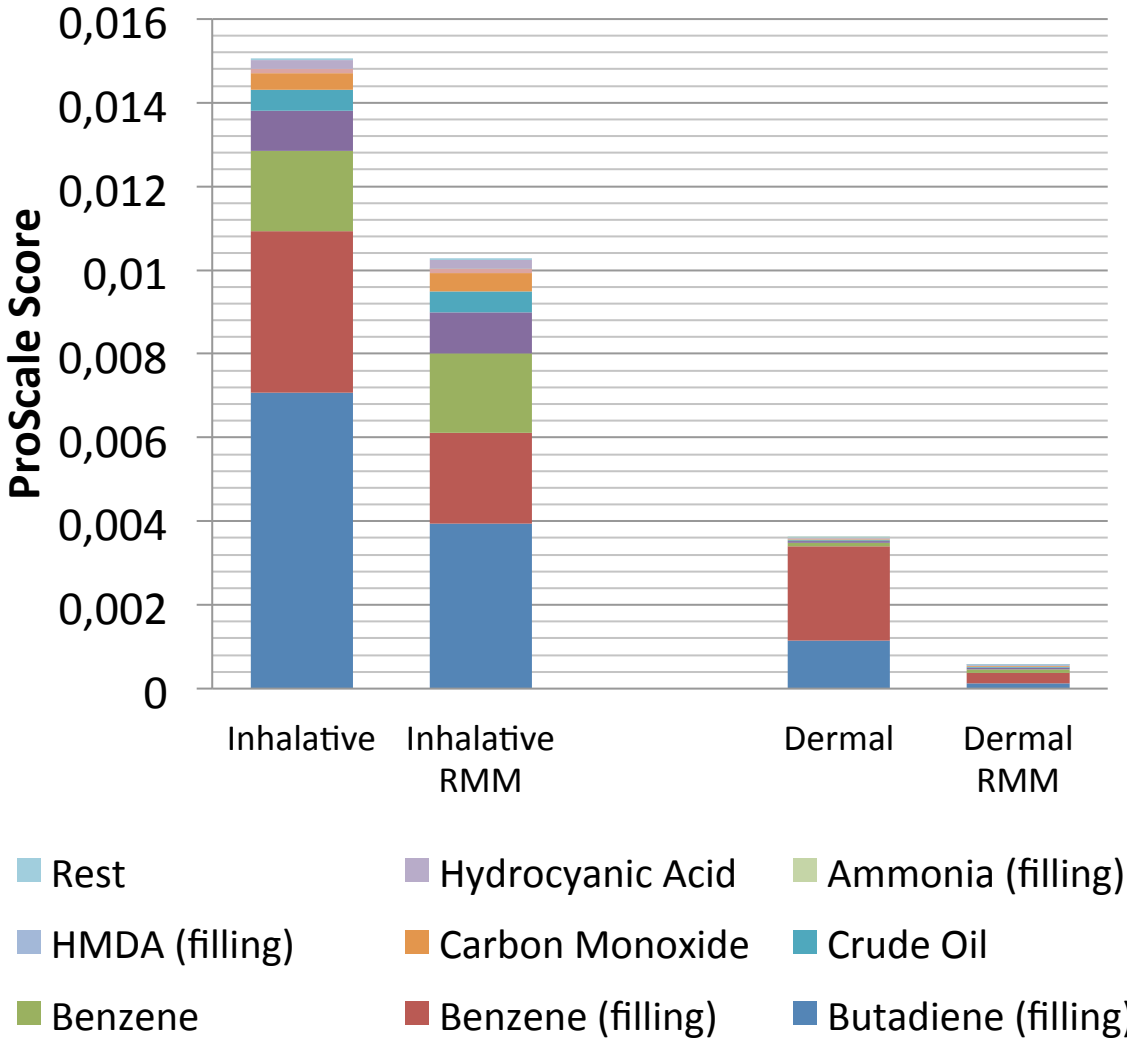
- Risk Management Measures (RMM) & Local Exhaust Ventilation (LEV)

  → Different Exposure-Concentration-Factor
  (Impact depending on PROC)

- Production scale (Large/Medium)

  → Impact on Person-Hours-Factor

ProScale Assessment: Results RMM & LEV



- Impact of RMM mainly on filling processes
- No impact of RMM on PROC 1
- Significant reduction of impact
- About 30% reduction for inhalative and about 90% for dermal ProScale score

RMM: Risk Management Measures
LEV: Local Exhaust Ventilation

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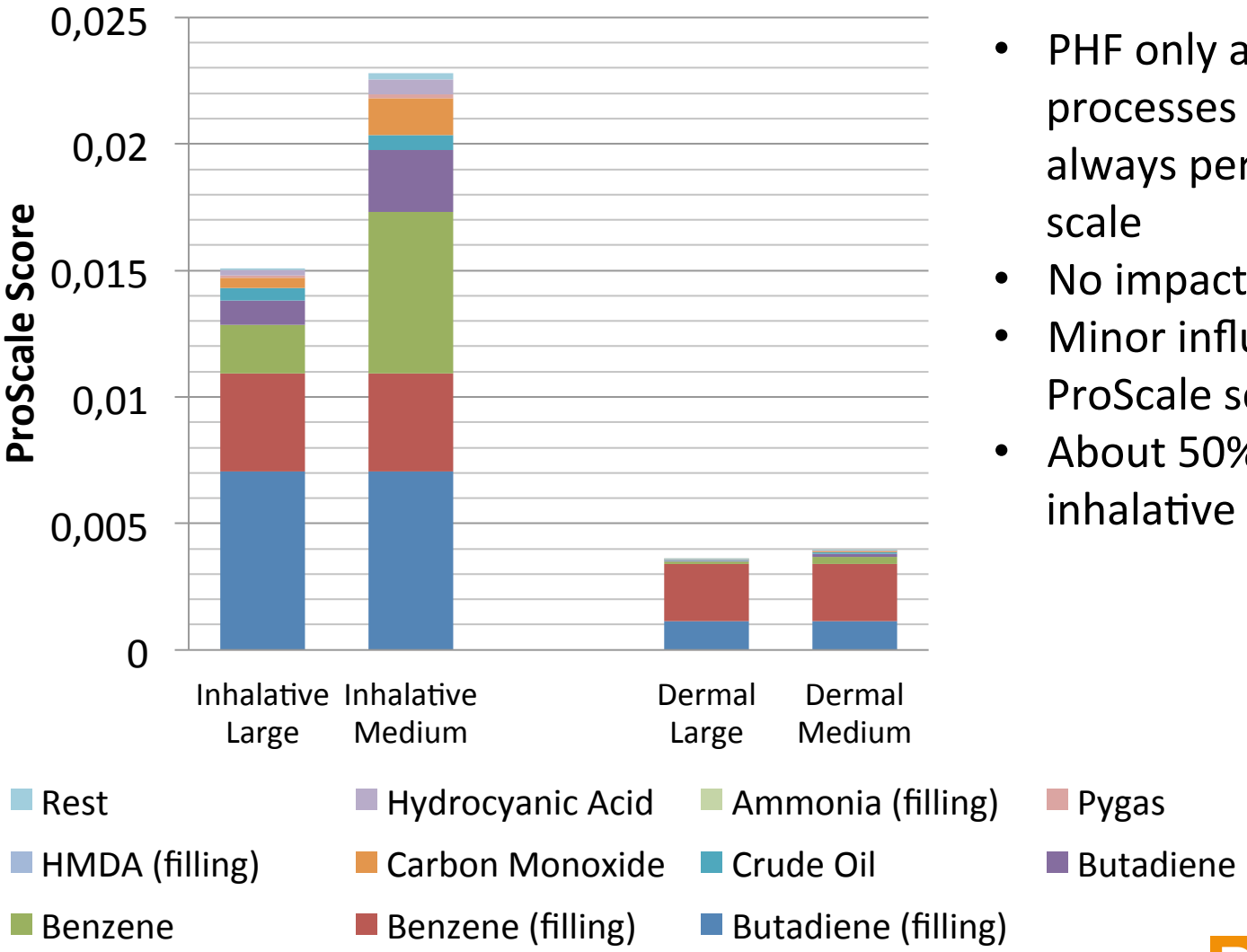
ProScale Assessment: Results size



- PHF only adjusted for processes which are not always performed in global scale
- No impact on filling processes
- Minor influence on Dermal ProScale score
- About 50% increase for inhalative ProScale score

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Q&A Session

- Questions regarding data?
- Requests concerning other functionalities
- Comments on tool & method performance for further improvement
- …

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THANK YOU FOR THE ATTENTION

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