TSCA Occupational Conditions of Use and Exposure Scenario Workshop
1st 10 Chemical Example: Perchloroethylene (PCE)

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Objectives

1. Explain how EPA went from:
   a. Conditions of Use identified in the Perchloroethylene (PCE) Scoping and Problem Formulation Documents TO
   b. Occupational Exposure Scenarios (OES) that were assessed in the PCE Risk Evaluation
2. Discuss how the process can be improved in the future.

Presentation Outline

1. Starting Point: The COUs identified in the:
    - PCE Scoping Document (June, 2017)
    - PCE Problem Formulation Document (May, 2018)
2. Why did EPA identify OES
3. General Approach used to identify the OES to assess in the PCE Risk Evaluation.
4. Results - # of OES that were assessed in the PCE Risk Evaluation.
5. Recommendations on how the process can be improved.

COU Starting Point

- Perchloroethylene COUs
  - (PCE) Scoping Document (June, 2017). Table 2-3: Categories and Subcategories of Use for Perchloroethylene
  - Same list of COUs in Table 2-3 on p. 25-31 of EPA's Problem Formulation Document.
  - COUs are unique combinations of Life-Cycle Stage/Category/Subcategory
  - COU Tables identified 59 COUs for PCE
    - PCE Examples:
      - Processing/Incorporated into formulation, mixture or reaction product/Adhesive and Sealant Products
      - Industrial Use/Solvents (for cleaning or degreasing)/Batch Vapor Degreasing
      - Industrial Use/Solvents (for cleaning or degreasing)/Dry Cleaning Solvent

Excerpt of PCE COU Table

Table 2-3. Categories and Subcategories of Conditions of Use Included in the Scope of the Risk Evaluation

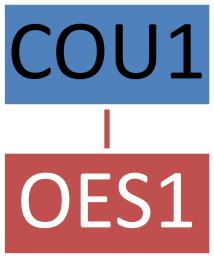
Life Cycle Stage	Category [a]	Subcategory [b]	References
Manufacture	Domestic manufacture	Domestic manufacture	U.S. EPA (2016b)
	Import	Import	U.S. EPA (2016b)
Processing	Processing as a reactant or intermediate	Intermediate in industrial gas manufacturing	U.S. EPA (2016b); Market Profile, EPA-HQ-OPPT-2016-0732; Public Comment, EPA-HQ-OPPT-2016-0732-0013; Public Comment, Public Comment, EPA-HQ-OPPT-2016-0732-DRAFT-0018; Public Comment, Public Comment, EPA-HQ-OPPT-2016-0732-0033
		Intermediate in basic organic chemical manufacturing	U.S. EPA (2016b); Market Profile, EPA-HQ-OPPT-2016-0732;
		Intermediate in petroleum refineries	U.S. EPA (2016b); Market Profile, EPA-HQ-OPPT-2016-0732; Public Comment, EPA-HQ-OPPT-2016-0732-0018
		Residual or byproduct	Public Comment, EPA-HQ-OPPT-2016-0732-0013

Why Did EPA Identify OES

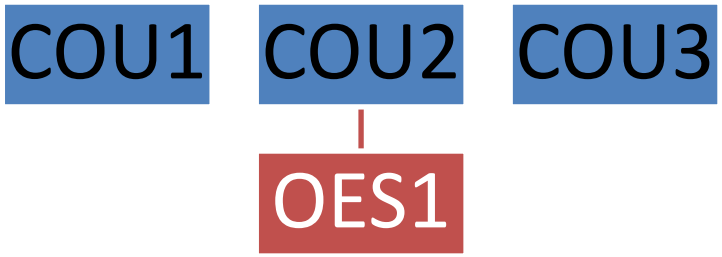
- Goal is to evaluate risks for each COU
- Many of PCE's COUs were data poor with respect to environmental release or exposure data
- Grouping COUs allowed EPA to provide estimates based on a more robust dataset or fill in key data gaps
- Some COUs had sufficient data to account for key differences in processes included in the COU

Identifying OES – General Approach

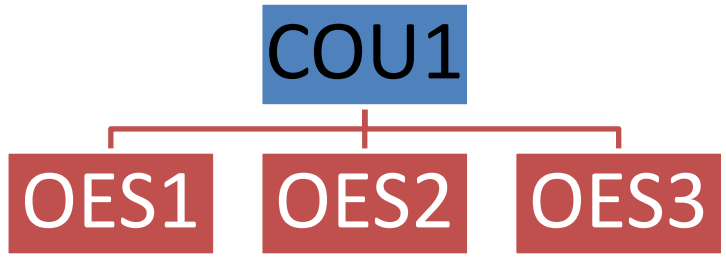
- OES determinations are largely driven by:
  - Similarities and differences in release and exposure potential between COUs.
  - Availability of data and modeling approaches to assess releases and exposures.



One COU can map to one OES
(e.g., the domestic manufacture COU is its own OES).



Multiple COUs can be grouped into one OES
(e.g., four intermediate/reactant use subcategories are grouped into the processing as a reactant OES).



One COUs can be broken into multiple OES
(e.g., Batch Vapor Degreaser COU is broken into two OES, one for open-top vapor degreasers and one for closed-loop vapor degreasers).

Identifying OES for PCE – Direct Mapping

- Where data were specific to the COU, sufficiently robust, and/or no similar COUs were expected, the COU was mapped directly to an OES
- Examples of Direct Mapping for PCE:
  - Domestic Manufacturing
  - Cold Cleaners
  - Laboratory Chemicals

Identifying OES for PCE – Multiple COUs Grouped Into One OES

- Where information indicates that release/exposure potential were likely to be similar and data were lacking to differentiate estimates between COUs, EPA grouped COUs into a single OES
- Examples of Grouping COUs into a Single OES for PCE:
  - "Processing as a Reactant" OES included 4 COUs from subcategories under the Processing as a Reactant/Intermediate COU Category
  - Aerosol Spray Degreaser/Cleaner and Lubricants and Greases COUs were grouped into the "Aerosol Degreasing and Aerosol Lubricants" OES

Identifying OES for PCE – One COU Split Into Multiple OES

- Where information indicates that release/exposure potential were likely to be different for specific processes within a COU, EPA split the COU into multiple OES
- Examples of Splitting COUs into Multiple OES for PCE:
  - Batch Vapor Degreaser COU was split into
    - Open-Top Vapor Degreasing OES; and
    - Closed-Loop Vapor Degreasing OES
  - Solvent-Based Paints and Coatings COU was split into:
    - Adhesive, Sealants, Paints, and Coatings OES; and
    - Maskant for Chemical Milling OES

Results – OES Assessed in the PCE Risk Evaluation

- Started with 59 COUs in the PCE Problem Formulation Document
- Resulted in 21 OES assessed in the Risk Evaluation
- Crosswalk of COUs to OES in Table 2-14 on p. 131-141 of EPA's Final Risk Evaluation Document

Excerpt of PCE COU to OES Crosswalk Table

Table 2-14. Crosswalk of Subcategories of Use Listed in Table 1-4 to Occupational Exposure Scenarios Assessed in the Risk Evaluation

Life Cycle Stage	Category [a]	Subcategory [b]	Occupational Exposure Scenario (OES)	Associated Condition of Use in Risk Calculator	Consumer Exposure Scenario
Manufacture	Domestic manufacture	Domestic manufacture	Section 2.4.1.6– Manufacturing	Manufacturing	N/A
	Import	Import	Section 2.4.1.7 – Repackaging[c]	Repackaging	N/A
Processing	Processing as a reactant/ intermediate	Intermediate in industrial gas manufacturing	Section 2.4.1.8 – Processing as a Reactant	Processing as Reactant/ Intermediate	N/A
		Intermediate in basic organic chemical manufacturing			
		Intermediate in petroleum refineries			
		Reactant Use			

Recommendations for Improvement

- EPA Draft Scoping Document
  - Identify OES to be assessed in the Risk Evaluation
  - Crosswalk of COU to OES
  - Include:
    - Less boiler-plate language. More specifics.
    - EPA's understanding of the OES and the function of the chemical in the OES
    - Rationale for the grouping/split of the OES
    - Key uncertainties and data gaps
    - Chemical-specific details of EPA's analysis plan for each OES for the chemical. This will utilize experience that has been gained from the Risk Evaluations that have been worked on to-date
- This will provide an opportunity for review and feedback – for Final Scoping Document and on into the development of the Risk Evaluation