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Canada's Experience from Assessment of Highest Priorities under its Chemicals Management Plan

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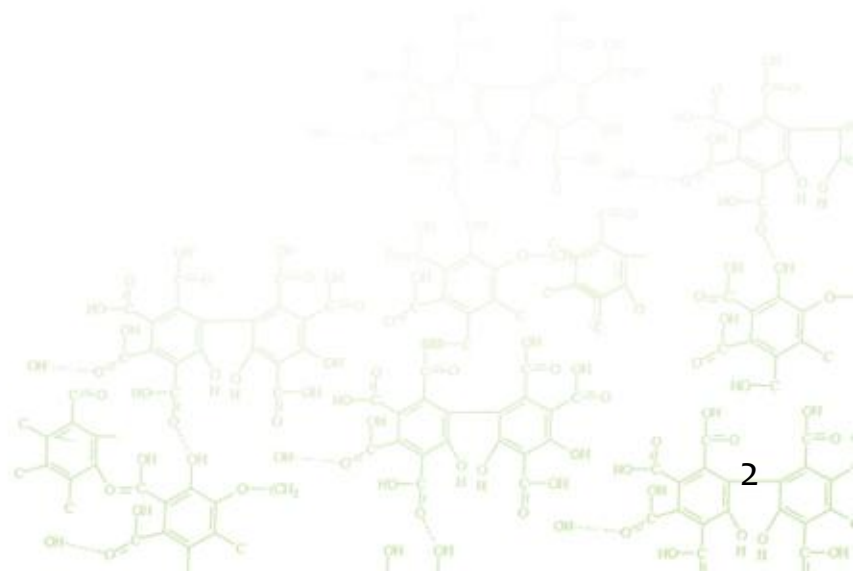
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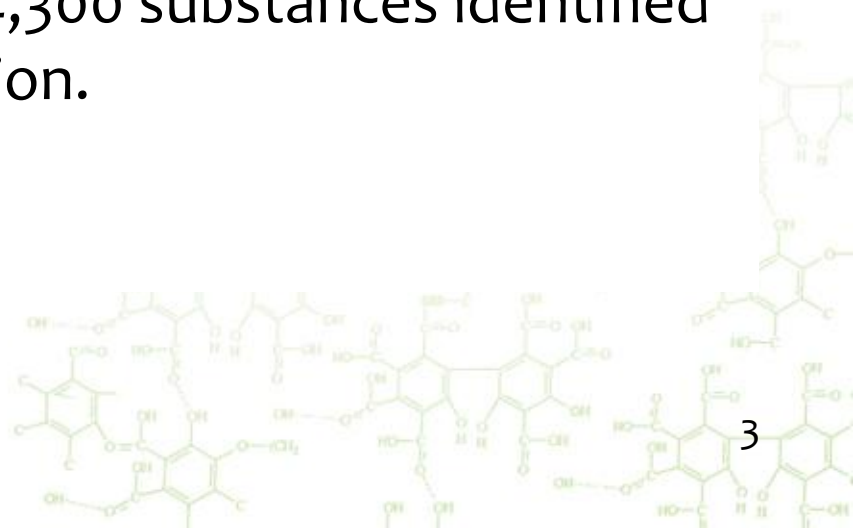
Overview

- Canada's Chemicals Management Plan (CMP)
 - Challenge Initiative
 - Petroleum Sector Initiative
- Exposure Science Observations
- Moving Forward – Ensuring a Strong Exposure Science Foundation

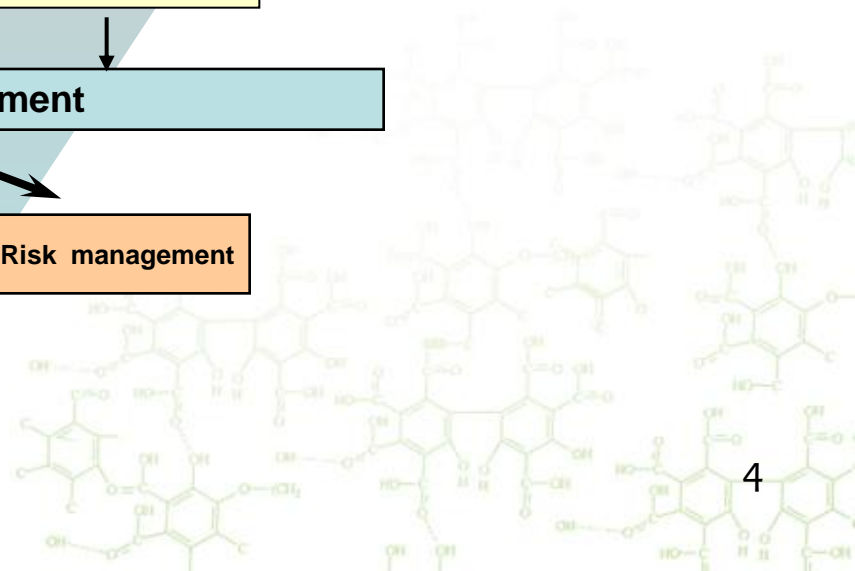
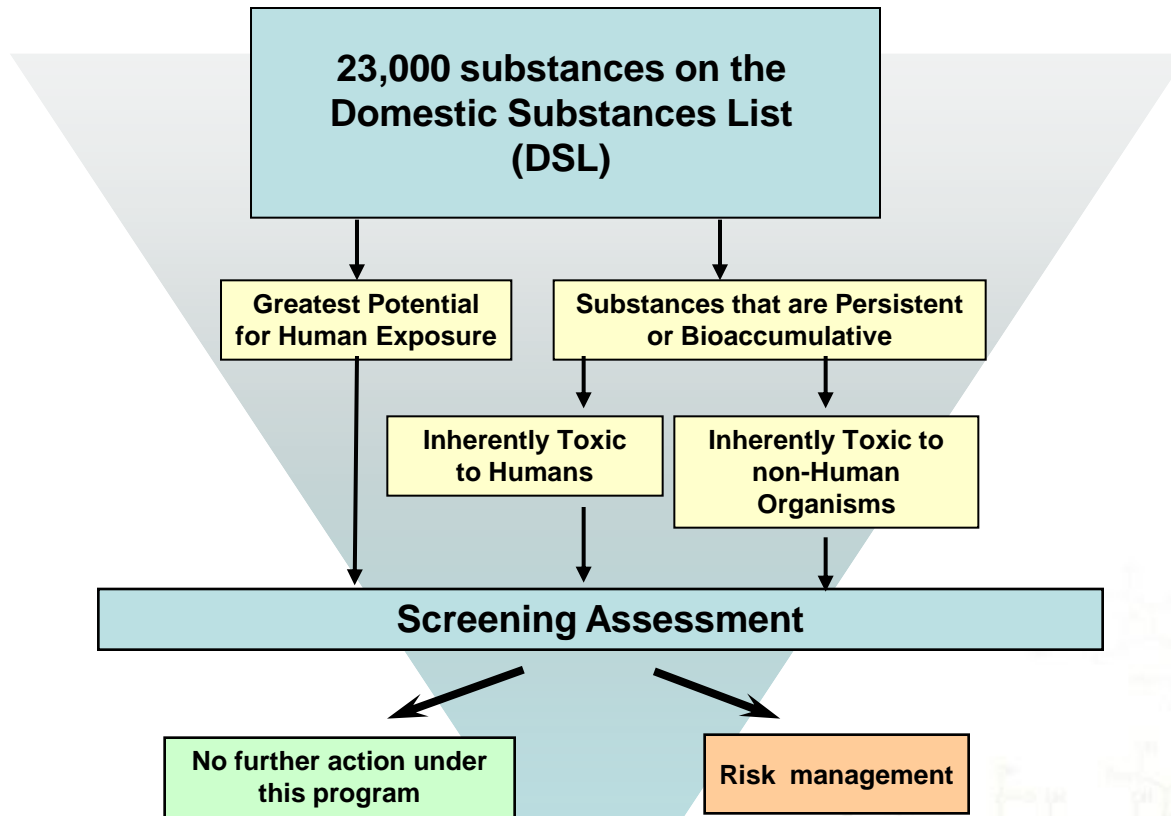


What is the CMP?

- The Chemicals Management Plan is the Government of Canada's response to the Strategic Approach to International Chemicals Management (SAICM). It is designed to meet the 2020 goals set by the World Summit on Sustainable Development for Sound Management of Chemicals.
- The CMP provides a framework for the assessment and management of approximately 4,300 substances identified as priorities through categorization.

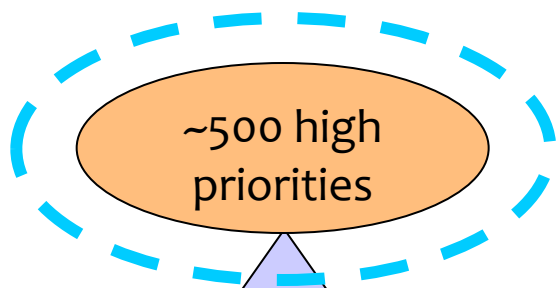


The Categorization Process



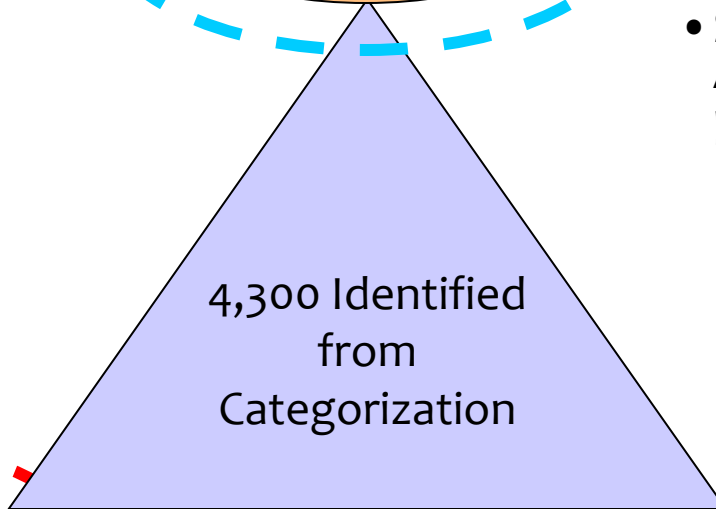
Where we are in the Overall Process

- Support through:
- Research, monitoring, surveillance
 - Inventory update
 - International collaboration

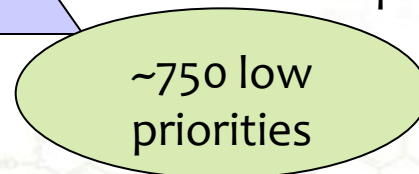
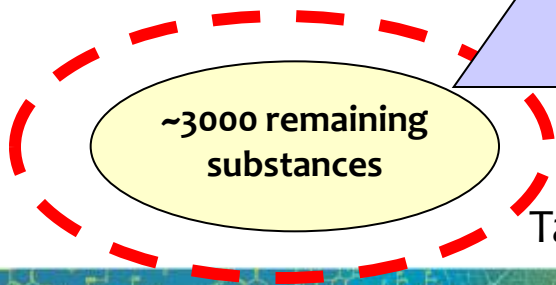


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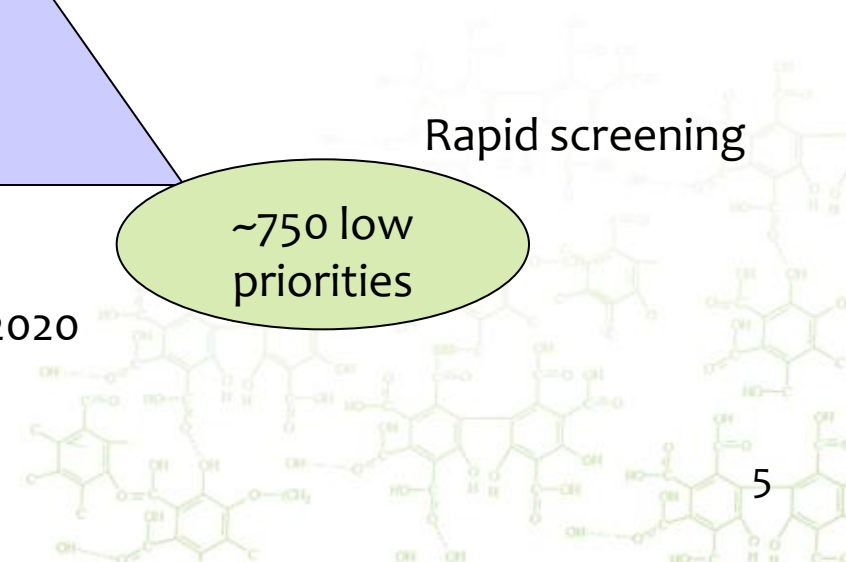
- Challenge Initiative
- Petroleum Initiative
- Significant New Activity Reporting provisions



Rapid screening

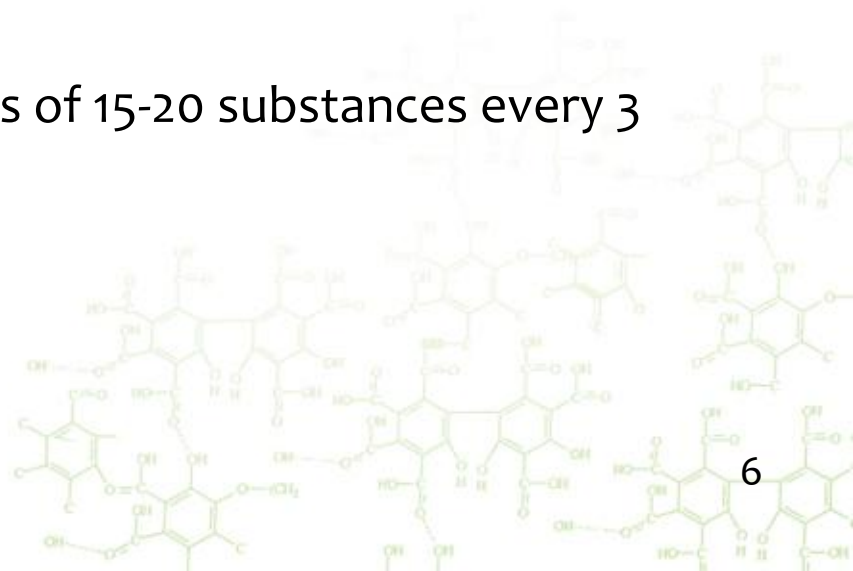


Target completion by 2020

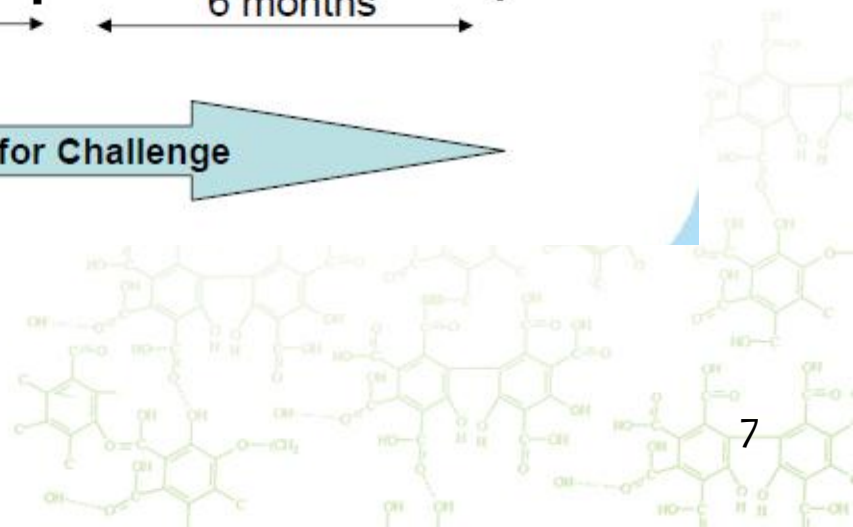
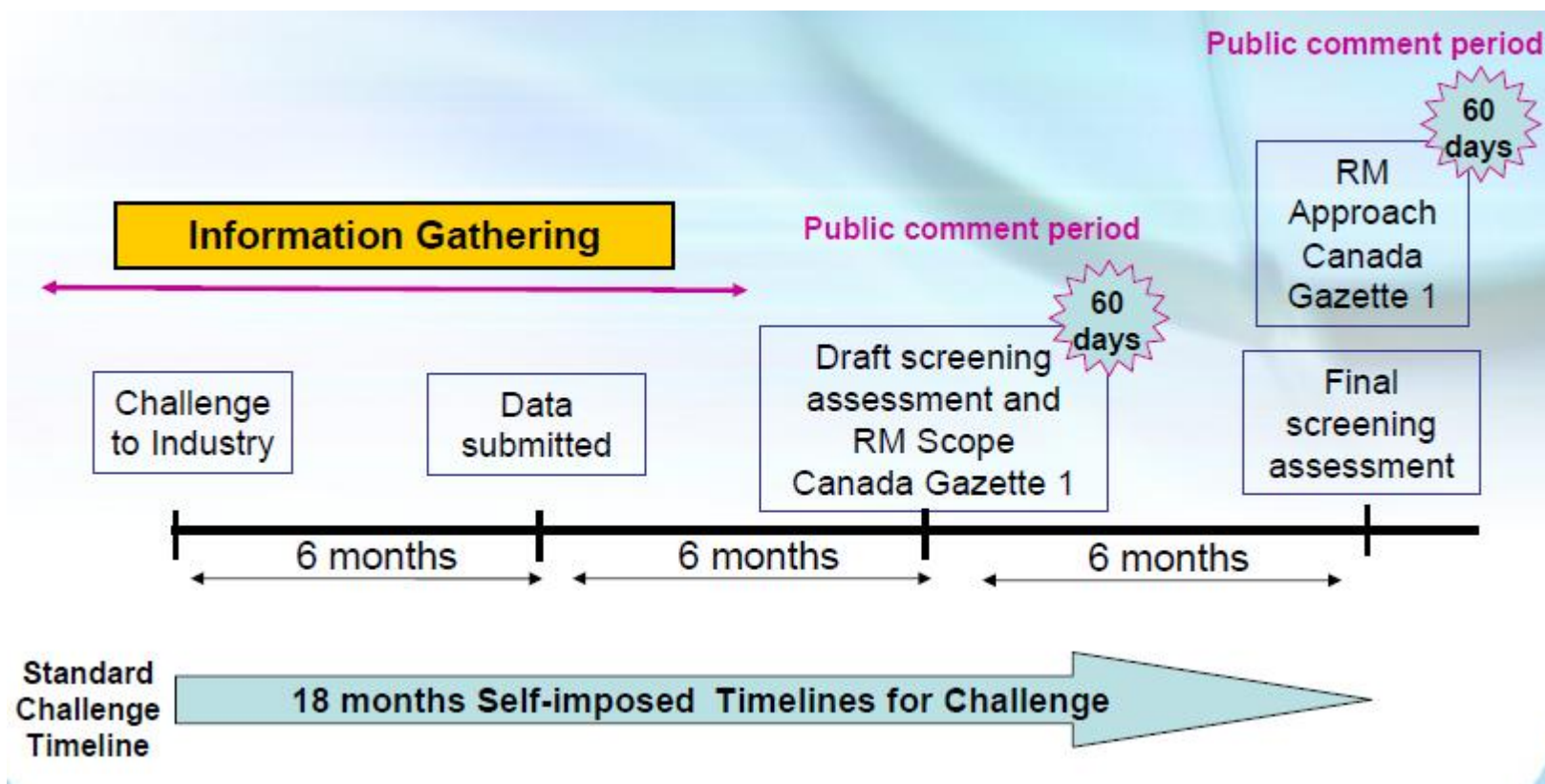


The Challenge Initiative

- Every 3 months the information-gathering phase of a batch of 15-20 substances was launched. Industry and other stakeholders were challenged to submit within 6 months:
 - information pertaining to questions outlined in a mandatory survey
 - voluntary information considered relevant to risk assessment or potential management
- Government scientists had up to 6 months to publish an assessment based on the information provided followed by a decision as to what actions are required, if warranted
- Publication of assessments in 12 batches of 15-20 substances every 3 months over 3 years

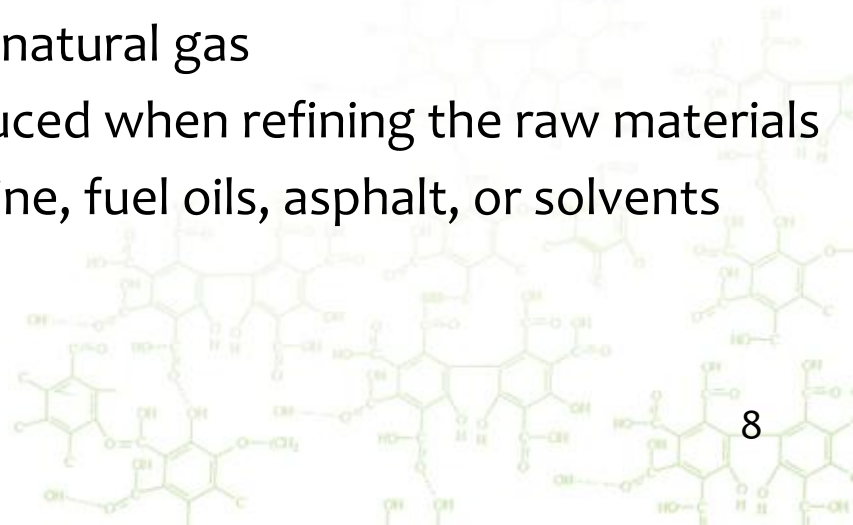


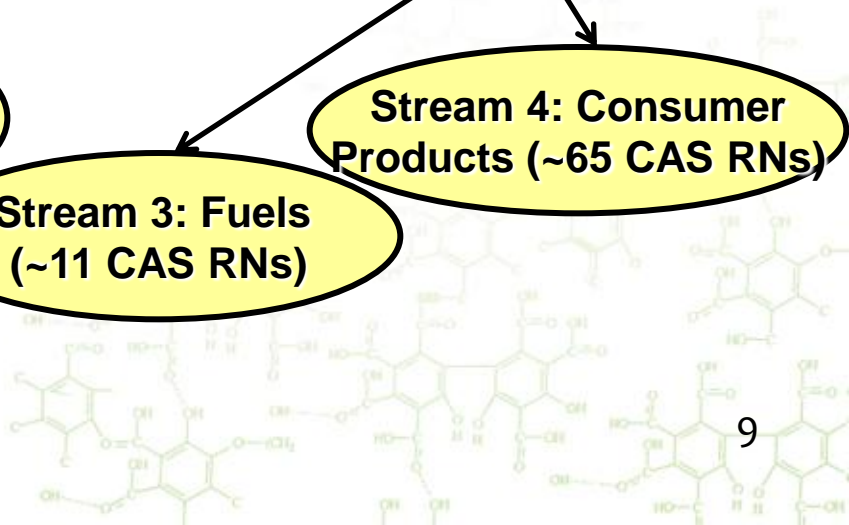
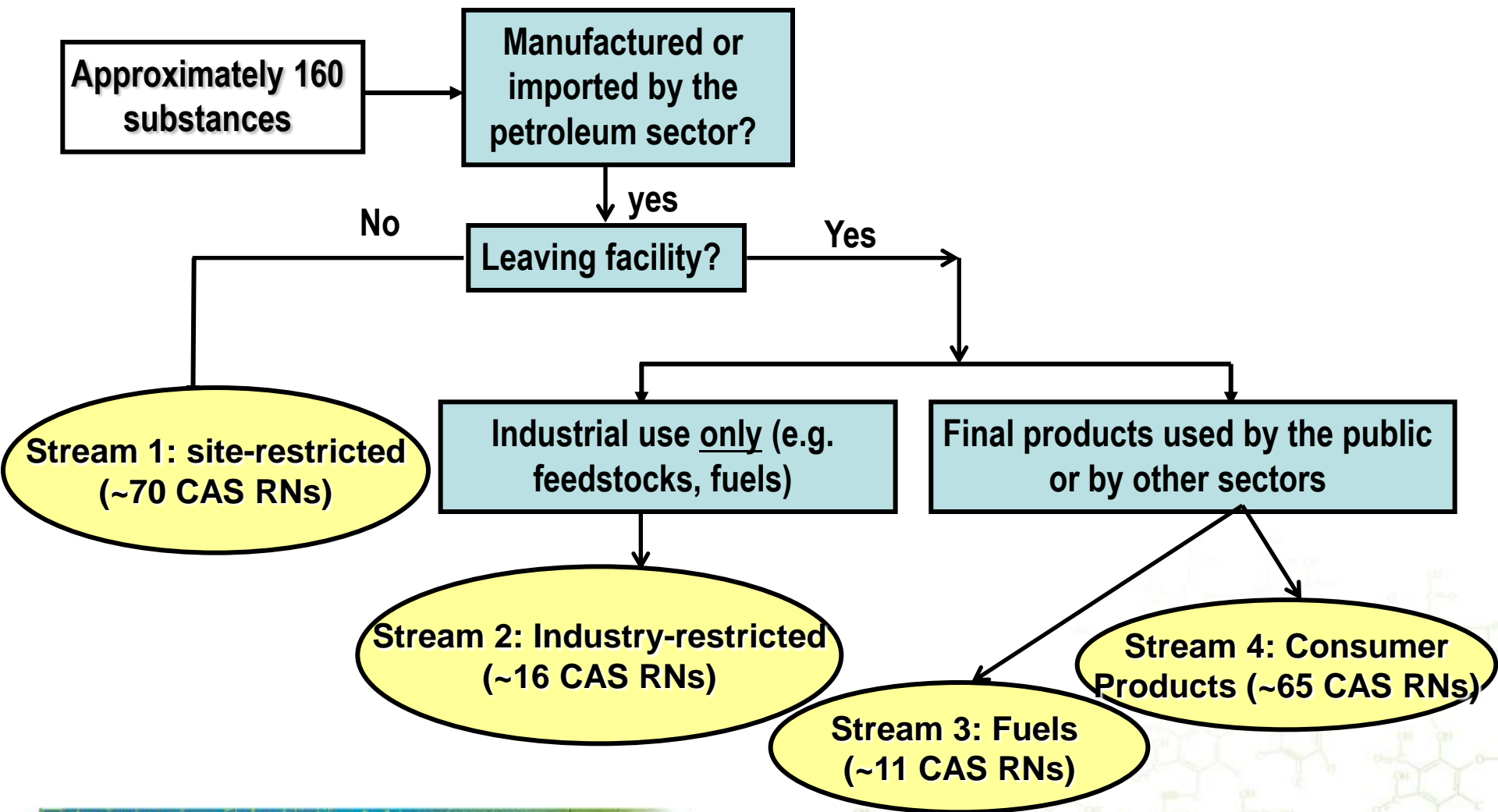
The Challenge Initiative



Petroleum Initiative

- Petroleum Initiative substances were chosen to be addressed outside the Challenge initiative because they are:
 - primarily, if not exclusively, related to the petroleum sector
 - complex mixtures that may need to be considered differently from discrete substances
- There are approximately 160 substances in the Petroleum Initiative
 - Raw materials such as crude oil and natural gas
 - Intermediate process streams produced when refining the raw materials
 - Final refined products such as gasoline, fuel oils, asphalt, or solvents





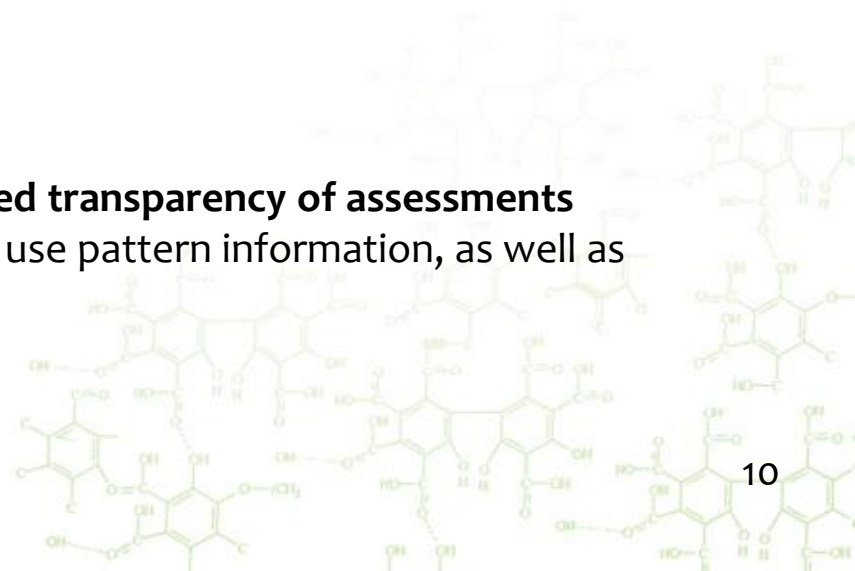
Exposure Science Observations – Challenge

Priority-Setting

- **Significant limitations to conducting a priority-setting exercise based on dated inventory data**
 - Portion of high priorities not currently in commerce
- **May have benefited from use of rapid exposure assessment approaches during prioritization**
 - poor correlation between greatest potential for exposure criteria and concern for human health in subsequent assessment activity
 - No ecological exposure criteria were included in the prescribed categorization approach

Information-Gathering

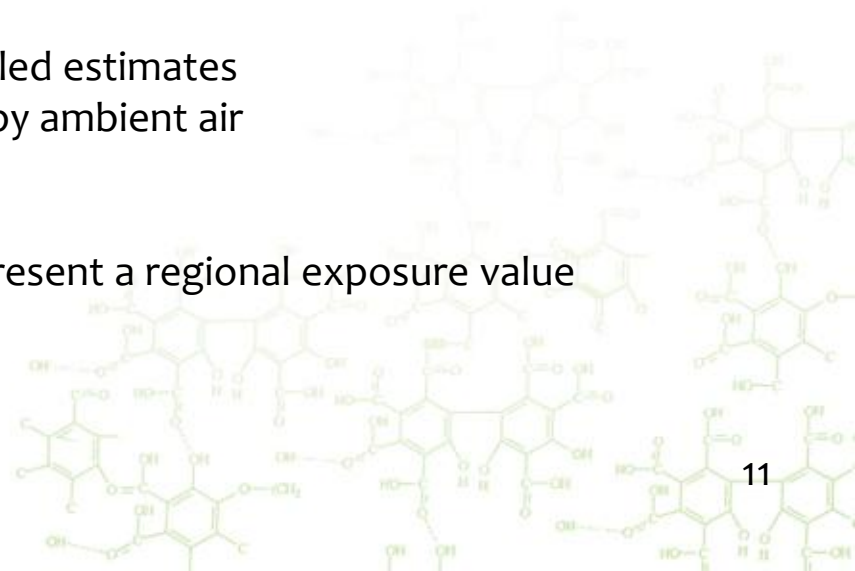
- **Confidential business information claims impaired transparency of assessments**
 - Precluded full disclosure and ability to share use pattern information, as well as model and tool inputs



Exposure Science Observations – Challenge

Assessment

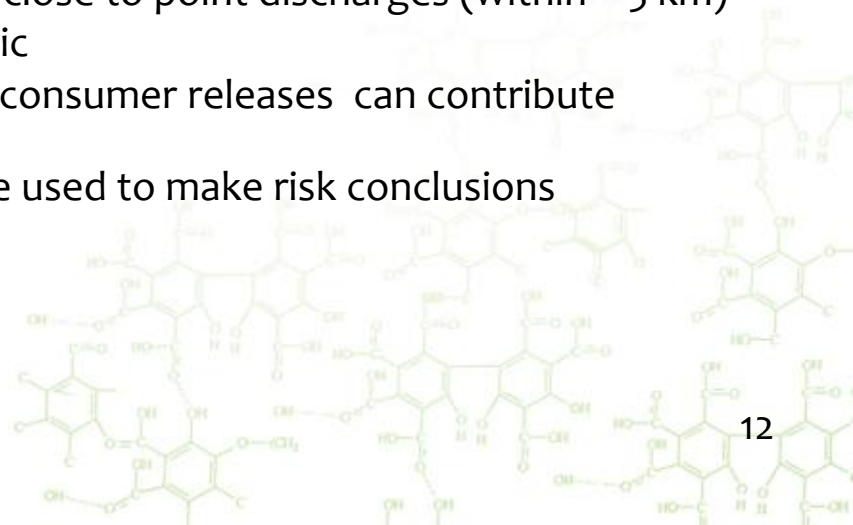
- **Limited data availability required the use of conservative assumption**
- **Substance-by-substance approach limits ability to incorporate aggregate and cumulative approaches and gain efficiencies inherent to class-based assessments**
 - Azo experience; cobalt experience
- **General population exposure from environmental media and food**
 - Identified as a source of exposure to general population in more than half of the health priority assessments but not frequently identified as an exposure of concern (~10%).
 - Approx. 1/3 of these assessments used modeled estimates
 - Predominant media are indoor air, followed by ambient air
- **Regional ecological exposure**
 - Ambient monitoring data can be used to represent a regional exposure value



Exposure Science Observations – Challenge

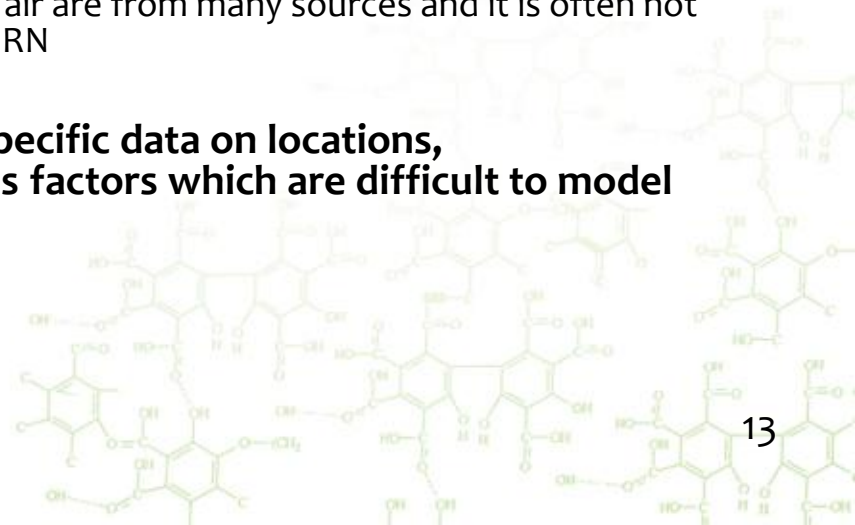
Assessment (cont'd)

- **General population exposure from use of consumer products:**
 - Identified as a source of exposure in more than half of the health priority assessments and was more frequently identified as an exposure of concern (~25%).
 - Approx. 75% of these assessments used models for estimating exposures.
 - Personal care products were the most prevalent consumer product scenario.
 - Predominant route of exposure is dermal
- **Local ecological exposure :**
 - “Local” exposure includes areas reasonably close to point discharges (within ~ 5 km)
 - Predominant medium considered was aquatic
 - Both industrial releases and down-the-drain consumer releases can contribute significantly to resulting exposure
 - Both generic and site specific scenarios were used to make risk conclusions



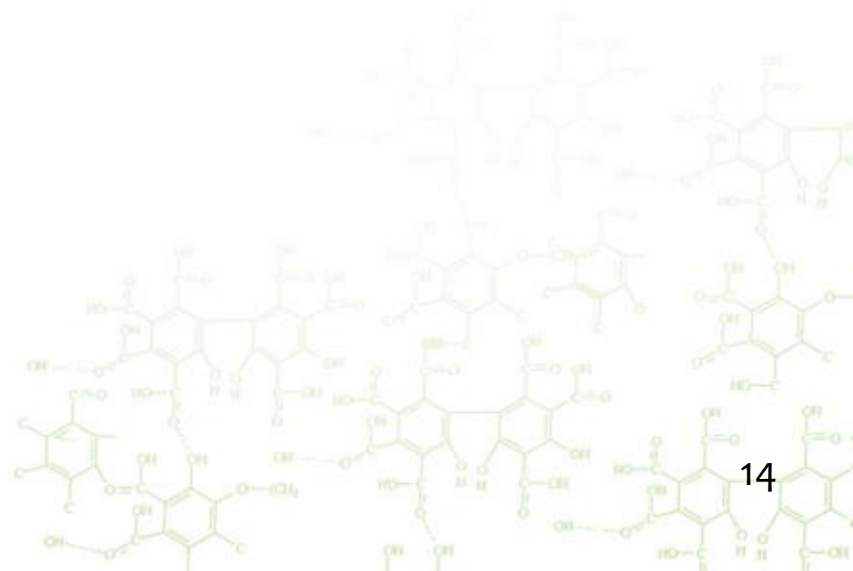
Exposure Science Observations - Petroleum

- **Current models do not adapt well to UVCBs with limited data; as such a high hazard constituent approach was required**
- **Limited ability to use higher tier models**
 - Lack of analytical data for complex mixtures
 - Lack of compositional data
- **Lack of monitoring data for specific petroleum-based substances of interest.**
 - Petroleum substance exposures are often “in the vicinity” of large facilities or storage areas and require monitoring data acquired in close proximity to the source of production or storage.
- **Source Attribution**
 - Most petroleum substance constituents in ambient air are from many sources and it is often not possible to relate the contribution of a specific CAS RN
- **Complex transportation scenarios require very specific data on locations, frequency/duration as well as container emissions factors which are difficult to model with inherent dispersion from motion**



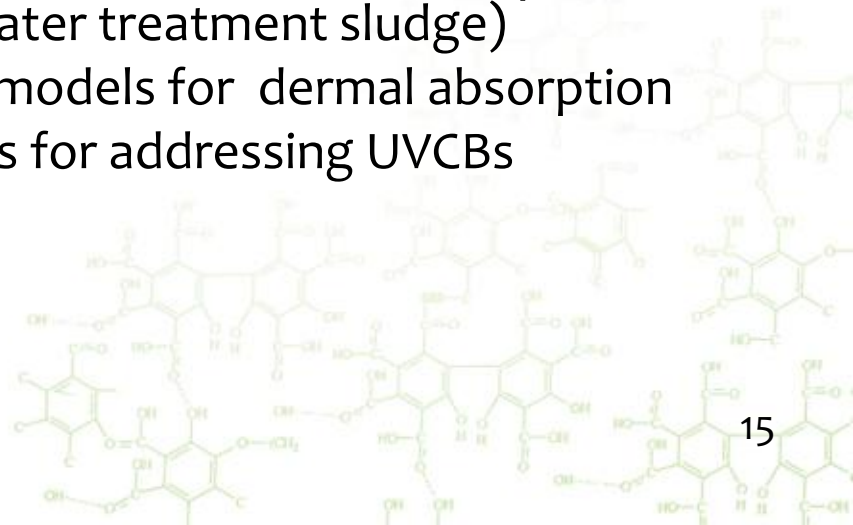
Moving Forward – Ensuring A Strong Exposure Science Foundation

- **Use Pattern Information**
 - Strong foundational data
 - Characterization of exposure from imported products continues to present a challenge



Moving Forward – Ensuring a Strong Exposure Science Foundation

- **Refinements to existing models and default parameters, and development of higher tier models, including:**
 - refinements to exposure default parameters for consumer scenarios (e.g., frequency of use, amount of product used) and industrial scenarios (eg. emission factors, days of operation)
 - model evaluation with existing monitoring data (comparison with real-world exposures)
 - further development required for unique consumer scenarios (e.g. infant mouthing, migration from textiles, and use of automotive products) and industrial scenarios (wastewater treatment plant models; soil amended with wastewater treatment sludge)
 - Further development of predictive models for dermal absorption
 - Further development of approaches for addressing UVCBs



Moving forward - Ensuring a Strong Exposure Science Foundation

- Continued targeted biomonitoring and ecological monitoring initiatives to have high tier exposure data for key substances and to support model evaluation.
- Better use of exposure science to influence risk assessment approaches (e.g., Threshold of Toxicological Concern, rapid screening)
- Explore better integration of ecological and human health exposure tools.



Poster WT383 Past, Present and Future – Human Health and Ecological Exposure Assessment under Canada’s Chemicals Management Plan

Chemical Substances Website

www.chemicalsubstances.gc.ca

