



Alberta Sulphur Terminals Ltd.

Proposed Bruderheim Sulphur and Shipping Facility –
Human Health Risk Assessment

Public Openhouse, Lamont, Alberta

Karen Phillipps, M.Sc

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Summary

Introduction

Intrinsic Environmental Sciences – who we are

Methodology

- Problem Formulation

- Exposure and Toxicity Assessment

- Risk Characterization

Results

Management and Monitoring

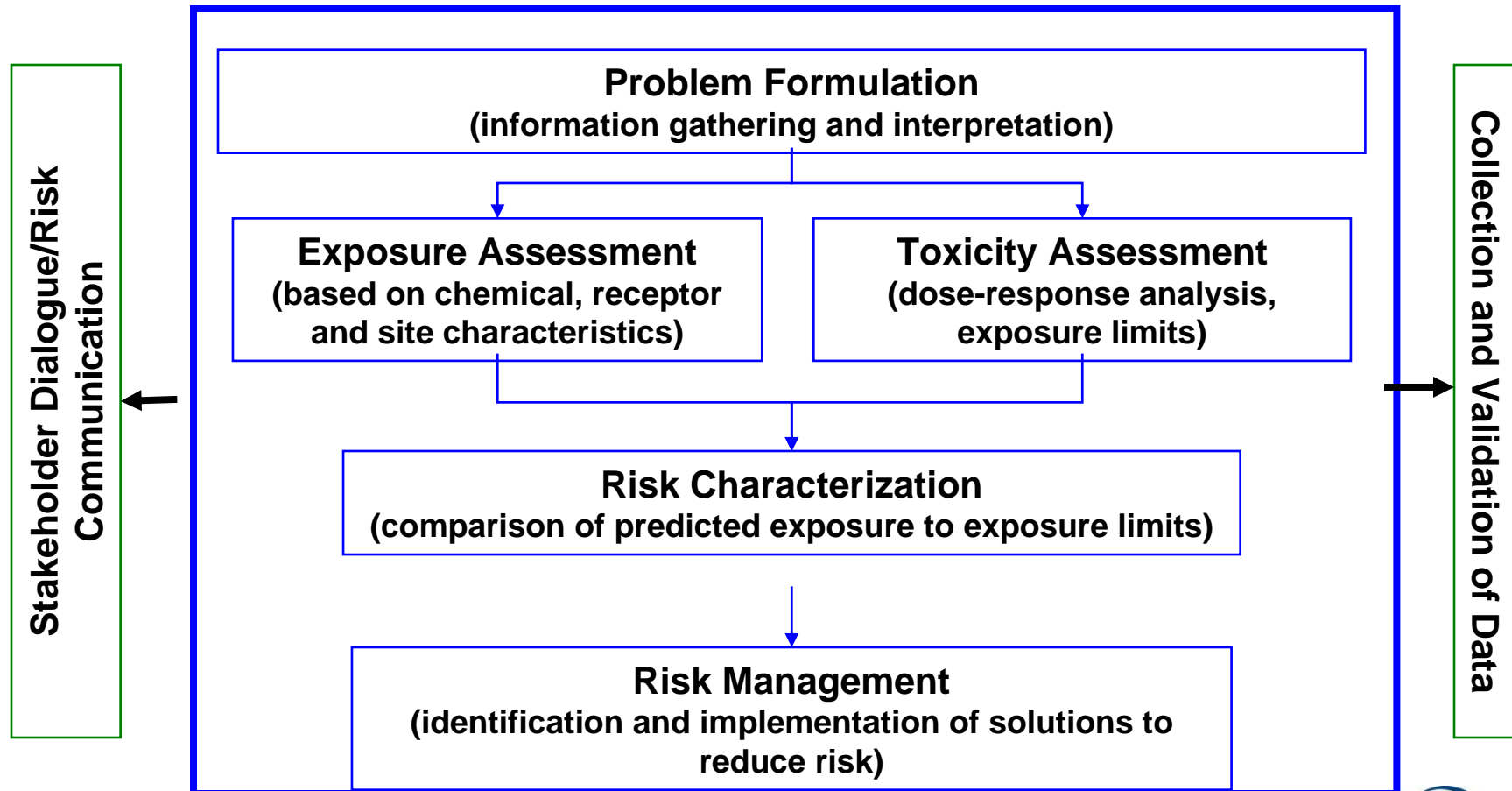
Intrinsik – Who we are

- Completed the human health risk assessment section of the Alberta Sulphur Terminals Environmental Impact Assessment
- Who we are:
 - Privately owned Canadian consulting company
 - Expertise in human and ecological health assessment
 - Knowledge of toxicology, environmental science, public health

Intrinsic - Goals

- To Identify and understand the health impacts that chemicals can have on living systems
- To share this understanding with people to help them make informed decisions about the health risks presented by chemicals in the environment

Methodology – Risk Assessment Paradigm



Step 1 - Problem Formulation

- Identification of:
 - Chemicals included in assessment (*known as chemicals of potential concern or COPCs*)
 - People that might be affected
 - Relevant routes of exposure to the chemicals
 - Air only relevant pathway
 - Water, soil, food – not considered due to chemical properties
 - Scenarios to consider in risk assessment:
 - Background (existing conditions)
 - Baseline (existing + approved facilities in area)
 - Application (existing + approved + AST project)
 - Cumulative or CEA (existing + approved + AST project + other proposed projects)

Exposure and Toxicity Assessment

- What level of exposure people have to the chemicals
- What health effects can the chemicals cause and under what conditions?
- What is the safe level of exposure?
 - Acute and chronic exposure limits

Risk Characterization

- How do the exposures compare to the 'safe' levels?

$$\text{Estimated Health Risk (expressed as Concentration Ratio)} = \frac{\text{Estimated Exposure}}{\text{Safe Level of Exposure}}$$

- What is the likelihood of adverse health effects?
 - CR values > 1 suggest health risk
- What is the potential risk to health?

Results

- **Acute Exposures (less than 24 hr)**
 - Health risks for individual chemicals associated with *low-negligible* risk (CR values less than 1)
 - Respiratory irritants mixture, CR = 1.2
 - Conducted by combing risks for chemicals with same endpoint (resp. effects)
 - Suggest a *possible* risk of respiratory health risks in sensitive people (e.g. asthmatics)
 - Potential for these risks actually occurring is low:
 - Based on worst-case exposure estimates
 - Conservatism built into ‘safe’ limit
 - Differences in how the chemicals cause effects

Results

- **Chronic (all exposures > 24 hours)**
 - Long-term exposure to chemicals associated with negligible health risks
 - All chemical and mixture CR ratios are less than 1

Management and Monitoring

- Groundwater monitoring 2x/year
- Surface water monitoring during construction
- Implementation of dust suppression measures and participation in regional air quality initiatives
- Please refer to other discipline reports

Questions?