



BIO BASED CHEMICAL IMPORT REPLACEMENT INITIATIVE

CHEMICAL MARKETS AND BIOCHEMICAL OPTIONS FOR ALBERTA

FINAL REPORT

Prepared for:

Enterprise and Advanced Education
Government of Alberta

Prepared by:

Cheminfo Services Inc.
30 Centurian Drive Suite 205
Markham, Ontario, L3R 8B8
Phone: 905-944-1160
Fax: 905-944-1175

January 2014

Alberta
Government

Bio Based Chemicals Import Replacement Initiative

- Project Overview

- Process

- Results

- Next Steps

Project Overview

- Theory
- Practical
- Reality

Theory



Theory

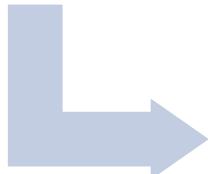
acid Ethylene

Pesticides
Acrylic Isopropanol Soaps
Xylenes Isoprene
Alpha polyalkyloglucosides
gum Ethanolamines
Phenol anodes Glycerol Pigments
Alkyl Polyethylene ethyl
Heavy 4 Morpholine aromatics
Guar black Polystyrene butanediol
Acetic competitive
Paints materials
Heavy Urea Ethanol
olefins Acetic Acid Acetone
graphite Xanthates Esters Epichlorohydrin
Polyols Hexane Toiletries
Ethers Polylactic Carbonate Toluene
dyes Polymers Carboxymethylcellulose Lubricants
acetates Naphthas Surfactants
peroxide sealants
Adhesives Explosives

Practical

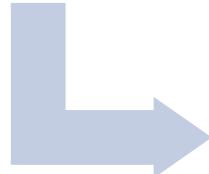
Preliminary
Research

- Scoped about 300 chemicals
- Analyzed imports, market data, supplier information, etc.



Phase I
Research

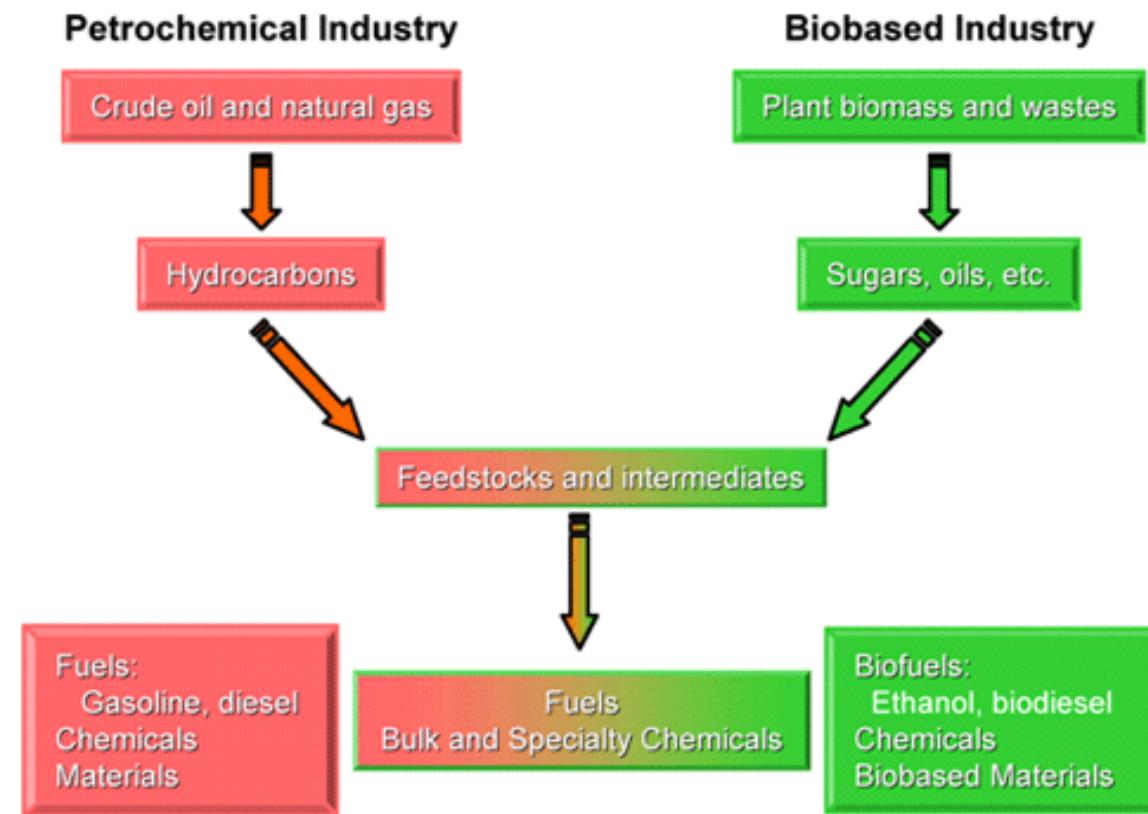
- Market research on 40 chemicals and 10 market areas
- Prepared brief profiles



Phase II
Research

- More detailed market research on 10 best
- 6 chemicals, 4 market areas

Practical



Results

- Solvents
- Glycerol Carbonate
- Lubricants
- Surfactants
- Isopropanol
- Hexane
- Guar Gum
- Carboxymethylcellulose (CMC)
- Alpha Olefins
- Oilfield Chemicals

Phenol

Table 1: Canadian and Alberta Imports of Phenol

	2009		2010		2011		2012	
	(tonnes)	(\$ million)						
Canada	70,451	\$67	77,501	\$96	73,812	\$103	75,070	\$110
Alberta	20,913	\$21	30,070	\$37	33,331	\$47	35,666	\$52

Source: Statistics Canada, Canadian International Merchandise Trade

Phenol



Surfactants

Table 1: Trend in Canadian and Alberta's Imports of Main Surfactants

		Canada 1990	Canada 2009	Canada 2010	Canada 2011	Canada 2012	Canada 2012	Canada 2012
Canada	HS * Code	(kilotonnes)	(kilotonnes)	(kilotonnes)	(kilotonnes)	(kilotonnes)	(\$ million)	(\$/kg)
Anionic	340211	15.2	52.5	54.6	57.0	59.6	\$120.1	\$2.02
Cationic	340212	2.0	5.9	7.5	7.4	8.1	\$27.7	\$3.41
Non-ionic	340213	24.0	45.5	49.1	48.9	47.2	\$152.7	\$3.23
Other (NES)*	340219	7.8	9.3	9.5	12.1	12.6	\$33.2	\$2.63
Total Canada		49.0	113.2	120.6	125.5	127.5	\$333.6	\$2.62
Alberta	HS Code	Alberta 1990	Alberta 2009	Alberta 2010	Alberta 2011	Alberta 2012	Alberta 2012	Alberta 2012
Alberta	HS Code	1990	2009	2010	2011	2012	2012	2012
Anionic	340211	0.95	3.4	4.6	6.0	7.0	\$19.1	\$2.74
Cationic	340212	0.09	0.3	0.6	0.6	0.6	\$1.9	\$3.40
Non-ionic	340213	1.43	4.4	4.9	5.2	3.4	\$10.5	\$3.06
Other (NES)*	340219	0.61	0.9	1.2	2.7	3.2	\$9.7	\$3.02
Total Alberta		3.1	8.9	11.3	14.4	14.2	\$41.2	\$2.90
of Total Canada		6%	8%	9%	12%	11%	12%	

Source: Statistics Canada, <http://www.statcan.gc.ca/trade-commerce/data-donnee-eng.htm>

* HS stands for harmonized system. NES stands for “not elsewhere specified”.

Guar Gum

	2009		2010		2011		2012	
Canada	(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)
Imports	2,873	\$8,341	5,582	\$13,386	8,631	\$30,374	9,254	\$97,815
Value (\$/tonne)	\$2,894		\$2,398		\$3,519		\$10,570	
Alberta								
Imports	1,535	\$3,735	3,587	\$7,936	5,812	\$20,345	6,462	\$71,453
Value (\$/tonne)	\$2,433		\$2,212		\$3,501		\$11,057	

Source: Canadian International Merchandise Trade Database, HS 1302320010: Guar Gum.

Note: Export data was not available for this chemical.

Conclusions

Full report available at:

- <https://www.albertacanada.com/industry-reports.aspx>

Morley Kjargaard, Manager
Bio Industrial, Enterprise Division
Innovation and Advanced Education
Morley.kjargaard@gov.ab.ca
403 556 4316