

Bio-based Renewable Chemicals

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Alberta Agriculture and Forestry's Bio-Industrial Opportunities Section is a leader in Alberta's bio-based renewable chemicals industry. We, along with partners across the Alberta government, support the province's bioeconomy by facilitating the growth of high-value bio-based renewable chemicals, specialty ingredients and products from agriculture/forestry biomass, waste and bioprocessing side streams.

Alberta is capitalizing on the rapidly increasing consumer preference for plant-based ingredients. Businesses and organizations in the bio-based chemicals cluster/supply chain positioned to grow the Alberta bioeconomy's core capacity and profitability include: growers and grower associations, startups and established businesses, researchers, investors and key end users.

Consumer demand, superior performance, environmental pressures and improving economics are all expected to drive further investment in bio-refining. For integrated bio-refineries, bio-based specialty/renewable chemicals can increase speed to market, and provide higher value returns and cash flow as companies build their longer term portfolio of ingredients and products in new markets. The bioindustries provide carbon benefits, renewability, sustainability, jobs and major diversification opportunities for new market

development and new gross domestic product (GDP) expansion.



High value bio-based renewable chemicals and specialty ingredients

High value bio-based renewable chemicals and specialty ingredients derived from Alberta agriculture/forestry biomass, waste streams and bioprocessing side streams are targeted to the multi-billion dollar global markets in renewable industrial chemicals (solvents, surfactants, emulsifiers, lubricants); specialty chemicals (cosmetics/personal care, cleaning and fine chemical) and green building industries (polymers, resins, composites, advanced materials).

Bio-based renewable chemicals including high-value raw materials, ingredients,

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intermediates, drop-in and novel molecules/chemicals, processing aids and innovative platform technologies meet the increasing global demand for sustainable, renewable, safer products and materials. Users of chemicals, polymers, materials and ingredients are also increasingly demanding products that are environmentally friendly, present zero or lower risk to human health and meet regulatory and sustainability requirements.

The global market for renewable chemicals is expected to grow from \$51.7 billion USD in 2015 to \$85.6 billion in 2020, with a compound annual growth rate (CAGR) of 10.6 per cent (2015 to 2020). The market for green alcohols used in biofuel production and other industrial applications is about the same.

Estimated global sales for the cosmetic & personal care markets are \$675 billion USD by 2020, market estimated at \$460 billion USD in 2014 - 6.4 per cent CAGR; natural/organic CAGR of nine per cent. This specialty ingredient industry is highly competitive and high-value market. The global cosmetic industry is always looking for new and novel plant-based actives and ingredients that can replace synthetic/petrochemical ingredients (consumer market-driven) for their formulations and finished consumer products.

Alberta's cosmetic and natural health product sector consists of a conservative estimate of over 250 companies representing over \$35 million in revenues (includes larger commercial finished product cosmetic companies, toll manufacturers and ingredient manufacturers, not direct farm sales). Alberta companies represent 15 to 20 per cent of the national industry.

The bio-based renewable chemicals and ingredients team is helping raise the profile and drive business development and commercialization of globally competitive high-value innovative products and sustainable chemicals from renewable biomass, waste and bioprocessing side-streams.

As a collaborative value chain initiative, the team connects researchers, manufacturers,



service providers, farm producers and others supporting the development and expansion of this growing bio-based renewable chemicals cluster across the province.

For more information, contact the Bio-based Renewable Chemicals Team

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