

## Bio-Industrial Opportunities Branch

*A diverse, integrated team is working to bring the benefits of an innovative, efficient bioeconomy to Alberta in the fields of bio-chemicals, bio-energy, bio-materials and other areas.*

Today, the science of using plant-based feedstocks to make chemicals, materials and energy is increasingly well-understood. While petroleum-based feedstocks are finite in supply and non-renewable, renewable plant-based feedstocks offer both functionality and sustainability.

Bio-Industrial Opportunities Branch, part of the Food and Bio Processing Division of Alberta Agriculture and Rural Development, is playing a significant role in the development of Alberta's bioeconomy.

The Branch:

- develops green products and solutions that enhance and diversify the agricultural bio-based economy
- provides industry with business development expertise and specialized knowledge to identify and create new opportunities
- facilitates growth of commercialization through the engagement of domestic and international partners by providing expertise and capacity.

Through value chain development, investment attraction, innovation and commercialization activities, Bio-Industrial Opportunities Branch is helping to shape the growth of a competitive, diversified bio-industry sector in Alberta.

### Bio-Based Chemicals

As a collaborative value chain initiative, the bio-based chemicals team connects researchers, manufacturers, service providers, farm producers and others supporting the development of Alberta's bio-based chemicals industry. One area of focus is to use traditional and non-traditional Alberta-grown crops and other plant biomass to make a wide variety of chemicals and related products. These include drop-in chemicals, biofuels and green building materials.

The second area of focus relates to specialty chemical ingredients for cosmetics and personal care products. This initiative seeks to capitalize on a rapidly increasing consumer preference for plant-based ingredients within this multi-billion dollar market.



Bio-Industrial Opportunities Branch is one of several stakeholders involved in the operation of a \$2 million polyol pilot plant located at Agri-Food Discovery Place in Edmonton. The plant enables focused research into the ozonolysis and hydrogenation processes required to turn canola oil into a diverse class of chemicals known as polyols, as well as industrial acids.

### Bio-Based Energy

Alberta is well-positioned to be a bioenergy leader in the coming years. Crops and forest resources are produced in abundance here, along with large volumes of livestock, providing ready feedstocks for ethanol, biodiesel and biogas. The bio-based energy team is fostering the development of new capabilities in bio-based energy through cross-ministry cooperation, financial sourcing and policy creation.

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## Biomaterials

Biomaterials are materials made from plant-based feedstocks that can supplement or even replace petroleum-based materials in some applications. The Alberta Biomaterials Development Centre (ABDC) is taking the lead in developing biomaterials capabilities to diversify and sustain the economy, while improving market opportunities for producers of crop and forest resources in Alberta.

ABDC is a cross-ministry initiative focused on business, biomass, materials and biochemicals development, as well as fibre processing and analytical testing. By working closely with companies that are interested in biomaterials, identifying and then overcoming their technical and business challenges, ABDC is helping to catalyze Alberta's biomaterials economy.

A key focus is the development of agricultural supply chains for feedstock crops like hemp, flax, cereals and canola.



Purchased in 2009 at a cost of \$4.5 million, ABDC's Belgian-made Van Dommele unit can process one tonne of hemp or flax straw per hour into various grades of fibres for commercial biomaterials. Considered to be the largest publicly available fibre processing line in the world, this facility and the expertise that goes with it are attracting considerable commercial interest to Alberta.

## Waste Utilization

The Bio-Industrial Opportunities Branch nutrient recycling program delivers scientific and engineering support to help industry explore some of today's most promising ideas. Major activities include demonstrating and developing 'zero-waste' food production technologies such as food-safe greenhouse nutrient technologies and aquaponic food production technology transfer.



## Operations & Facilities

The Branch's operations and facilities team provides essential operational support through a world-class, unique bio-processing pilot plant facility, along with state-of-the-art processing equipment for grain fractionation, separation, solvent extraction, polymer reaction, extrusion and other processes.

The focus of the team is on providing technical client services, enhancing staff and branch capacity, maintaining and enhancing processing equipment and providing project support for industrial companies.

## More Information

Contact the **Bio-Industrial Opportunities Branch:**

Alberta Agriculture and Rural Development  
Bio-Industrial Opportunities Branch  
Agri-Food Discovery Place  
Building F-83, 6020 118 Street  
Edmonton, Alberta, Canada T6G 2E1  
Phone: (780)644-8118  
Email: [biobranch@gov.ab.ca](mailto:biobranch@gov.ab.ca)

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