



## **Challenge: LCBA-ARLANXEO Biobased feedstock production**

### **Challenge Statement/Synopsis:**

ARLANXEO operates a BioIndustrial Park in Sarnia, Ontario, Canada. Included in the BioIndustrial Park is a biological oxidation wastewater treatment facility (BIOX). The BIOX facility uses aerobic digestion to treat contaminated effluent from several industrial sources in the Sarnia area. Through this process, over 1000 tonnes of biological sludge is generated and removed from the system per year. The sludge is currently sent to landfill for disposal. The challenge being proposed would be to determine a method for the biomass to be diverted from landfill and converted into a usable product. Preferably, this would be converted to a feedstock for the petrochemical industry. Feedstock that is used at ARLANXEO is primarily isoprene and isobutylene; however, in the local Sarnia area feedstocks include styrene, ethylene, 1,3-butadiene, alkanes and alkenes. Conversion to energy (methane, hydrogen) would be another option under consideration.

### **Context for the Challenge:**

ARLANXEO has a commitment to reduce the waste and carbon footprint of its facilities. Landfilled biomass accounts for 25-35% of total waste generated at the site. This would significantly reduce the waste generated from the site.

In addition, by developing a biobased feedstock, this would be able to off-set the purchase of fossil fuels by processors.

### **Response Criteria:**

- Conversion of the biomass to a usable feedstock
  - Preference for conversion to ARLANXEO feed stock (isobutylene, isoprene)
  - Energy conversion from biomass is also accepted
- Solutions that can accept liquid biomass are preferred
  - Sludge dewatering can be performed by ARLANXEO as required

### **The Opportunity:**

Products from the petrochemical industry are in very high demand and expect to increase in the future. The current feedstock is almost exclusively produced from fossil fuels. By reducing the dependency on fossil fuels, this could greatly reduce the carbon footprint of



these materials. Near the ARLANXEO facility, there are several major petroleum and petrochemical facilities, including Imperial Oil, Suncor, Shell, NOVA chemicals, and INEOS. A full list of companies can be found at <https://lambtonbases.ca/directory/>.

Most of the industries have wastewater treatment facilities that produce biomass. If successful, this technology would be demonstrated to large industries that could rapidly expand the market.

As part of the LCBA Canada program you may have the opportunity to:

- Pilot or deploy your solution with ARLANXEO, if your solution is selected and deemed suitable.
- Pitch your solution during GLOBE Forum 2022, North America's longest-running sustainable business conference.
- Meet new customers and explore new markets for your solution.

#### **About ARLANXEO Canada Inc.:**

ARLANXEO Canada Inc. ("ARLANXEO") is a world-leading synthetic rubber company. The company's core business is the development, manufacturing, and marketing of synthetic high-performance rubber for use in the automotive and tire industries, the construction industry, and the oil and gas industries. The Tire & Specialty Rubbers (TSR) business unit offers a broad portfolio of versatile rubbers primarily for applications in tire production. They are used in, for example, the liners (the airtight layers) of tires as well as for the tread, side walls and other tire components. Other applications include chewing gum, sports and golf balls, hoses and conveyor belts. ARLANXEO operates a single Canadian facility in Sarnia.

The Sarnia Site began operation in 1942 by Polymer Corporation Limited. ARLANXEO Canada Inc. In 2016, the site became ARLANXEO Canada Inc. The Sarnia has had several operating names in that period including Polysar Limited (1973), Nova Petrochemicals Inc. Polysar Rubber Division (1990), Polysar Rubber Corporation (1990), Bayer Rubber Inc. (1995), Bayer Inc. Rubber Division (1997), and LANXESS Inc. (2004).

The ARLANXEO BioIndustrial Park is located at 1265 Vidal Street, Sarnia, Ontario. It is located on over 160 acres and operates 24 hours a day, 7 days a week. It is primarily a biological oxidation (BIOX) water/waste treatment facility.



Contaminated water from the Butyl facility is sent to the BIOX for treatment. Other local industries send contaminated water to the BIOX facility for treatment as well. The BIOX is a biological oxidation sewage treatment facility that accepts on-site effluent, in addition to, liquid industrial and hazardous waste for treatment.