Promoting environment-friendly lifestyle that uses Green Chemicals

Shifting from fossil resources to renewable biomass resources

Because of our concern about the global environment, Mitsui has focused since early 1990 on efforts to shift away from fossil resources to biomass resources. Our goal is to help popularize the use of chemicals with low environmental impact, an important step in creating a sustainable future. Mitsui has been promoting the use of oils like palm oil, sugar from sugarcane, and more recently expanding its efforts in the area of the so-called green chemicals derived from these raw materials. Reducing dependence on fossil resources, which are found only in a limited number of places in the world, and securing a stable supply of biomass resources are considered crucial for the future of the chemical industry. Mitsui is taking specific steps to expand the supply chain for fats and oils. For example, it has strengthened its relationship with KLK, one of the largest palm-farming companies in Malaysia, related to the manufacture of chemicals derived from palm oil.

Environmental Initiatives

Developing a comprehensive value chain from biomass resources

As an alternative to fossil resources, the demand for biomass resources is expected to continue expanding in the future.

To satisfy these needs, Mitsui will be actively building a comprehensive value chain that will manufacture green chemicals from biomass resources via fats and oils, sugars, and intermediates. We will strengthen our extensive capabilities through cross-sectional collaboration with other business units such as Foods & Retails Business Unit, to create a wide variety of chemical products from biomass resources. At the same time, we will work to ensure a stable supply of biomass resources in Southeast Asia, North America, and South America, improve the yield of biomass resources, and develop new fermentation and catalyst technologies.

Green Chemicals operations

Sugars & Starch feedstocks
Approximately 1.5 billion tons/year in sugar equivalent
- Corn, Cassava, Rice, etc., Sugarcane, Beet, etc.
- 1.3 billion tons
- 140 million tons
- 60 million tons

For use as food
For use as feed
For industrial use
- 120 million tons
- 20 million tons
- 20 million tons

Fat and oil resources
Approximately 160 million tons/year

For chemical use

Initiatives in the sugar and wood resource chain

Resources
Sugarcane
Corn, etc.

Raw material (monomer)

Bioplastics

Initiatives in the fats and oils resource chain

Palm oil

Fatty acids, glycerin
Natural alcohol

Derivatives

Detergent, toiletry, rubber, activator

Initiatives for Consumer Issues

Providing products that are socially and environmentally useful

The one material that represents modern civilization more than any other is plastic. It is used in a wide range of applications because it can be molded into any shape, and is durable and inexpensive. More recently, because people are taking a more ecological perspective,
a great deal of attention is being focused on biomass plastics and biodegradable plastics, which are made from biomass resources and have a smaller environmental impact than conventional plastics. The carbon dioxide generated from incinerating biomass plastics was originally captured by the biomass used as the raw material through photosynthesis, and therefore biomass plastics can be considered carbon neutral and thus a very promising material that can help prevent global warming. Biodegradable plastics, which can be broken down into water and carbon dioxide in soil or compost where microorganisms abound, have also been attracting much attention. In Japan, biodegradable plastics are bags for collecting kitchen waste bound for composting facilities in some municipalities.

Mitsui’s goal is to make low-environmental impact plastics readily available to consumers. Therefore, we have made building a value chain that covers every phase from securing biomass resources to manufacturing bioplastic products a major pillar of our green chemicals operation.

Palm-Oleo, an associated company of Mitsui, has announced plans to increase its capabilities to break down fats and oils, with the goal of expanding a value chain that encompasses the entire process from palm oil extraction to manufacturing fatty acid and alcohol derivatives. The company is promoting a green chemicals business operation providing raw materials for the environment-friendly products consumers are demanding, including bioplastics, fatty acids for use in detergents and cosmetics, glycerin, and alcohols, as well as lubricants, rubber, and tires.

Demand for beauty and body care products, such as detergents and cosmetics that keep the body clean and make daily life more comfortable, are expected to continue increasing as the standard of living in emerging economies improves in the future. By increasing the availability of green chemical products (e.g., products that utilize glycerin made from palm oil instead of fossil resources), we can help reduce the impact of such products on the environment and make it easy for people to achieve a balance between their cultural lifestyle and a more ecological way of life.

In some emerging economies, trash generated from homes is creating a serious environmental problem. Mitsui is taking steps to reduce the volume of trash in these countries and effectively utilize it by making biodegradable plastic trash bags available. The bags are used to efficiently collect organic waste materials from food service establishments and homes, and then transport them to composting facilities where the collected organic waste is converted into fertilizers. Through these initiatives, Mitsui is expanding its business in terms of both raw materials and product line-up made from biomass resources and will continue to contribute to improving the quality of life in emerging regions.