New Businesses

Progress in the Year under Review 2009

The Cosmo Oil Group is working to establish new businesses besides oil by developing products and technologies with low environmental impact. One business with huge growth potential is 5-aminolevulinic acid (ALA). We are accelerating market development and the expansion of product domains for this compound, whose applications include pharmaceuticals. In 2001, the Group developed a new low-cost, mass-production fermentation process that has dramatically increased potential applications for ALA used in low concentrations. The Cosmo Oil Group has already begun marketing active ingredients and liquid fertilizers combined with ALA. Capitalizing on our position as a pioneer in this field, we will expedite development of finished products that contain ALA, including marine and animal feed, cosmetics, and pharmaceuticals. The Group already markets fertilizer combined with ALA in Europe and other regions. Our plans are to expand sales in existing markets and export such fertilizer to China and the United States, the two largest consumers of fertilizers in the world.

The Group is also developing a concentrated solar power (CSP) generation business using technology provided by the Tokyo Institute of Technology with MASDAR, an organization funded by the Abu Dhabi government. The technology produces a large amount of power more efficiently and for less cost than existing solar power generation systems. As a power generation system particularly suited to regions with high temperatures, low humidity, and high sunshine hours, we are currently constructing a pilot plant in Abu Dhabi.

With application of PENTA GARDEN®

Without application of PENTA GARDEN®

(Left) PENTAKEEP® (fertilizer containing ALA) for professional use
(Right) PENTA GARDEN® (fertilizer containing ALA) for home use

Strategies

- **Raise the profile of ALA and promote development of functional products**
- **Concentrated solar power generation**
- **Biomass ethanol**
- **Solar power generation**

New business related to environmental technology: ALA	
Raw material business	Active ingredient supply business Currently manufacturing and selling ALA as raw material for fertilizers, animal feed and research reagents
Finished products	Fertilizer business
	Animal feed business
	Pharmaceutical, cosmetic, and health food business
Other new businesses related to environmental technology	
Concentrated solar power generation	Launch a new CSP generation business in areas that are in the sunbelt region and that have a high demand for power in particular.
Biomass ethanol (1)	Grow crops as a raw material for bio-fuels production (a project expected to be promoted via a JV company to be established together with the East Sepik provincial government and local residents).
Biomass ethanol (2)	Commercialize manufacturing of biomass ethanol using second-generation raw materials (from plants or wood).
Solar power generation	Launch a new business to manufacture polysilicon (polycrystalline silicon) in the future.

Isao Kusakabe

Senior Executive Officer
General Manager,
International Ventures Dept.

The Group is actively developing ALA as a new business in the environmental technology field with the aim of establishing this business as a key earnings pillar. We are currently working on fertilizer and animal feed applications in two huge markets in particular. These are the United States, the largest exporter of agricultural products in the world, and China, which is finding it difficult to increase its self-sufficiency ratio due to its rising population. In addition to promoting animal growth, ALA has huge benefits as animal feed. This is because it permits reductions in the amount of corn and other major ingredients used in feed, which are also sought after as a food source for human consumption. By building cooperative relationships with other companies and research organizations, we are working on using ALA to develop high-quality products that will meet the rigid standards demanded by the pharmaceutical, cosmetic, and health food sectors.