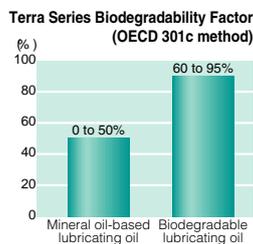


Expansion of Environmental Business: The Development of Environmental Technologies and Products, etc.

Working closely together as one unit, the group companies of Cosmo Oil have been developing products that have less environmental impacts as well as developing petroleum-related environmental technologies. These technologies and products are helping to the reduction of adverse impacts on the environment in companies in the same and other industries.

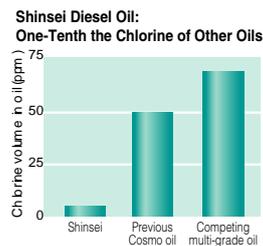
Cosmo Oil Lubricants

Cosmo Oil Lubricants develops and sells its low environmental impact lubricating oils such as biodegradable and chlorine-free products.



Cosmo Terra is a series of synthetic lubricating oils with a highly biodegradable structure that was developed with the first priority being to protect the environment, and the oils have been certified as Eco Mark products. Because the oils can be decomposed by microorganisms into carbon dioxide and water, they help to prevent water and soil contamination. It is a series with wide applications including lubricating oils for construction and agricultural machines, railway vehicles, outboard motors, and chainsaws.

The Cosmo Clean series of metal cutting oils, which were also developed with the highest focus on environmental protection, provide chlorine-free



benefits in solving the problems associated with chlorine in disposal and washing. Cosmo Shinsei Synthetic Diesels, an oil for diesel cars which has a level of chlorine just one-tenth that of normal oils, was released in 1999. It not only provides the benefits of low-chlorine oils for the environment, but also extends engine life and the interval between oil changes.

The Cosmo Lio SL series of engine oils are oils for gasoline engine cars that provide a cleaning effect, increased heat resistance and reduced engine oil



Cosmo Lio Supreme

consumption as well as reduced fuel consumption. The SL is an international standard established by the American Petroleum Institute (API).

Cosmo Engineering Co., Ltd.

Cosmo Engineering mainly shoulders the responsibility for the plant construction and maintenance of our oil refinery equipment. The company has made a contribution to environmental protection in



Hydrocarbon vapor recovery unit

businesses in other industries, not to mention in Cosmo Oil, through its achievements in environmental technologies including development of a hydrocarbon vapor recovery unit, a dioxin removal unit, and process wastewater treatment technology.



Dioxin removal unit

The hydrocarbon vapor recovery unit was developed to recover gasoline and other vapors during shipping from oil refineries and oil storage depots. In 1997, the recovery unit using the adsorbent developed by Cosmo Oil, the application called the "Cosmo adsorption system" to adsorb vapor, was put into practical use. This unit is now being supplied not only within Cosmo Oil, but to other petroleum companies as well. For example, the same technology was put to use in a volatile organic compound (VOC) recovery unit that provides a high recovery rate and space-saving size, and has been praised for its high level of safety. These factors all contribute to its wide use in the chemical, printing, and pharmaceutical factories.

Cosmo Engineering also introduced the adsorption unit technology that is installed after the fly-ash collector device of existing incinerators and can greatly reduce the concentration of dioxin, with removal rates of 99 percent or more. This greatly

decreases the dioxin generated by municipal and industrial waste incineration facilities.

The process wastewater treatment technology developed for oil refineries is also finding application in the livestock industry for the treatment of animal waste. The high-efficiency active sludge unit and denitrification and phosphorus removal units can be combined for an advanced level of waste treatment in hog farms.

Cosmo Ventures, Inc.

Cosmo Ventures, Inc. is involved in the development and sale of products, such as wastewater treatment systems and cleaning agents replacing CFCs, based on petroleum-related technology for the reduction of environmental impact that can also be applied to other industries.

Bioflora 01 is one such product for the treatment of wastewater containing oils using bioremediation (a wastewater treatment technology using microorganisms). Unlike existing treatment facilities, no chemicals or filtration films are necessary, and since oil or organic materials in the wastewater are biodegraded into water and carbon dioxide, it not only reduces the use of chemicals but also dramatically reduces the sludge generated during water treatment. We will promote the introduction of this technology to factories striving to achieve zero-emission operations.



Bioflora 01

Another product sold by Cosmo Ventures, Inc. is New Petrosafesol, a new cleaning agent that has no ozone depletion or global warming effect, replacing specified CFCs or trichloroethane as a detergent for metal parts. Because it has excellent washing and drying properties, and does not require equipment for washing with water, it has attracted much attention as a true next-generation cleaning agent.

Cosmo Trade & Service Co., Ltd.

Cosmo Trade & Service is a trading company; in FY 2001 a new Environment Development Division was

established to assist the import and sales of environment-related products including surface-strengthening and heat insulation materials.

Ashford Formula, a US-made concrete protector and strengthener, is used at distribution centers, home improvement centers, and factories throughout Japan. This product is used to strengthen concrete floors, helping to protect employees' health by suppressing concrete dust.

For Super Therm, a heat insulation coating material first developed by NASA of the US, new applications are being considered. We are developing a broad range of applications including insulation for railway vehicles, buses and trucks and other applications taking advantage of its sound-insulating properties in addition to its conventional use in insulating roofs and piping.

Cosmo Matsuyama Oil Co., Ltd.

Cosmo Matsuyama Oil Co., Ltd. whose businesses include production of petrochemical products, gasoline, kerosene, diesel oil, and jet fuel oil, contributes to the effective use of oil by flexibly responding to market needs for products.

The company, for example, receives benzene that is generated from the benzene separation process at oil refineries and uses it as a raw material for producing chemical products by processing it with equipment such as aromatics extractors.



Aromatics extractor processing petrochemicals

Pseudocumene, a petrochemical produced by Cosmo Matsuyama Oil, is used as a base material in a new method of neutrino detection at KemLAND, a neutrino observatory for a research project organized by Tohoku University.