



Results of the Medium-term Environmental Plan

環境中期計画活動実績

Fiscal 2004 was the last year of the Medium-term Environmental Plan that was launched in Fiscal 2002. The following highlights the major results of the Medium-term Environmental Plan and introduces 3 achievements of Fiscal 2004.

Results of Blue Earth 21

We outlined 3 major themes in the Blue Earth 21: “Zero Emissions”, “Green Purchasing”, and “Soil Environment Measures”, and promoted relevant activities.

3 Achievements of Fiscal 2004

In Fiscal 2004, we were not only able to achieve “supply of sulfur free gasoline and diesel fuel”, but we were also able to make steady progress in the “practical application of fuel cells”. In addition, we executed the “contract for obtaining emission credits to future 1 million t-CO₂”, a countermeasure to climate change.

Results of the Medium-term Environmental Plan "Blue Earth 21"

The company's united environmental effort as outlined in the First Medium-term Environmental Plan (Fiscal 2002 - 2004) was completed at the end of Fiscal 2004. The nine themes of the plan were implemented by each division and ultimately rendered many achievements. However, some issues still remain. We formulated the Second Medium-term Environmental Plan (Fiscal 2005 - 2007) in April 2005, which is a consoli-

dated plan for the entire Cosmo Oil Group, with focus on challenging new issues, as well as striving to resolve the unresolved issues in the First Medium-term Environmental Plan. The following is a summary of the current status of efforts being made based on the First Medium-term Environmental Plan and its three priority themes: zero emissions, green purchasing, and soil environment measures.

Zero Emissions

Reduction of Industrial Waste

In the effort to reduce industrial waste to as close to zero as possible (zero emissions), compared to our goal of a 1.5% landfill rate^{*1}, we achieved 1.2%. The average landfill volume at refineries for Fiscal 2002 through 2004 was reduced by 88% compared to Fiscal 1990, exceeding the industry goal of 67%.



Resource Conservation/Office Clean

The Office Clean Team was formed within the company to promote "Reduce, Reuse, Recycle". Copier paper was reduced by 8% (approximately 1.5 million sheets) as compared to Fiscal 2003, and computer paper was reduced by 33.3% (approximately 1.6 million sheets) in Fiscal 2003 as compared to Fiscal 2002. These levels were maintained in Fiscal 2004.



^{*1} Landfill rate (%) = Landfill volume/Generated volume
The above figure is the sum of all industrial waste from the refineries, the Kasumi Power Station, and oil depots.

Green Purchasing

For environmentally friendly products that are purchased range from office supplies to building materials, catalytic agents and containers, the voluntary standards are established for each product category. Over time, the number of product categories is planned to be increased. Voluntary standards have also been formulated for suppliers, and preference is given to those suppliers who respond in kind to our environmental measures. On the other hand, we are making efforts to persuade those suppliers who have not yet responded to our suggested standards. At present, approximately 500 companies have responded to our standards.



Soil Environment Measures

In order to avoid environmental risks caused by soil contamination at service stations or oil depots, we have been introducing measures to promote prevention and minimize environmental impacts in the even of a spill.

For the purpose of implementing an effective and planned effort, in August 2004, an expert group was formed in a department in charge of safety and environmental control. In Fiscal 2002, the Cosmo Oil Group conducted an interview-based investigation concerning soil contamination at affiliated service stations. Based on the results of those interviews, the Cosmo Oil owned service stations began conducting planned soil investigations in order of priority, and some specific locations were given guidance as necessary.

By Fiscal 2004, approximately 200 soil investigations were conducted at service stations including those that are no longer in operation. Based on the investigation results, soil remediations were undertaken at necessary locations. We actively continue the inspection at a rate of approximately 100 per year and we also press forward the preventative measures such as adopting the environment considered designs at service stations. Soil investigations are conducted at other business sites as well, and necessary measures are implemented based on those results. In Fiscal 2004, we spent approximately 1 billion yen on these soil environment measures.



Themes of Fiscal 2004

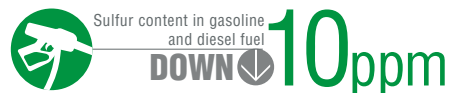
In January 2005, We Developed Sulfur Free Gasoline and Diesel Fuel (Sulfur Content of Less Than 10ppm)

On January 1, 2005, Cosmo Oil began distributing sulfur free gasoline and diesel fuel. In addition to using the already existing direct desulfurization unit at the Sakaide Refinery, FCC gasoline desulfurization units were newly installed at the 3 refineries in Chiba, Yokkaichi, and Sakai, contributing to the realization of desulfurized gasoline. It became possible to produce desulfurized diesel fuel by using a new catalyst that was developed exclusively by Cosmo Oil.

The low sulfur content gasoline and diesel fuel standards will be set at 10ppm or less in the EU beginning in 2009, and the upper limit of sulfur in gasoline will be set at 80ppm with an average of 30ppm and 15ppm or lower in sulfur of diesel fuel in the United States from 2006. In Japan, the government has set regulations requiring diesel fuel to be sulfur free by 2007, and gasoline by 2008. We were able to realize sulfur free diesel fuel and gasoline well in advance of January of 2005, making Japan the fastest country in the world to make sulfur free gasoline and diesel fuel a reality.

Two benefits are anticipated as a result of developing desulfurized gasoline (with a sulfur content of 10ppm or less). One is a reduction in the amount of CO₂ that is emitted thanks to improved fuel consumption. This is because sulfur free gasoline should be necessary as a fuel for direct fuel injection engines and lean-burn engines that are beginning to become developed and widespread. The other is a reduction in restricted automobile gas emissions. By lowering the sulfur content in gasoline and diesel fuel, the endurance of emission gas treatment equipment improves. As a result, restricted gas emissions such as nitrogen oxides (NO_x), carbon monoxides (CO), hydrocarbons (HC), and particulate matter (PM) should be reduced.

In this way, desulfurization is expected to produce two positive effects, "reduction of CO₂ emissions due to improved automobile fuel consumption", and "reduction of NO_x and PM automobile gas emissions", both of which are new ways to address global environment conservation.



People's Voice

"Sulfur Free" refers to a state where the sulfur content of gasoline or diesel fuel is reduced to practically nonexistent levels (10ppm or less). The objective of desulfurization is to increase the fuel consumption of automobiles and to reduce the amount of CO₂ emissions (a countermeasure against climate change), and to tackle the problems of air pollution by reducing NO_x and PM.

For a producer like us, desulfurization places an enormous burden in terms of production and cost. However, we were able to begin supplying sulfur free gasoline and diesel fuel in January 2005. Just 2 years after the top management proclaimed that "we will realize sulfur free fuel", we accomplished the feat. I think it is fair to say that meeting this objective far in advance of the regulatory deadlines set forth by the government, and being the first in the world to introduce these measures are truly a revolutionary accomplishment.

Satoshi Ito

Satoshi Ito
Corporate Planning Department



Steady Advances in the Practical Application of Fuel Cell

In April 2005, we initiated a cross sectional team on fuel cell for the purpose of its practical application that is one of the important goals for our company as an integrated energy company.

1. Efforts towards Realizing Practical Applications for the Stationary Fuel Cell

We are currently in the midst of studying a 1kW grade stationary fuel cell. We placed a stationary fuel cell using LP gas as fuel at the Isaka dam cycle park in Yokkaichi City in Mie prefecture, and began conducting field tests in March 2005 at a facility within the park which is supplied with electricity and heated water.

In addition, we are currently conducting a survey on household energy use, and evaluating energy efficiency and economic benefits of introducing stationary fuel cells for household use. The data gathered from these studies will be used in the "Large Scale Field Operation Concerning Stationary Fuel Cells" to be conducted by the Ministry of Economy, Trade and Industry, and will also be applied to the development of practical applications of kerosene fuel cells.

2. Efforts towards Realization of the Hydrogen Station

In order to create a hydrogen station accompanied by the gas supply function, we are working to develop small, high efficiency hydrogen production equipment. In addition, taking advantage of the knowledge and experience gained at the JHFC Yokohama-Daikoku Hydrogen Station*¹ that has been in operation since March 2003, we are working on a business model for hydrogen stations.

*1 JHFC is a project being implemented by the Ministry of Economy, Trade and Industry as part of their research assisting business in the field testing of polymer electrolyte fuel cell systems and is a combination of the "Fuel Cell Vehicle Demonstration Study" and the "Demonstration Study of Hydrogen Fueling Facilities for Fuel Cell Vehicles".

1 Million t-CO₂ Emission Credit Purchase Agreement

Being a business that handles fossil fuel, we attach great importance to the issue of greenhouse gas emissions that are generated directly or indirectly by our business. In view of sustainable development of our society, we feel this is an issue that we should confront head on as a management priority. A specific example of our efforts in this area includes our participation in the GG-CAP (Green Gas Credit Aggregation Pool) which is an international organization for obtaining emission credit, through which we have executed a contract to obtain emission credit for 1 million t-CO₂ in the future.

This is an agreement to purchase credits from the Kyoto Mechanism, namely, CDM (Clean Development Mechanism*¹) and JI (Joint Implementation*²) projects, through the first private emission credit purchasing scheme created by Natsource, an emission credit brokerage company.

*1 The acquisition by a developed country which has set reduction goals of the reduced portion of greenhouse gasses as a result of greenhouse gas reduction projects being implemented in developing nations which do not yet have a reduction goal.

*2 The transferring or acquisition among developed nations of reduced units of greenhouse gases as a result of greenhouse gas emission reducing or absorbing projects implemented by the relevant countries.

