



7. Transport Division Environmental Measures

① Ground Transportation

Petroleum products are transferred from refineries to depots, and from there they are transported to service stations and factories. Tank trucks are the main means of transport, and for transport from refineries to depots, railroad and marine tankers are used as well.

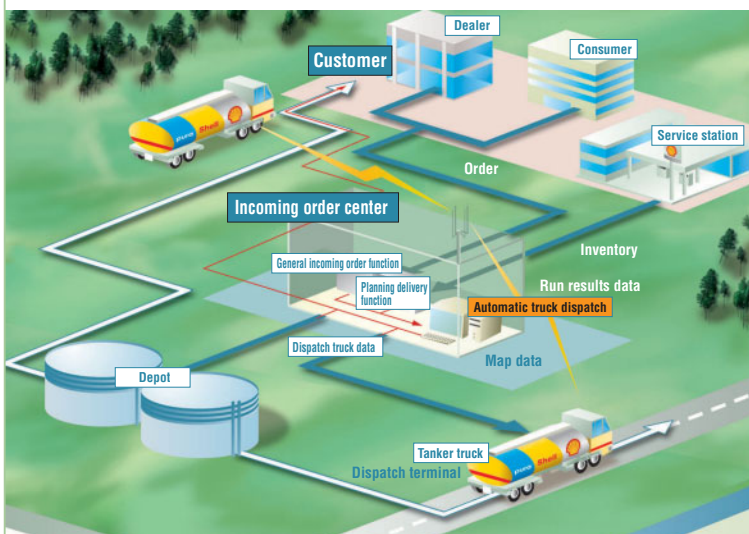
Fuel consumption, exhaust gas emissions, and damage from accidents are all transport issues and may be linked to environmental problems. Showa Shell recognizes that it can counter these problems expeditiously by establishing a more efficient transport structure and system. The company has set a target of reducing fuel consumption by 9% from 1990 levels by 2010.

The first step toward increasing transport efficiency has been increasing the size of tank lorry and marine tankers. Showa Shell uses large tank lorry (capacity of 20 kl and over) for more than 74% of its transport, an increase from 52% in 1995. The company has nearly achieved its goal of using large tank lorry for 75% of its transport.

Showa Shell has also increased the number of its super-large tank lorry (capacity of 24 kl and over) from 9 trucks in 1996 to 70 in 2004. The company also plans to raise the efficiency of its marine transport by increasing the size of its tanker ships and reducing transport distance, all the while keeping safe operations in mind.

In addition, Showa Shell is striving to improve transport efficiency and cut distribution costs through the use of a computer-controlled distribution planning system for

■ Calculating the Minimum Tank Lorry Delivery Distance with NEU PLANET



tank lorry, NEU PLANET. The system has been reviewed and updated as necessary to ensure the reliability of its data. Showa Shell is promoting other initiatives to improve efficiency, for example by consolidating depots and encouraging night-time and holiday tanker truck deliveries in order to avoid traffic congestion. This reduces fuel consumption and increases turnaround times.

② Marine Transport

● Increasing tanker size and optimizing transport distances

Showa Shell has been actively increasing the size of its tankers and optimizing transport distances in an effort to raise the efficiency of its domestic marine transport.

Larger tankers call for improving tanks and reception terminal facilities, and Showa Shell has been committed to making the adjustments necessary for more efficient marine transport.

Average tanker capacity has increased from 2,400 kl in 1995 to approximately 4,000 kl in 2004 as a result of the company's active efforts to increase usage of larger tankers.

The average transport distance for domestic transport ships continued to increase slightly through 2000 due to oil terminal streamlining and reductions. Since then, however, Showa Shell has been able to reduce transport frequency and distance by increasing domestic tanker size, optimizing transport plans for joint delivery, and adjusting supply and demand balances.

● Ship Inspections (Domestic Ship Screening System)

Starting in 2004, Showa Shell Group has been improving its screening system to check the safety and soundness of its domestic sea tankers transporting products as well as the safety of tankers received by group terminals.

Ship inspections involve checking documents, interviewing crew, and inspecting facilities in accordance with STASCO's (Shell International Trading & Shipping Co., Ltd.) Domestic Marine Tanker Checklist. STASCO developed these guidelines and Showa Shell Sempaku revised them to meet conditions particular to Japan. If the inspection turns up a safety problem, the company takes necessary actions, such as requesting corrective measures or denying permission for use of the tanker.

Tankers that have undergone inspections conducted by another oil company and whose results are registered in OCIMF*1 SIRE*2 are regarded as having undergone

inspection by Showa Shell itself, and can be deemed safe based upon the other company's results.

Showa Shell currently plans to conduct safety inspections of approximately 1,100 vessels, nearly all domestic sea tankers used by its group businesses.

*1 OCIMF: Oil Companies International Marine Forum

*2 SIRE (report): Results of a petroleum company's inspection of (mainly foreign) vessels are registered in the OCIMF SIRE system. All petroleum companies may refer to reports in this system.



8. Soil Contamination Countermeasures

Environmental pollution is often invisible to the eye, and severe damage may have occurred by the time it becomes apparent. This is nearly always true with soil contamination. Toxic substances may penetrate the soil or flow into underground water reserves and contaminate the environment.

Europe has been tackling this issue for more than ten years, and the Royal Dutch/Shell Group has developed a variety of technologies to tackle the problem.

The Soil Contamination Countermeasures Law was

enacted in Japan in February 2003. Before this, however, Showa Shell developed its own soil contamination risk assessment system (NERA, see page 38) and introduced it in 2000. The company was very proactive in coping with soil contamination, acting even before required to do so by law.

Showa Shell has conducted joint research with the Petroleum Energy Center since 2001, contributing to new survey methodologies. It also conducts assessments of soil contamination conditions at the site of a former refinery in Niigata, where a fire resulting from a major earthquake occurred in 1964.

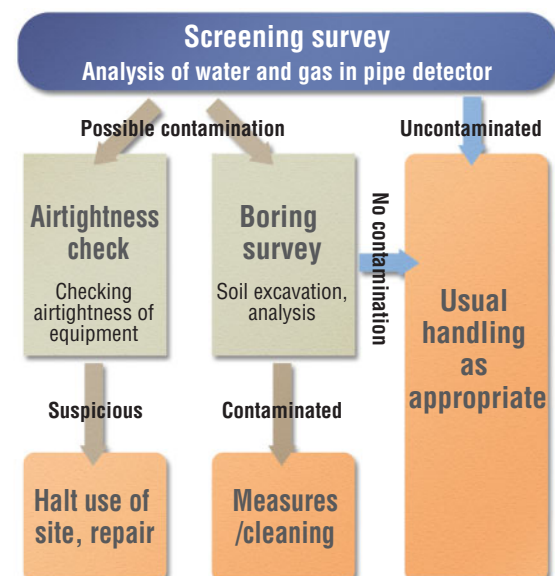
① Soil Contamination Countermeasures at Service Stations Owned by Showa Shell

Showa Shell established the Site Solution Group in mid-2004, integrating individual departments' separate countermeasures to soil contamination into one working group. This reorganization was intended to be a more effective countermeasure against soil contamination.

The Site Solution Group developed an internal set of soil contamination-related standards and response procedures. It has implemented a systematic soil contamination survey at approximately 1,200 Showa Shell-owned service stations and garage pumps (gas pump facilities on customer sites), and responded with measures as necessary. In 2004, screening surveys, or pipe water analyses, and boring soil surveys were conducted at approximately 200 locations. Countermeasures were taken as necessary where contamination was detected.

The functions of the Site Solution Group merged with the Retail Sales Department's Engineering Division in 2005 in order to improve work efficiency.

■ Soil Contamination Survey Flowchart

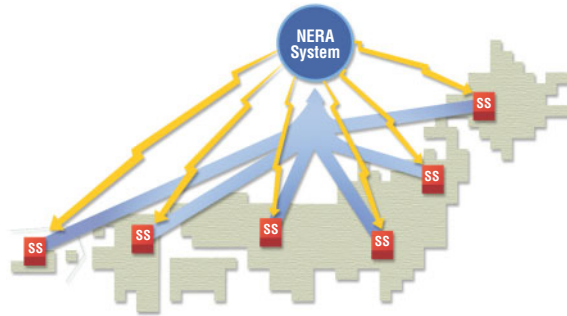




8. Soil Contamination Countermeasures (continued)

② The Network Environmental Risk Assessment (NERA) and Soil Contamination Risk Management

There have been cases of soil pollution caused by petroleum products at Showa Shell service stations. In 2000, Showa Shell used the Network Environmental Risk Assessment (NERA) system developed by Thornton Research Center of the Royal Dutch/Shell Group and to assess approximately 5,000 Showa Shell service stations for the possibility of soil contamination. The results and suggestions for improvement were offered to service station managers.



③ Other Soil Contamination Countermeasures

Showa Shell is also implementing preliminary preventative measures against soil contamination. With asphalt-coated tanks over a given age, the company is either replacing them or coating inner tanks with resin in order to prevent corrosion.

Service stations in earthquake-prone areas are also being checked for airtightness in order to ensure their safety in the event of a major earthquake.

④ Collaboration with Affiliate Companies

Showa Shell not only implements soil contamination countermeasures and determines effective resolutions on its own, but also in collaboration with other companies. Shoseki Engineering Co., Ltd., provides proprietary technology for surveys and countermeasures, and K.K. SVC Tokyo provides environmental analysis technology.

The company is able to use its accumulated experiences and know-how to actively help other companies facing similar issues through its cooperating companies.

Detailed soil survey

Shoseki Engineering Co., Ltd.
Designated Survey Company
Designation number
Env. 2003-1-502



Soil contamination analysis

K.K. SVC Tokyo
Registered environmental
measurement certification
business
Governor of Kanagawa No. 155



9. Preserving the Natural Environment

Showa Shell carries out an environmental assessment before embarking on any large-scale developments or facility construction. The assessment gauges the project's foreseen impact on the environment, and engages both public and local private entities in an effort to minimize such impacts.

Showa Shell plans to standardize each of its group companies' efforts to protect the natural environment, and is moving toward introducing the Environmental Standard, one of the Royal Dutch/Shell Group's standards. The Environmental Standard would clearly list regulations such as a ban on usage of ozone-destroying substances and halon-containing products, and requirements for environmental impact monitoring at facilities such as operational sites. The Environmental Standard is presently being introduced at all Royal Dutch/Shell Group companies around the world.

10. Preserving Biodiversity

Biodiversity is a property of the entire system in which life on earth has evolved into different species in accordance with their varied habitats over millions of years. Those species form diverse living organisms that are also dependent on each other. Biodiversity is an important mechanism of nature that is essential for the existence of humankind.

However, humankind's recent industrial activities now endanger the biodiversity system. Activities such as landfills that erode tidelands, deforestation projects that

endanger natural habitats, and capture of wild animals and plants for commercial use all threaten earth's biodiversity.

To protect the earth's biodiversity, the UN promulgated the Convention on Biological Diversity in 1993. Japan was a signatory nation.

Protecting biodiversity is important to the Royal Dutch/Shell Group, and it established its own Biodiversity Standards in 1999. Showa Shell works hard to protect biodiversity and is working toward creating an internal company structure to achieve its objectives.

11. Providing Eco-conscious Products and Searching for New Energies

● Hydrogen Fuel / Hydrogen Stations for Fuel Cells

Showa Shell has been participating in two programs sponsored by the Ministry of Economy, Trade, and Industry (METI), the Japan Hydrogen and Fuel Cell Demonstration Project and the Hydrogen Refueling Station Pilot Program. Ariake Hydrogen Station, Japan's first hydrogen refueling station, opened in June 2003, supplying liquid hydrogen and compressed hydrogen.



Showa Shell has also been involved in the Fuel Cell Demonstration Test subsidy program of Mie Prefecture since April 2005, and has started an operations demonstration of household fuel cell systems.

● GTL (gas-to-liquids) Fuels

GTL is a clean liquid fuel synthesized from natural gas that contains almost no sulfur or aromatic components. It is the focus of much attention due to its environmental friendliness.



Test sales of Fan Premium, especially for fan heaters, were held from December 4, 2004, to March 31, 2005, to gauge future sales of GTL heating oils.

A demonstration highway run of GTL mixed diesel oil was held from November 2003 through September 2004, showing that GTL fuel produces less exhaust emissions. The demonstration was conducted in conjunction with Mitsubishi Corporation, the Shutoken Consumers' Cooperative Union (Co-op), and Shell International Gas.

● LNG Power Generation

In August 2003, Showa Shell launched Ogishima Power Co., Ltd., a planning company, in cooperation with Tokyo Gas Co., Ltd., and Shell Gas BV.



Together, they undertook preparations for the startup of a large-scale power generation project (1.2 million kW) using liquefied natural gas (LNG), a clean and environmentally friendly fuel.