



Efforts to Prevent Environmental Pollution

Soil Contamination Countermeasures

Pollutants can reach places not visible to the eye, causing serious damage to the environment before they are detected. This is nearly always true with soil contamination. Toxic substances may penetrate the soil or flow into underground water reserves and taint the environment. Europe has been tackling this issue for more than ten years, and the Shell Group has developed a variety of technologies to tackle the problem.

In 2003, the Soil Contamination Countermeasures Law was enacted in Japan. Before this, however, Showa Shell developed its own soil contamination risk assessment system, the Network for Environmental Risk Assessment (NERA) (see

page 39), and introduced it in 2000. The company has always been very proactive in coping with soil contamination, and acted even before being 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.

In 2006, the company completed voluntary soil contamination surveys at 1,200 Showa Shell-owned service stations.

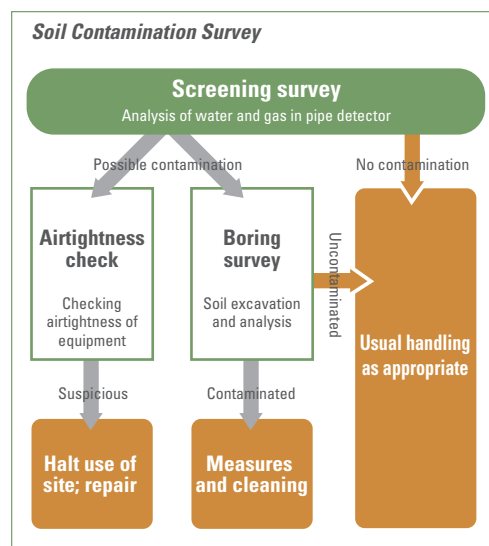
Voluntary Response to Soil Contamination at Service Stations

Showa Shell established the Site Solution Group in mid-2004, integrating the separate groups working on soil contamination countermeasures from different departments into one working group. This reorganization was carried out in order to more effectively deal with the threat of 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 (including gas pump facilities on customer sites), and responded with measures as necessary.

By the end of 2005, screening surveys and pipe water analyses were completed at approximately 750 service stations. At service stations where the possibility of contamination exists, soil samples will be taken by boring, and necessary measures will be carried out if contamination is confirmed.

In fiscal 2006, voluntary surveys that included the boring of soil samples were completed at approximately 1,200 Showa Shell-owned service stations.



Voluntary Response to Soil Contamination at Facilities and Land Other Than Service Stations

In addition to service stations, Showa Shell is conducting voluntary surveys of oil refineries, land used for tank yards, and residential and commercial-use land, employing engineering practices compliant with the Soil Contamination Countermeasures Law. If a survey confirms contamination of a site, the local authorities are notified and guidance requested,

while necessary measures are taken.

Since 2004, the company has been establishing standards for soil contaminated with oil that are in keeping with the risk-based corrective action concept introduced in Europe and the United States, formulating standards to lower risk to the environment, and taking the needed countermeasures.

Other Soil Contamination Countermeasures

Anticipatory measures in place to prevent soil contamination from oil spills include the replacement of filling station tanks after a set number of years and the inspection of filling stations for leaks after earthquakes above a set intensity. To reduce the environmental impact of such corrective work, Showa Shell has, since 2003, used proprietary land farming technology to reduce the concentration of oil in contaminated soil. Then, in 2005, the company installed bioreactors to perform voluntary decontamination of VOCs in underground water.



Bioreactor in place at a service station.

Contributing to Society through Subsidiaries and Affiliates

Showa Shell's voluntary activities to reduce soil contamination are undertaken in collaboration with its subsidiaries and affiliates. Showa Shell then shares the experience gained and technology developed in the course of these activities with firms who might encounter the same problems.

In 2005, Showa Shell shared with scores of companies the expertise in surveys and countermeasures of Shoseki Engineering Co., Ltd., and the environmental analysis capabilities of K. K. SVC Tokyo.



Detailed soil survey
Shoseki Engineering
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



Soil Contamination Risk Management by NERA

Showa Shell uses the NERA methodology developed by the Shell Group's Thornton Research Center in its soil contamination risk management. In 2000, the company used NERA to assess soil contamination risk at approximately 5,000 Showa Shell service stations. The results and recommendations were communicated to the operators of the service stations.

