Measures by Epson Regarding Water Pollution in China

In China, Seiko Epson Corporation ("Epson") has been setting up plants primarily in the Huanan and Huadong regions since 1985, when it established Epson Engineering (Shenzen) Ltd. (ESL) as its first plant on Chinese soil. The environmental measures employed by the manufacturing subsidiaries in China follow the examples set by Epson plants in Japan, while taking into consideration the actual local circumstances in China.

China is currently in the midst of an economic boom, with a GDP that has maintained a growth rate exceeding 10% every year since 2003. However, the high rate of economic growth in China is beginning to cause the social fabric to show signs of strain, similar to the stresses Japanese society suffered during its high economic growth period. Rapid urbanization resulting from the tremendous growth of the economy has outstripped the building of the social infrastructure, and has had an adverse effect on the environment in the form of air and water pollution. Epson carries out environmental measures that take the local social infrastructure in China into consideration. At factories involved in the production of electronic devices in particular, Epson undertakes measures that take local conditions into consideration in dealing with water pollution, as these factories use such a large quantity of water.

	Company Name	Location
FJEC	FUJIAN EPSON CO.,LTD.	Fuzhou
ESL	EPSON ENGINEERING (SHENZHEN) LTD.	ShenZhen
PIF1	(PLANT-1): PO SHEN INDUSTRIAL FACTORY	ShenZhen
PIF2	(PLANT-2): PO SHUN INDUSTRIAL FACTORY	ShenZhen
FIF	FU SHUN INDUSTRIAL FACTORY	ShenZhen
SZE	SUZHOU EPSON CO., LTD.	Suzhou
EGL	E&G ELECTRONIC (SHENZHEN) LTD.	ShenZhen
TEL	TIANJIN EPSON COMPANY LTD.	Tianjin
ETWX	EPSON TOYOCOM (WUXI) CO.,LTD.	Wuxi
ETSZ	EPSON TOYOCOM SUZHOU CO.,LTD	Suzhou
SEM	SHANGHAI EPSON MAGNETICS CO., LTD.	Shanghai

Epson's manufacturing companies in China

China's Water Problem

China is currently facing a very serious water problem. On top of simply not having sufficient water resources as a country, China is also burdened with a massive population, estimated at 1.3 billion people, that is placing an ever-growing demand on water to meet its needs for daily living as it develops and advances culturally. Moreover, the work sites in China, which have become the workshop of the world, consume a staggering quantity of water. At the same time, wastewater treatment facilities and the related infrastructure to treat both domestic and industrial wastewater produced by this huge population are still undeveloped. The discharged wastewater flows into rivers, and comes back to be used again as drinking water or industrial water. A vicious cycle of water shortage, deterioration of water quality at water sources, and deterioration of water quality of domestic and industrial wastewater, is giving rise to a wide range of serious problems.

In order to improve this situation, it is essential that all companies carry out even greater efforts to comply with regulations that are becoming much stricter, and undertake capital investment in technologies related to water treatment. As an environmentally-advanced company, Epson is actively undertaking efforts to resolve these issues.

China's Water Pollution Problem and Regulatory Measures

In June 2007, pollution of the water in Taihu Lake near the Yangtze delta seriously affected the source of water for drinking and industrial use. According to an investigation carried out by the State Environmental Protection Administration, the pollution in Taihu Lake is caused by wastewater produced by the residents and factories in six categories of industries: spinning and dyeing, chemical, paper, steel manufacturing, electroplating, and food manufacturing. Jiangsu province's environmental protection department announced that the emission limits for major pollutants discharged by urban sewage plants and key industries in the Taihu Lake area of Jiangsu would officially take effect from January 1, 2008. Sources report that 30% of the enterprises in the Taihu Lake area may be forced to close down, suspend operations, merge with others, or shift to a different line of production as a result of the new standards.

The three factories that Epson has in the Huadong region rely on Taihu Lake as a source of water for their manufacturing and production needs. Therefore, to respond to the challenges presented by the ever-worsening pollution of the water source, efforts are being made to increase and strengthen facilities to carry out pre-treatment of water for industrial use.

Monitoring Changes in Water Quality and Pre-treatment of Industrial Water

Water taken in for industrial use normally comes from rivers or lakes. Considering the actual state of pollution in these rivers and lakes, it is essential that monitoring of water quality be carried out when taking in water in order to promptly identify any changes, and measures be employed in advance that appropriately counter the changes in water quality. If the quality of the water is such that it cannot be purified by pre-treatment facilities, factories that depend on this water will become unable to carry out their operations. Consequently, if it is determined that the quality of the water for industrial use will continue to deterior-

ate, it will be necessary to bolster the capabilities of the pre-treatment facilities.

Regulations Related to Industrial Wastewater

Because water pollution at water sources is such a serious issue, the regulations governing industrial wastewater produced by every company are quite strict and will only grow stronger. Efforts are underway to revise and strengthen the Water Pollution Prevention and Control Act regarding such areas as a licensing system for water pollution, regulations on total allowable volume of pollutants, and instituting stiffer penalties for the legal representatives of the company responsible for the pollution. In giving more teeth to regulations governing companies that use water, China's Ministry of Information Industry has taken the view that low-tech enterprises, in other words, companies engaged in heavy industries, are bad for the environment, while high-tech enterprises are friendly to the environment.

Epson's Industrial Wastewater Treatment System

Factories involved in the production of electronic devices use vast quantities of industrial water in carrying out their operations. To ensure stable operations at factories manufacturing electronic devices in China, it is absolutely essential that a reliable and continuous supply of industrial water be available for use by these factories. In order to maintain stable operations of its electronic device manufacturing factories in China, Epson employs a water treatment system, shown in the drawing below, at each of these factories. This system enables the factories to control the inflow (intake) and outflow (discharge) of industrial water. Passing industrial water through a pre-treatment facility ensures that the quality of the water taken in meets the level required for the production of electronic devices. After the water is used, purifying it by passing it through a post-treatment facility ensures that the water being discharged meets the level of quality stipulated by regulations.

Recycling Industrial Wastewater

Although regulations differ from province to province in China, the regulations pertaining to water are particularly strict in the Shenzen district in Guangdong province. At ESL, where its approximately 10,000 employees carry out operations around the clock, meals are served four times a day: in the morning, afternoon, evening, and at night. The water used in preparing these meals and washing the dishes accounts for the greatest proportion of the water used in the factory. In complying with the strict water regulations imposed by the administrative authorities, ESL undertakes efforts such as recycling water used to wash hands in restrooms. FIF, which manufactures watch and clock parts, recycles 80% of its wastewater, exceeding the 60% wastewater recycling rate set by the government. Through such efforts, each of Epson's factories is responding to the laws and regulations by coming up with various ideas and maximizing technologies.

Epson's Water Pollution Measures

With respect to the impact its business in China has on the country's water, Epson intends to continue its proactive efforts, including (1) carrying out investment in plant and equipment to bolster pre-treatment facilities to treat industrial water due to pollution of water sources that supply industrial water; (2) carrying out investment in facilities and technologies with the aim of boosting the recycling rate of industrial wastewater; (3) increasing the frequency with which monitoring is conducted as well as setting up facilities in order to cope with the tightening of regulations related to industrial wastewater; (4) providing information to assist administrative authorities in investigating sources of pollution.

To ensure further expansion and continuation of its business in China, Epson aims to play an active part in achieving the Chinese government's dual mission of environmental protection and economic development.