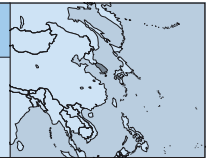


# KOREA, REPUBLIC OF

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## Introduction

Developments in information and communications technologies (ICTs) have reduced the life cycle of electronics such as computers and other telecommunication devices. Electronics are produced, consumed and disposed of faster than ever, which causes many environmental issues. Heavy metals and chemicals are used in manufacturing electronics which contaminate the environment. And workers who are exposed to the toxic materials suffer from fatal diseases. However, the South Korean government's approach and the business response towards these issues are still controversial at home and abroad.

On 12 March 2010, Greenpeace activists stuck huge stickers on Samsung's Benelux headquarters in Brussels saying "Samsung = broken promises". This was in protest against its use of polyvinyl chloride (PVC) and brominated flame retardants (BFRs) in all its products, despite its promises to clean up its act. Samsung was the first company to have promised not to use these materials. Local human rights and workers' health advocacy groups also blame Samsung for the many cancer cases that have been reported amongst its workers. According to Supporters for the Health and Rights of People in the Semiconductor Industry (SHARP),<sup>1</sup> an organisation founded in 2007 to support Samsung workers who suffer from cancers, 23 hematopoietic cancer cases (including acute leukaemia) among its workers have been reported to date and ten of them have died.<sup>2</sup> On 31 March 2010, another Samsung worker died of leukaemia. Her death fuelled debate over carcinogenic materials used in its production lines and working environment. Samsung acknowledges a small number of the reported cases but argues that even in those cases its work environment had nothing to do with them. But a local media outlet disclosed that an internal Samsung "environmental handbook" suggests that it used six types of carcinogenic materials including trichloroethylene (TEC), and more than 40 types of dangerous irritants.

As for recycling ICT products, environmental groups point out that South Korea does not have a proper system to collect and recycle old telecommunication devices. As of February 2009, 46 million Koreans or roughly 95% of the population used mobile phones. An average Korean switches mobile phones once every two years as new products are more frequently marketed and life cycles of these devices are reduced. As a result, fourteen million mobile phones become "old" ones every year. Among them, only three million are

collected properly, meaning eleven million mobile phones are either stored in people's houses or discarded with trash. This means that only about 20% of old mobile gadgets are properly recycled.<sup>3</sup>

## Policy and legislative context

### *Electronics and occupational health and safety*

Notification No. 2008-26 of the Ministry of Labour lists 56 carcinogenic materials. It sets exposure limits for 39 materials but does not provide the limit for seventeen. Materials recognised as carcinogens by the ministry include radiation, soot and tar, vinyl chloride, chrome, benzene and silica.

Article 42, Section 2 of the Korean Industrial Safety and Health Act says the minister may, if deemed necessary to diagnose occupational disease and identify the causes, conduct an occupational disease investigation on the correlations between workers' diseases and hazardous elements at the workplace.

### *Extended producer responsibility (EPR)*

In 1992, the government introduced the deposit-refund system under which producers deposit a certain amount of money in a recycling fund and get a refund after collecting their old products. But the approach did not produce the desired outcome. As a result an extended producer responsibility (EPR) system was introduced to complement the deposit-refund system. EPR imposes recycling quotas on the manufacturer. When a company fails to meet the standards, the government imposes a fine that is greater than the cost of implementing a proper recycling system. Producers have a responsibility for recycling their products and packaging materials and the cost is reflected in the consumer price. This principle has been applied to refrigerators, washing machines, TVs, air conditioners and computers including laptops since 2003, and was expanded to include audio equipment and mobile phones in 2005, and printers, copiers and fax machines in 2006.

### *Act for Resource Recycling of Electrical/Electronic Products and Automobiles*

In January 2008, the Act for Resource Recycling of Electrical/Electronic Products and Automobiles was enacted to force producers to reduce the use of hazardous materials and to ensure that their products are eco-friendly through proper disposal and recycling. The system covers electronics and automobiles comprehensively. Article 20 of the Act

1 [cafe.daum.net/samsunglabor](http://cafe.daum.net/samsunglabor)

2 Park Ilwhan (2010) *Samsung electronics and leukemia*, Supporters for the Health and Rights of People in the Semiconductor Industry (SHARP).

3 Institute of Environment and Health, Gachon University of Medicine and Science (2005) *Research on the status of disposal and recycling of e-waste*.

requires manufacturers to collect and dispose of packaging materials as well as old electronics and old vehicles when they sell new ones, except when consumers do not want to give old ones back.

### Urban Mining

The Seoul metropolitan government launched the Urban Mining project in July 2009. It is about collecting gold, silver and palladium in old electronics and old mobile phones. Experts expect the project will help the country's trade balance by roughly USD 2.5 billion when the recycling rate is up by 20%, and reduce as many as 1.5 million tonnes of CO<sub>2</sub> emissions when metal materials are recycled and supplied through urban mining.

### Production and environment

Many people believe the electronics industry is a clean industry. In contrast, many workers are reported to have been affected by hazardous materials while producing electronics. But few Korean researchers have studied workers who are potentially exposed to carcinogenic materials in South Korea. As a result, the company's argument is generally accepted when workers raise questions about health problems related to harmful materials they have used. That means the workers' health issues are neglected until a new study finds some concrete cases for them.

Some research on toxic materials used in the ICT product manufacturing process is being conducted. The management of hazardous materials is usually not open to public scrutiny. It is even harder to track hazardous material management in much smaller companies than Samsung, because the companies and their workers are usually out of media and public attention.

### Semiconductor manufacturing and working environment

A Samsung semiconductor factory worker, Yumi Hwang, died of leukaemia on 5 March 2007. The incident triggered a debate over Samsung's responsibility for leukaemia cases among its workers. SHARP says 47 cancer cases among Samsung workers were reported as of 18 May 2010. But Samsung has denied its responsibility for the fatal diseases.

On 24 November 2009, the Korean Workers' Compensation and Welfare Service (COMWEL), a government agency which is responsible for workers' damage compensation insurance, disregarded the workers' claim to request compensation, saying that no carcinogen was found in the manufacturing process in the epidemiological investigation and, as a result, the cancers are personal issues. The workers and the bereaved families of the Samsung workers filed administrative litigations demanding to revoke COMWEL's decision on 11 January 2010.

The gist of the litigation is that the epidemiological investigation is not convincing. There was no transparent and verifiable process in the investigation, which can lead some results to be distorted and left out. It is also difficult for the

complainants to verify the results in the case when there are usually several years between exposure to the harmful materials and the onset of diseases. Article 107, Section 2 of the enforcement regulations of the Korean Industrial Safety and Health Act says an epidemiological investigation may be done in cases when employers, representatives of workers, health managers or doctors demand it to find out how a disease was contracted; when COMWEL demands it to determine whether a disease is related to work; when the Korea Occupational Safety and Health Agency (KOSHA), a government agency responsible for occupational health issues, demands it to prevent diseases; and when a head of the Ministry of Labour offices demands it to identify correlations between harmful factors and workers' health. But SHARP points out that the system ignores workers' rights to know and to participate in the process, and these rights should be given to workers. The law says a representative of workers such as a trade union staff person can attend the investigation but the complainant cannot be a part of it. Without trade union representation, workers or advocacy groups do not have any route to raise questions about the investigation. SHARP demands that carcinogens and working environment issues be thoroughly identified to prevent other fatal cases.<sup>4</sup>

### Limits of EPR

The government imposes recycling quotas on companies, although the volume of old electronics collected and their distribution routes are still not clear, environmental groups say. The Ministry of Environment annually announces recycling quotas in consideration of factors such as a company's volume of marketed products, the volume of packaging materials, and the volume of its own products the company collects. Despite this, quotas are typically set considering the volume of marketed products. Electronics have different life spans. This means that determining quotas mainly depending on the volume of marketed devices is not the right way to go. Many companies do not send reusable old materials they collect to second-hand markets because they need to meet the recycling quota (by just disassembling old goods). Some producers and their associations contract out the collecting and recycling process to recycling companies by subsidising the companies and then buying the old technology again to meet the quotas. A policy such as imposing quotas without concrete measures to promote recycling has many loopholes.

### E-waste collecting

Effective management of electronic waste (e-waste) requires identifying the volumes accurately as well as controlling toxic materials properly. In Korea, however, we still do not know the exact figure of e-waste volumes generated.

4 Kongyu Jung-Ok (2009) *The limits and problems of epidemiological investigation*, Supporters for the Health and Rights of People in the Semiconductor Industry (SHARP)/Green Consumers Network. [www.gcn.or.kr](http://www.gcn.or.kr)

Old mobile phones are mostly collected through dealers which nevertheless do not have a legal responsibility to collect them – this responsibility rests on the producers. This lack of a legal responsibility means the collection of mobile phones is not effective, and public awareness about recycling mobile phones is low. The collecting rates also decreased after a system of compensation for old devices was scrapped. The system had allowed companies to give consumers some money in exchange for taking their old phones.

The Green Consumers Network in Korea has run a campaign to reduce e-waste since 2004. It has tried to promote public awareness on the need for proper disposal and recycling of e-waste by designating a “zero e-waste” day.

The Korea Association of Electronics Environment, an electronics business association, was founded to manage a collecting and recycling system. It divided the collection zones in South Korea according to five provinces: the central province, Chungcheong, Youngnam, Honam and Cheju. But this system has its problems. Unlike old electronics collected by producers, old electronics collected through the local centres do not have useful materials because municipalities first take them out before they are delivered to the producers. Environmental problems such as freon gas emissions are reported as well.

### Exporting e-waste

Forty percent of old electronic appliances are collected domestically. More than 30% of old mobile phones containing metals such as gold and silver are exported to China. Some old large electronic appliances are disassembled in local facilities managed by municipalities, and private companies also export them to China. Small electronic devices are exported to China in inappropriate ways even though many of them are not reusable. Apparently they are exported to China as second-hand goods because waste is not allowed to be exported. Exporting these waste-like electronics can cause serious environmental problems when the destination countries do not have proper disposal facilities.

### Limits of urban mining

The Ministry of Environment says the potential of urban mining in South Korea is about half of that of more developed countries. In terms of scarce metals, the country's capacity to extract and reprocess materials is just 20% of more developed countries. Only twenty recycling companies (or 5.5% of recycling companies) can reprocess scarce metals.

Collection rates of old electronics increased after EPR was introduced in 2003, but still remains low compared to vehicles. The collecting of old vehicles was 75.6% in 2008, but rare materials in vehicles are still rarely recycled because of a lack of processing technologies. A lack of awareness of urban mining is also blamed for the poor record in collecting e-waste. The Korea Zero Waste Movement Network<sup>5</sup>

surveyed 238 Seoul residents and found only 42% of them were aware of changes in ways of collecting small electronics.

### New trends

- The government announced a master plan for waste recycling for the next ten years in response to worldwide energy issues and depleting natural resources. The master plan is also expected to contribute to so-called “green growth”. Under the master plan the government will invest about USD 1.6 billion to promote recycling of scrapped resources. It has also introduced a new collection system for small electronic devices such as MP3s, portable multimedia players and other small metal materials such as metal tools, by collecting them separately (as of September 2010). The government is planning to overhaul its recycling system and EPR is going to be applied to more products.
- The Ministry of Environment is planning to strengthen local recycling capabilities with local disposal facilities and private recycling companies. In this way it expects to generate benefits economically and environmentally.

### Action steps

Social groups working for workers' health and human rights in the semiconductor industry argue that the government and business should overhaul their policy in the following ways:

- The semiconductor business should clear up toxic materials in the manufacturing process and provide workers with occupational safety education programmes and safety equipment.
- Workers who have been allegedly affected by hazardous materials should be allowed to participate in an epidemiological investigation.
- Improvements are required in the Industrial Accident Compensation Insurance system so that workers who suffer work-related diseases such as cancer benefit before an investigation reaches a conclusion. Investigations take too long to define a correlation between their work setting and the onset of disease.

As for e-waste, environmental groups argue that the government and business should overhaul their policies in the direction of the following:

- Government should track and manage e-waste. To this end, statistics on waste should be reported regularly and transparently. Local governments should find ways to require private recycling companies, including exporters, to submit reports on quantities recycled or shipped.
- Cooperation between government, local communities and business should be reinforced.
- More support by the government and municipalities for second-hand technology retailers is required to promote recycling. ■

<sup>5</sup> The Korea Zero Waste Movement Network is an association of over 180 NGOs including environmental, gender and consumer organisations, and conducts various environmental campaigns.