

Addendum

Republic of Korea

The Korean Peninsula is situated at the eastern end of the Asian continent extending about 1,100 km long. China lies across the Yellow Sea to the west, while Japan is across the East Sea to the east. The Republic of Korea belongs to the temperate zone with four distinct seasons. The country has a presidential system with national assembly and is administratively divided into 16 higher-level local governments and 230 lower-level local governments. Nowadays, the local governments are the main provider of administration services for the citizens.

HEALTHCARE FACILITIES

Waste Management Act specifies 16 healthcare waste generators. The main sources of healthcare waste are hospitals and clinics. As of December 2007, there were 316 general hospitals and 50,123 clinics. Other generators of healthcare waste include public healthcare centers, veterinary clinics, research institutes for medicine and pharmacy, and so on.

Healthcare Waste Generators in Republic of Korea

Total	General hospital	Clinics	Public healthcare center	veterinary clinics	others
57,837	316	50,123	2,962	2,757	1,679

MANAGEMENT OF HEALTHCARE WASTE

According to Waste Management Act, healthcare wastes are defined as “Wastes that may threaten human health by infection and, thus, need special treatment for the protection of human health and environment, which include human organs, animal bodies for clinical test, etc., generated from health and medical institutes, animal hospitals and other experiment and test institutes.

In Republic of Korea, healthcare waste is categorized under specified waste (similar to hazardous waste in other countries). Waste Management Act has included 7 types of healthcare wastes, which are classified according to the degree in hazardousness. Non-infectious wastes generated from healthcare waste facilities are defined industrial wastes, but are able to be disposed as municipal wastes if the municipality allows.

Classification of Healthcare Waste

Healthcare Waste	Definition	
Isolated waste	Wastes from the patients separated in order to protect people from infectious disease	
Harmful waste	Organs	Human or animal tissues, organs, parts of bodies, dead animal, blood, pus, materials from blood
	Pathological waste	Culture fluids, culture fluid containers, waste test tube, slide, cover glass, etc., used for test and experiment
	Sharps	Syringe needles, blades for operation, needles for acupuncture, dental needles, broken glass test equipments
	Biological & Chemical waste	Waste vaccine, waste anti-cancer medicine, biological treating materials
	Blood-contaminated waste	Waste blood bags, waste for blood dialysis, and other blood-containing wastes
General waste	Cottons, bandages, gauze, disposable diapers, sanitary towels, disposable syringes, etc	

The amount of healthcare wastes generated in 2007 was 82,633 ton/year, and had been increasing;

43, 127ton/year in 2004, 59,056ton/year in 2005, 56,616ton/year in 2006.

Collection, Storage and Transportation

The generators are to keep healthcare wastes in the designated container as soon as they are generated. The designated containers include two types; envelope-type and box-type. The former are made of plastic and the latter is of corrugated cardboard or plastic (PVC is excluded). Before distribution, the producer of container should pass the test, which is carried out by the institutes authorized by Ministry of Environment (MoE) and carried out in accordance with the related standards set by MoE.



Envelope-type plastic container




Box-type cardboard container



Box-type plastic container

Solid type healthcare wastes are to be contained in envelope-type plastic container or corrugated box-type cardboard container, whereas liquid type waste, sharps, isolated waste and organs should be disposed in box-type plastic container. The generators should put envelope-type plastic container in the box-type container when they consigned the healthcare wastes to the treatment companies. The container should be in white color and include healthcare waste symbol with different colors depending on the healthcare waste type.

The color of healthcare waste symbol

Type of waste	Placenta(when recycled)	Isolated waste	Harmful waste	General waste
 color	Green	Red	Yellow	Black

The transporter should keep the vehicle at 4°C or lower when it delivers healthcare wastes. The transportation vehicle should be white color and indicate the name of transporter, phone number and healthcare waste symbol in green color outside of the vehicle.

Treatment and Disposal

The generators are responsible for the proper disposal of healthcare waste. In Korea, most of the healthcare wastes are consigned to the waste treatment companies, which get licenses for business from the regional office of MoE. Only incineration is allowed for the healthcare waste treatment companies. And the incinerator should be operated at 850°C or higher.



Transporter



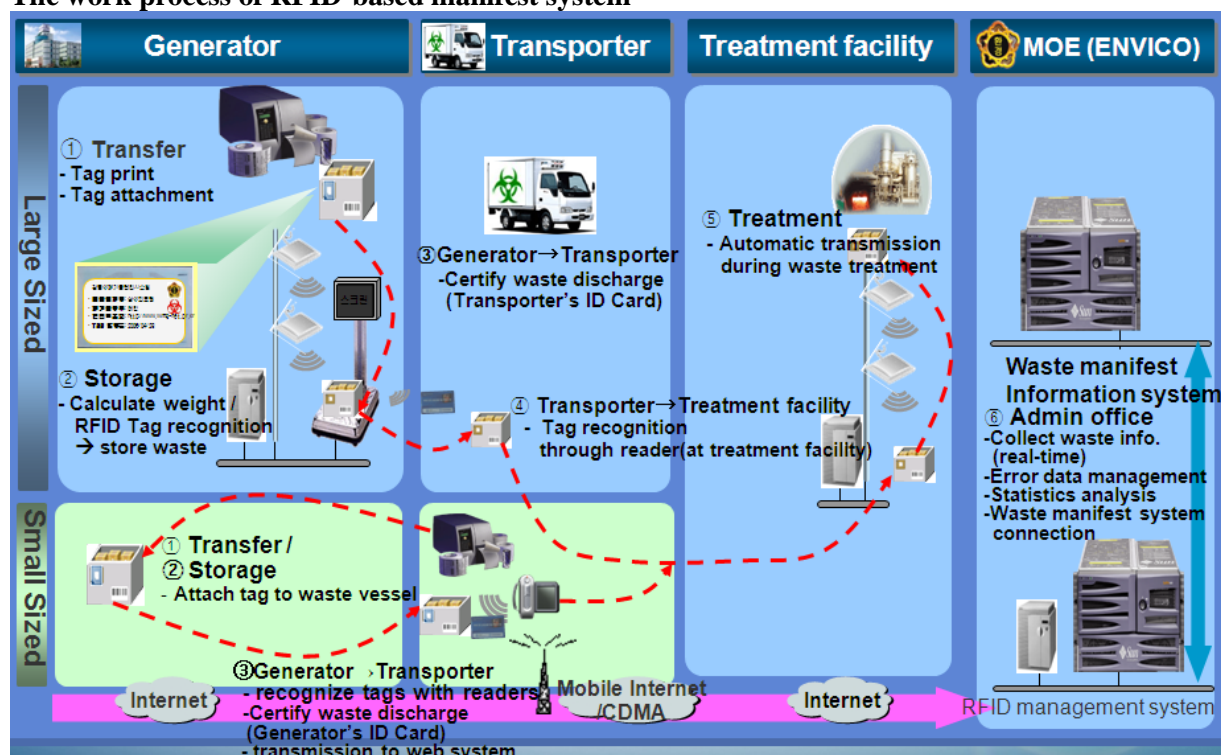
Disposer

As of December 2007, 14 treatment companies were under operation in Korea. When the generators want to dispose healthcare wastes by themselves, they can run incinerator or sterilizer and crusher with permission from the authority; a regional office of MoE for general hospitals, municipality for other

generators.

From August 2008, Korea has started a new manifest system to monitor the carriage and treatment of healthcare waste, which uses the RFID (Radio Frequency Identification Detection) technology. In this new manifest system, the generator has to put an electronic tag containing such information as the type of healthcare waste, generator, weight, and etc. on the container. The transporter and disposers detect the information using RFID reader during carriage and treatment and send it on a real time basis to ENVICO (Korea Environment & Resources Corporation), an affiliate under MoE responsible for running waste manifest system. The RFID-based manifest system has many advantages over the previous paper-based manifest system. For example, it can prevent the illegal dumping during transportation utilizing the real-time monitoring. And also, it releases generator, transporter and disposer from producing a huge amount of papers, which are required for reporting the disposal of healthcare waste.

The work process of RFID-based manifest system



INSTITUTIONAL ANALYSIS

MoE is the competent authority for healthcare waste management in Korea. MoE establishes the national plan and a strategy for healthcare waste management, and develops regulations and guidelines. Waste Resources Management Division in Resources Recirculation Bureau is directly responsible for dealing with the healthcare waste management in MoE.

Six regional offices of MoE and the municipality are executing the regulations and guidelines established by MoE. The main task of two institutional bodies is inspection and licensing on medical waste generators and consignees (transporter and treatment companies). The regional offices of MoE cover the general hospitals among generators, the transporters and treatment companies, and the municipality does other generators than general hospitals.

POLICIES AND LEGISLATION

Originally, the task of administering healthcare waste had been covered by Ministry of Health since 1981, and transferred to MoE in 2001. Waste Management Act deals with healthcare waste in Korea. The Act describes the types of healthcare wastes, the generators and standards for the proper disposal.

The detailed information on the regulations is provided by MoE as the guidelines.

INTERNATIONAL AND NATIONAL INITIATIVES

Waste Resources Management Division of MoE is the leading unit to carry out the required national survey and projects with a view to providing the data for healthcare waste management in Korea. And the Resource Recirculation Center of NIER (National Institute of Environmental Research) is supporting MoE by doing the required research on healthcare waste. In private sector, three healthcare waste-related associations are under operation to keep the members of the association updated on the regulation and policies developments. As mentioned above, ENVICO (Korea Environment & Resources Corporation), an affiliate under MoE, is responsible for running RFID-based manifest system.