

Implemental Activities of the Electronic Manifest Overseas

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International Affairs Division

Japan Industrial Waste Information Center

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1. Introduction

Many countries and regions have already implemented the legal manifest system to track the movement of wastes, in particular hazardous wastes, from the generation to the disposal. However, as the manifest system typically uses a paper form, the replacement by the electronic manifest (hereafter called “e-manifest”) has been increasing to reduce paper work burden and cost, and to strengthen tracking capability. Regarding the implementation of the e-manifest, Japan has the position of the pioneer. After Japan, more than ten (10) oversea countries and regions have so far made the implementation until 2010. And also in U.S.A. and China, implementation efforts are underway.

This paper provides the bird watching view of the e-manifests implemented in countries and regions overseas in comparison with those features including waste categories covered, the access of stakeholders, the fee of system use and etc.

The term “e-manifest” signifies “an electronic monitoring method by tracking the movement of waste” in this paper.

2. Current state of the implementation of e-manifest overseas

Table 1 shows the current state of the implementation of e-manifest overseas including Japan. As the table shows, Japan is the first country which implemented the e-manifest system in the world. In the Asia and Pacific region, Taiwan, Korea Singapore, three States of Australia, and Malaysia ran after in this order. China has already initiated a study for implementing an e-manifest system to strengthen the management of dangerous wastes. Its introduction may be worked out by revising the Waste Control Enforcement Act with the reference to the experiences of Dalian, Beijing and Shaanxi provinces where the e-manifest is in practical use.

In the North America, Ontario State, Canada firstly proceeds to implement an e-manifest system in 2007. U.S.A. had the e-manifest roadmap conference at Washington D.C. in March 2004 and then a view of e-manifest implementation was reported in Federal Register/ Vol.70, No.42/ March, 2005 where the final rule for the modification of the hazardous waste manifest was described. Further, in 2008, for the e-manifest implementation, an e-manifest pilot project was carried out and also a user’s meeting on national e-manifest system was held at Washington D.C. Based on these efforts, the legislation and budgeting are now on the way. As to the number of e-manifest users, 227 thousand facilities and 23 State Governments are assumed according to Exhibit 300.

Table 1. E-manifest - efforts by other countries and regions

Country·Region	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Japan	◆	All of industrial wastes												
Korea					◆	Scheduled wastes		●	Industrial wastes		●	Legally required		
Taiwan			◆	Industrial waste (extending the business sectors to be implemented step by step)										
Singapore					◆	Hazardous waste – legally required								
Malaysia										◆	Hazardous waste			
China												< Under study >		
Australia Queensland			◆	Wastes that must be tracked										
Australia New South Wales									●	Trackable wastes				
Australia Vitoria												◆	Prescribed industrial wastes	
Austria									◆	Hazardous wastes - E-waste etc.				
Germany												◆	Hazardous waste	
E U		◆ Pilot stage- Project "EUDIN" (Belgium, Netherlands, German, Austria) transboundary moving hazardous wastes												
Canada Ontario										◆	Hazardous waste			

In Europe, Austria started to use the e-manifest for electric and electronic appliances in 2005 and German has just started to use the e-manifest since April, 2010. As an EU related project, the central or/and local environmental governments of Belgium, Netherlands, Germany and Austria proceeds the EUDIN (European Data Interchange for Waste Notification System) project from 2000. In this project, the built-up of a control scheme of transboundary movement of waste using an electronic information interchange system among an exporter/importer, and the competent trade authorities of them is targeted. The information interchange is schemed to be made through an electronic message broker.

3. Appellation of the e-manifest system and the name of the operational body

In Table 2, the appellation of e-manifest systems and the name of the operational bodies overseas are shown.

(1) Appellation of the e-manifest system

The appellation of e-manifest systems may be divided into three term categories such as “e-manifest”, “e-consignment/e-delivery note (WasteCert)”, and “online reporting/tracking system”. Though the appellation “e-manifest” is originally employed in U.S.A., Canada, Japan and Korea also employed it. In addition, Taiwan calls waste delivery note as the e-manifest that can be printed out through the online tracking system. A transporter is required to carry it with the delivery of waste. In Europe, Singapore and Malaysia, the appellation “e-consignment note” is employed. In cases of the above two, it is considered to be the counterword of paper type manifest. “The waste certificate” of Victoria State, Australia is, just like as that of Taiwan, the certificate required for a transporter to carry with when transports waste to be tracked. It has two versions of paper type and electronic type. The WasteCert is the appellation of the electronic version and can be printed out on a personal computer in a moment. By contrast, the appellation “online reporting/tracking” is considered to be based on information transfer form.

The “Allbaro” of Korea is the appellation of an integrated waste information system including the e-manifest system. It is created with the initial letters of “All of wastes”, “basic”, “advanced”, “right” and “original”. The appellation “HWIN” of Ontario State, Canada is the acronym of “Hazardous”, “Waste” and “Information Network”.

(2) Operational body

In Japan, the incorporated foundation, and in Korea, the public corporation are operated the e-manifest system. In the other countries and the regions, the competent authority of the central government directly operates the e-manifest system. The

difference in the operation scheme, as a consequence, may affect on the differences in the user fee charge, or the use of e-manifest data base.

4. User fee charge and the employ of application service provider (ASP)

(1) User fee charge of the e-manifest system

Among the countries and regions implementing the e-manifest, Japan and Victoria State, Australia charge the fee to the e-manifest user. In case of Victoria State, the user pay the fee by buying WasteCert with the price of 50 ¢ each, while the price of the paper transport certificate is 5 \$ each. In the other countries and regions including Korea where the public corporation operates the e-manifest system, essentially the charge of user fee is not collected. In case of Korea, however, the collection of the user fee can be implemented upon the Government decision based on the Wastes Control Act.

(2) Employ of ASP

The employ of ASP is opened for users in the e-manifest systems of Japan, Queensland State, Australia and Germany, since it can manage various needs of generators. In the countries and regions that are required to use only the e-manifest, the employ of ASP seems not to be the choice.

Table 2. Name of the e-manifest system and the operation body

Country·Region	Name of the system	Operation body	Fee charge	ASP
Japan	E-manifest (JWNET)	JIWTC (JW)		
Korea	E-manifest (All baro)	KECO		
Taiwan	On line tracking	EPA IWCC		
Singapore	E-consignment note	NEA		
Malaysia	E-consignment note	MNRE-DE		
Australia Queensland	Waste tracking	EPA		
Australia New South Wales	On line tracking	DECC		
Australia Victoria	E-waste transport certificate (WasteCert)	EPA		
Austria	E-consignment note	UBA GmbH		
Germany	E-consignment note	ZKS-Abfall		
Canada Ontario	E-manifest(HWIN)	MOE		

50 ¢ /WasteCert

5. Waste category subjected to the e-manifest and the status of the e-manifest in legal manifest systems

Waste category subjected to the use of the e-manifest and the status of the e-manifest in legal manifest systems are shown in Table 3.

(1) Waste category subjected to the use of the e-manifest

In the countries and regions except Japan, Korea and Taiwan, the waste category subjected to the use of the e-manifest is hazardous or scheduled waste. Whereas in Japan, Korea and Taiwan, the whole industrial waste including hazardous or scheduled waste is subjected to the use of the e-manifest. In Korea and Taiwan, moreover, the export waste is subjected to the use of the e-manifest. However, it should be noted that Korea and Taiwan, at present, have each threshold quantity level under which the use of the e-manifest is exempted.

(2) Status of the e-manifest in legal manifest systems

As Table 3 shows, the e-manifest is exclusively used In Korea, Taiwan and Singapore, while in the other countries and regions, both of the paper type manifest and the e-manifest are used concurrently thus far.

Table 3. Waste category subjected to the e-manifest and the state of parallel use with paper type

Country·Region	Waste category			Usable manifest	
	Hazardous waste	Industrial waste	Export/import waste	Paper type	Electronic type
Japan			×		
Korea					
Taiwan					
Singapore					
Malaysia					
Australia Queensland					
Australia New South Wales					
Australia Victoria					
Austria					
Germany					
Canada Ontario					

6. Access to the data base of e-manifest information and the use

In the e-manifest system in Japan, JW exclusively carries out the management and operation including the administrative reporting as required by the Waste Management Law. Even the Ministry of the Environment, Japan or related local governments is not schemed to make any direct access to the data base and use them for their management. While in Korea where the public corporation, KECO, manages and operates the e-manifest system, the Ministry of Environment and the competent authority of local governments are able to make direct accesses to the data base of KECO. However, the access by local governments is limited to data related to them. In addition, in Korea, the digitalized submitting of the generation or disposal plans of waste is developed so that e-manifest data can be analyzed together with these data.

In Taiwan like in Korea, not only EPA, but also other related central governmental offices, local Environment Protection Bureaus, Industrial Park Management Bureaus and the Bureau of Environmental Inspection are schemed to have accessibility to the industrial waste data base via the interface in order to undertake their enforcement actions such as monitoring, inquiring, inspection and so forth (Fig. 1).

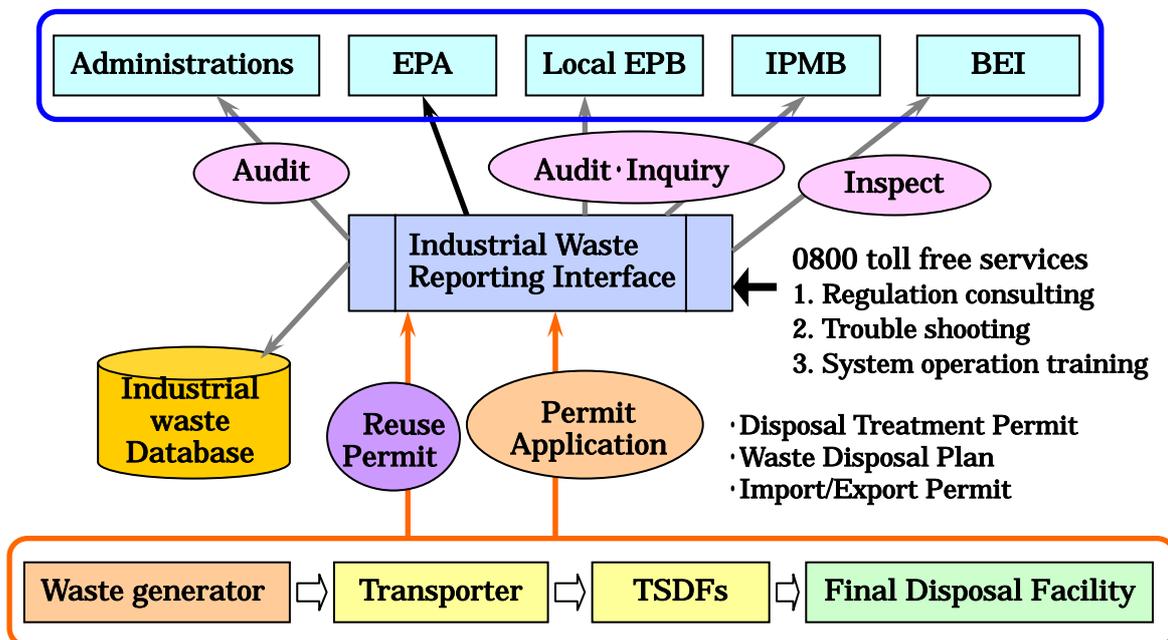


Fig.1 Use of the e-manifest information in Taiwan

Source: Taiwan EPA IWCC presentation material

7. E-manifest and e-Government

The promotion of e-Government is the subject that is worked by many industrialized countries and the implementation of the e-manifest is inevitably included in the scope. For example, in Taiwan, the scheme named Industrial Waste

Control Strategy where various governmental services including those by EPA and the other central administrative offices are consolidated is now in progress (Fig.2). In Austria, the Waste Electronic Data Management Plan 2006 based on the establishment of the Federal Waste Management Act 2002 was led off and the Electronic Management system is in operation from 2005. This plan includes 12 subprojects as Fig. 3 shows where subprojects becoming in operation until 2007 are colored.

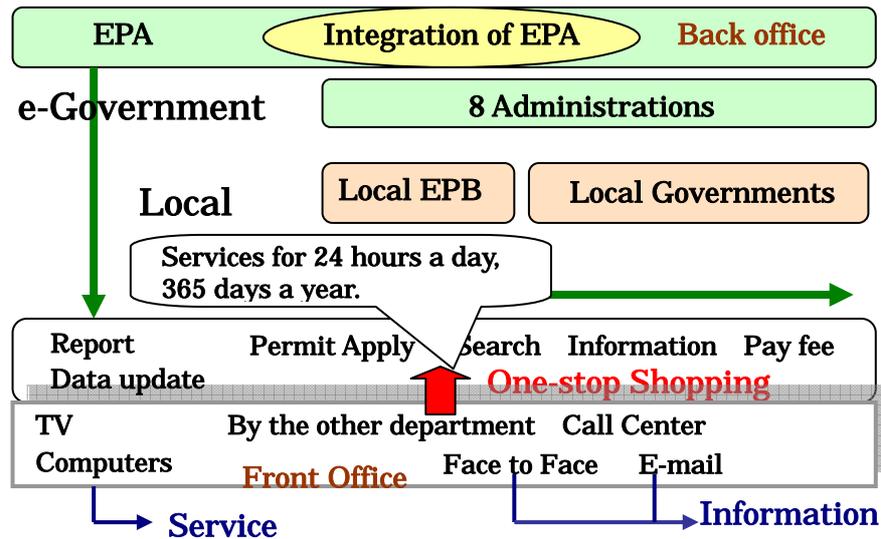


Fig.2 Scheme of the e-government of Taiwan
Source: Taiwan EPA IWCC presentation material

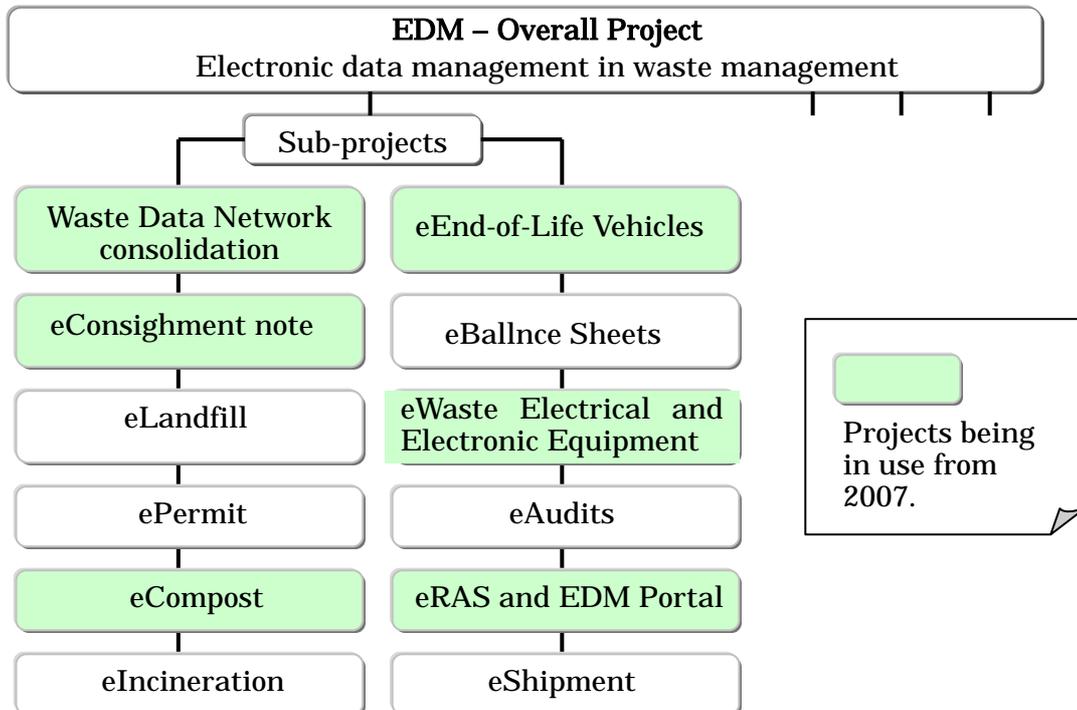


Fig.3 Subprojects Project EDM of Austria
Source: Federal Management Plan 2006, Austria

8. Waste movement tracking method other than the e-manifest

To address with the vulnerability that manifest information is not transferred with a moving waste physically in the tracking by e-manifest, a few of advanced tracking methods such as those using GPS, or RFID (IC tag) or Bar code are developed.

As to GPS, in Japan, it is applied to the tracking of vehicles transporting PCB wastes, whereas in Taiwan, vehicles transporting waste wearing a GPS appliance increase more than 5,600 as of September 2010. This number is achieved by expanding waste categories subjected to the legal requirement on a stepwise base. The subjectation was placed firstly on hazardousness and secondary on largeness in quantity.

As to the RFID, it is used for the tracking of individual receptacle contained infectious waste by some ward medical associations of Tokyo and Kanagawa in Japan. In this system, the IC tag information is transferred to the e-manifest system to comply with the legal requirement. In Korea, from August, 2008, the tracking using RFID became mandatory and the way of the use of RFID is the same as that in Japan, but its implementation is simply recognized as the fulfillment of the e-manifest.

9. Current state of the use of e-manifest in businesses

The outline of the current state of the business uses of e-manifest in countries and regions is shown in Table 4. Due to the insufficient information, only four (4) cases including Korea, Taiwan, Malaysia and Japan are compared.

As the Table shows, the number of subscribers of each country and region is roughly, 300 thousands for Korea (as of 2008), 43 thousands for Japan (as of March 2009), and 21 thousands for Taiwan (as of August 2009). As for Malaysia, the figure is 155 (as of March 2007), that is, to be noted, the number of disposal businesses with license. Note that Korea has the different order magnitude of the subscription of generators than those of Japan and Taiwan. As to the subscription number of waste management businesses, no substantial difference is found between them.

Regarding the e-manifest creations (issuing), the number is roughly, 6.4 millions in 2009 and 8.4 millions in 2010 for Japan, 3.3 millions for Korea (2008), and 1 million for Taiwan (2008). Japan has about two times greater than that of Korea and 6.5 times greater than that of Taiwan. This is attributable to the fact that in Japan, the use of the e-manifest is required without exception when a generator commissions its industrial waste to waste management businesses.

10. Closing remarks

In this report, the outline of the implementation efforts for the legal system of e-manifest overseas in comparison with that in Japan is presented. The similarities and differences among these legal systems of e-manifest are highlighted.

Table 4. Current state of the use of the e-manifest in countries and region

Country · Region	State of the use of the e-manifest	Tally point
Japan	Subscribers : 43,494 · Generator 33,718 · Transporter 5,775 · Disposal business 4,000 No. of the creation (issuing) 6,415,296	March 2009
Korea	Subscribers : 295,644 · Generator 287,647 · Transporter 5,086 · Disposal business 2,911 No. of the creations (issuing) 3,294,938	December, 2008
Taiwan	No. of businesses registered 61,000 No. of the creations Approx. 1 million	August 2008
Malaysia	No. of disposal businesses with permission. 155 · Landfill site 2 · Incineration facility 31 · Recycle facility 122	March 2007

[Appendices]

1 . Website address list related to the e-manifest

Country · Region	System	Website
Japan	JWNET	http://www.jwnet.or.jp
Korea	Allbaro	http://www.keco.or.kr
Taiwan	Online reporting	http://www.epa.gov.tw
Malaysia	ESWIS	http://www.eswis.jas.sains.my
Australia Queensland	Waste tracking	http://epa.qld.gov.au/environmental_management/waste/waste_management
Australia New South Wales	Online waste tracking	http://www.environment.nsw.gov.au/owt
Australia Victoria	WasteCert	http://www.epa.vic.gov.au/transporting_waste_wastecert.asp
Austria	EDM	http://www.bundesfallwirtschaftsplan.at
Germany	ZKS-Abfall	http://www.zks-abfall.de/DE/Home/homepage_node.html?_nnn=true
EU	EUDIN	http://www.eudin.org
Canada · Ontario	HWIN	http://www.hwin.ca/hwin/index.jsp

2 . Abbreviations

Abbreviation	Original	Note
BEI	Bureau of Environment Inspection	Taiwan
DECC	Department of Environment and Climate Change	Australia New South Wales
EDM	Electronic Data Management	Austria
EPB	Environment Protection Bureau	Taiwan
EUDIN	European Data Interchange for Waste Notification System	EU
ESWIS	Electronic Scheduled Waste Information System	Malaysia
HWIN	Hazardous Waste Information Network	Canada Ontario
IPMB	Industrial Park Management Bureau	Taiwan
IWCC	Industrial Waste Control Center	Taiwan
JIWTC (JW)	Japan Industrial Waste technology Center	Japan
KECO	Korea Environment Corporation	Korea
MNRE-DE	Ministry of Natural Resources and Environment Department of Environment	Malaysia
NEA	National Environment Agency	Singapore
TSDFs	Transport, Storage and Disposal Facilities	Taiwan
UBA	Umweltbundesamt	Austria
ZKS	Zentrale Koordinierungsstelle der Länder	Germany
GPS	Global Positioning System	IT word
RFID	Radio Frequency Identification	IT word