

# Present State of the Electronic Manifest System for Industrial Waste Management in Japan

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## EXECUTIVE SUMMARY

A waste manifest system which tracks industrial waste from the cradle to the grave in Japan which implemented in April 1993 as a regulation for only hazardous industrial waste management initially, and was thereafter revised to expand to all kinds of industrial waste. In order to further facilitate the proper disposal of industrial waste and the prevention of illegal dumping, the legal system for electronic manifests (e-Manifest) was introduced when the Waste Management and Public Cleansing Law was amended in June 1997. Thereafter, a waste generator was required to use either the paper manifest or the e-Manifest. Upon implementation in December 1998, we Japan Industrial Waste Information Center (JW) were only designated by the Minister of the Environment as an Information Processing Center (IPC) to operate the information system. At present, the numbers of users (subscribers) and manifest registrations (creations) have increased to more than 70 thousand and about 10 million creations per year, respectively, and the share of e-Manifest of the total number of manifests created (46 million) reached 23% in FY2010. This paper provides an outline of the e-Manifest system in Japan, namely, the features, operation modes, prevalence, targets, and efforts for promoting the increasing use of the e-Manifest.

## E-MANIFEST SYSTEM IN JAPAN

### Outline of the e-Manifest system

As noted above, the manifest system in Japan was started for only hazardous industrial waste with a paper only Manifest in April 1993. In June 1997, the regulation was changed to expand to all kinds of industrial waste. At the same time, the legal e-Manifest system was established in order to reduce the burden on a generator. The JW was designated as the IPC for the e-Manifest on November 30, 1998 and the implementation of the e-Manifest legal system was started on December 1, 1998. Upon amendment of the Waste Management Law, it became a requirement for a generator to confirm the status of treatment his industrial waste by manifest. Thus, when a generator manages his industrial waste by commission, he is required to use either the paper Manifest or e-Manifest.

### Development history of e-Manifest systems

For the start of operation in 1998, the first system was developed in 1997 based on the order of the Ministry of Health and Welfare. In 2000, an amendment of the Waste Management Law required a generator to confirm the completion of the final disposal of their waste. To address to this amendment, we developed a second system, which operated from April, 2001 (Table 1).

Table1. Development history of the e-Manifest system

System	1st	2nd	3rd	4th
Development period	1997-1998	2000	2004-2006	2008-2010
Background circumstances	Legal Implementation of e-Manifest	Amendment to the Waste Management Law	Advancement of internet technology	Steeply increased demand
Operation start	Dec 1,1998	Apr 1, 2000	Jun 26, 2006	May 4, 2010
Communication network	KDDI (telephone line)	KDDI & Internet	Internet	Internet
Access method	C/S	C/S, Web, EDI, Mobile phone	Web, EDI, Mobile phone	Web, EDI, Mobile phone

Then, with the progress of technology, it became possible to use high speed and large capacity broad band communication methods such as ADSL. We thus renewed our e-Manifest system from 2004 to 2006, to create a third system in order to enhance client convenience by strengthening communication and data processing capabilities. From May 2010, we began operating our fourth system which was developed from 2008 to 2010 to cope with the increased demand of e-Manifest use.

## System Features

The e-Manifest system is a system to manage industrial waste among a generator, a transporter and a disposer on a network via IPC by computerizing Manifest information (Figure 1).

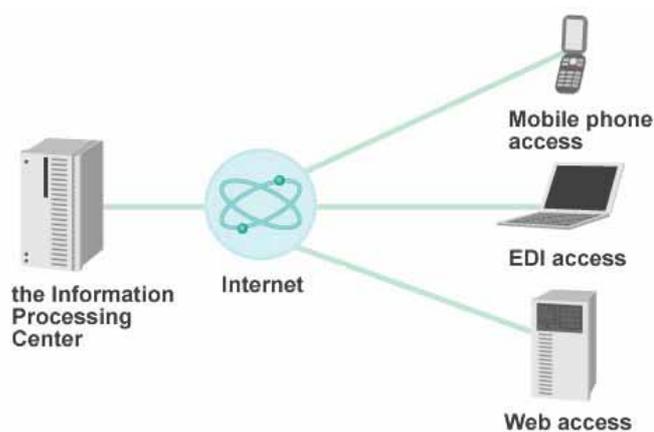


Figure 1. Access methods to the e-Manifest system

Regarding ways to access the e-Manifest system, we have three methods as follows;

### 1) Web access

Most users access using the Web to create e-Manifests without the need to install any special software.

### 2) EDI (Electronic Data Exchange) access

The EDI method is for a user who has developed original system to create e-Manifests. The IPC has opened up the data format for sending e-Manifest data to the IPC, so that a user can develop his own systems for e-Manifest.

### 3) Mobile phone access

Mobile phones can be used along with the web method. The registration and reference of data can be made through the Web function of a mobile phone.

## Operation modes of the e-Manifest system

The Manifest flow can be basically divided into two parts, the 1st Manifest (flow from a generator to an intermediate treatment businesses) and the 2nd Manifest (flow from an intermediate treatment businesses to disposers). Legally a user can choose either the paper or e-Manifest methods. Thus, the following three operational modes exist. Among the three modes, currently Mode 2 is the most popular (Figure 2).

Mode 1 : e-Manifest only

Mode 2 : e-Manifest (the 1st portion) and paper Manifest (the 2nd portion)

Mode 3 : paper Manifest (the 1st portion) and e-Manifest (the 2nd portion)

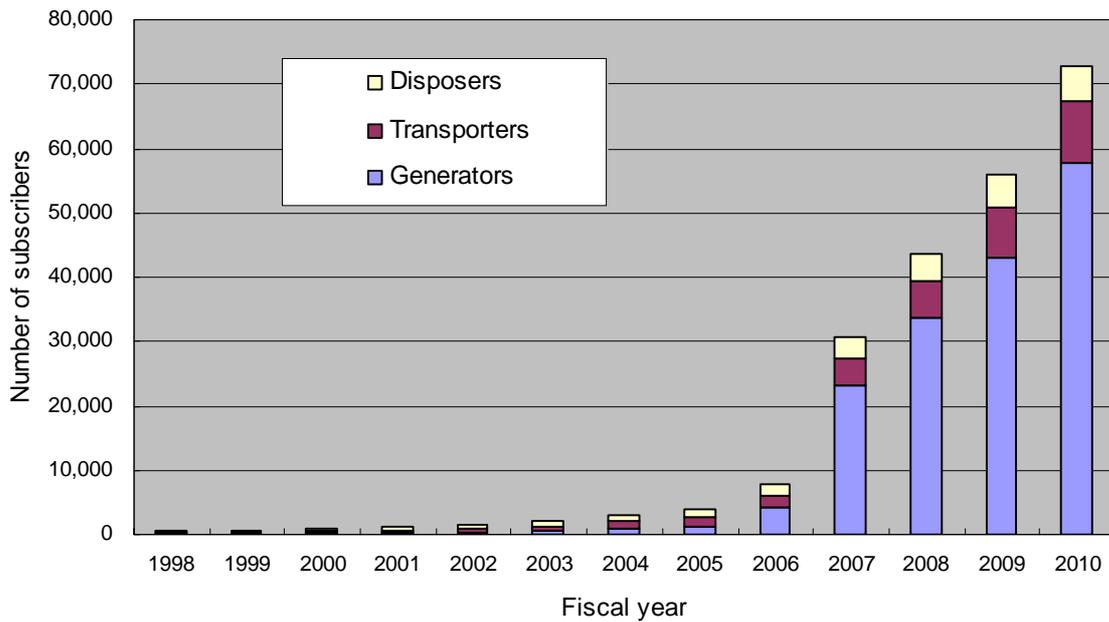
Mode	1st Manifest			2nd Manifest	
	Generator	Transporter	Intermediate treatment business	Transporter	Final disposer
			Disposer		
1	e-Manifest				
2	e-Manifest			Paper Manifest	
3	Paper Manifest			e-Manifest	

Figure 2. Operational modes of e-Manifest

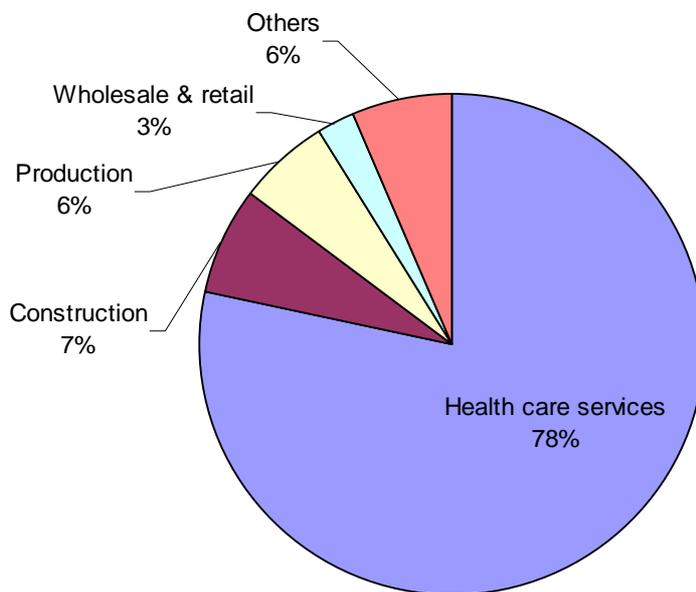
## CRURRENT SUBSCRIPTIONS AND NUMBER OF E-MANIFESTS

### Number of subscribers

The number of e-Manifest subscribers, especially in terms of generators, has increased significantly since FY2006 (Figure 3). At the end of March, 2011, the number of subscribers reached 72,761 (generators: 57,837, transporters: 9,388, and disposers: 5,536). This figure was about 1.4 times greater than that of the previous year. The subscribers of health care services (mainly dentists) are noted to have increased extensively since a new user fee for infrequent generators was introduced (Figure 4).



**Figure 3. Chronological changes in subscribers**



**Figure 4. Ratios of business categories of generator subscribers at the end of March, 2011**

### Number of e-Manifests created

Regarding the number of e-Manifests created, they have been found to be increasing significantly each year. At the end of FY2010, there had been about 10.6 million created which was about 10 times greater than of the number in FY2004 (Figure 5). The annual average share of e-Manifests compared to total Manifests created (46 million) has become about 23% (Figure 6). With the rapid increase in e-Manifests created in FY2007, the number of the paper Manifests has decreased. Since major general contractors and housing contractors started using e-Manifest for some construction sites, the number of e-Manifests created has been increasing. Through the spread of e-Manifest users in the construction business, various industries have recently starting using e-Manifest.

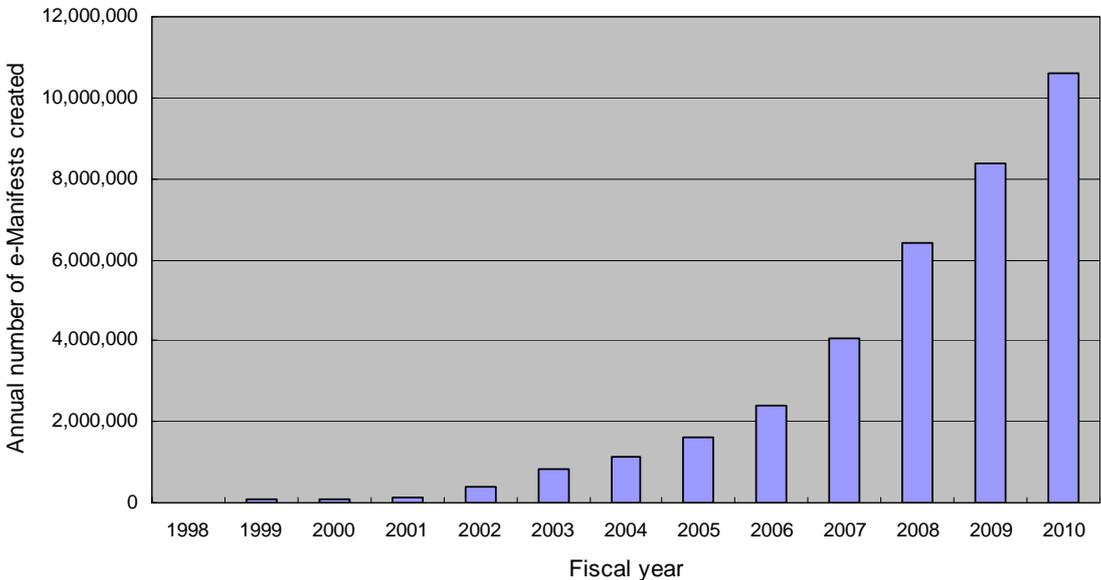
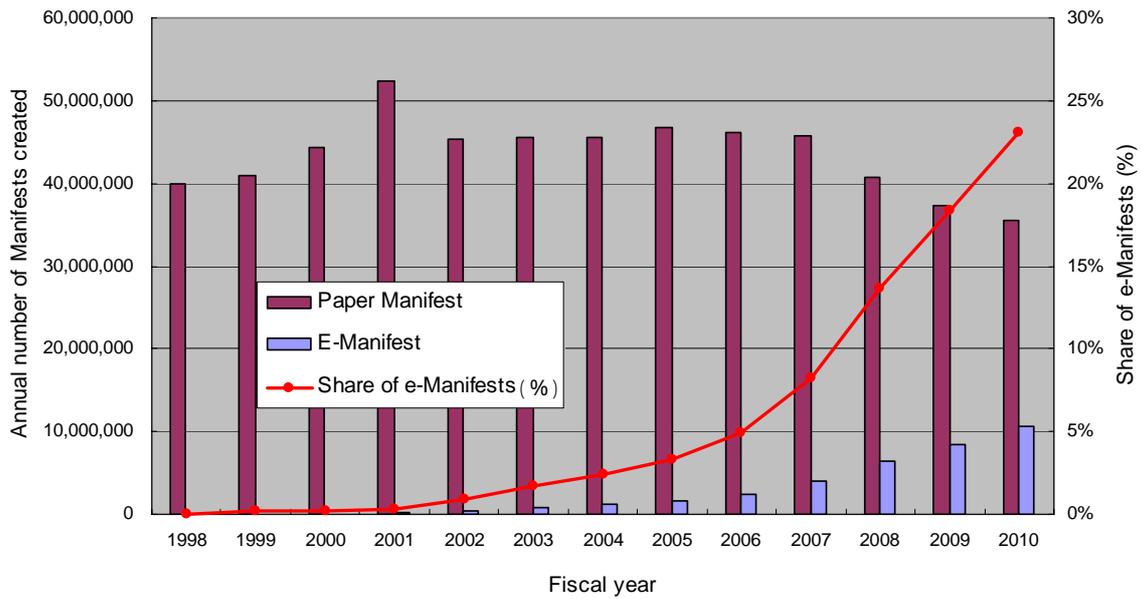
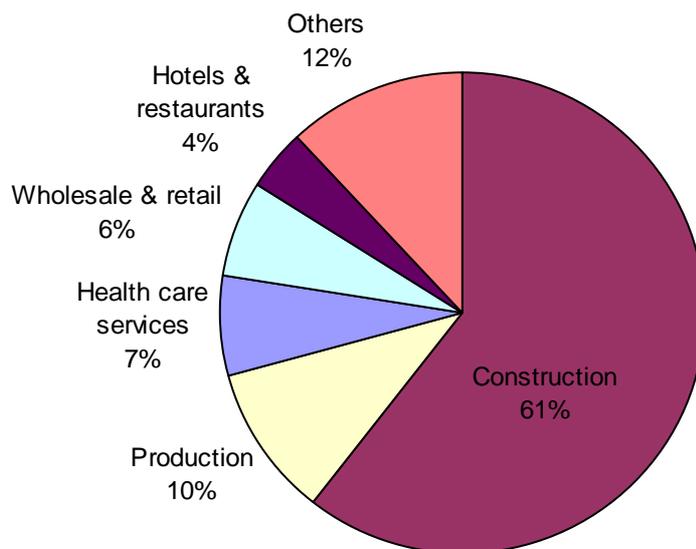


Figure 5. Chronological changes to number of e-Manifests created



**Figure 6. Chronological changes to number of e-Manifests created, and share of e-Manifests**

Regarding the number of e-Manifests created in relation to the business categories of generators, use in the construction business has the highest share of 61%, followed by manufacturing businesses (10%), health care services (7%), wholesale and retail (6%), and hotels and restaurants (4%). The sum of these business categories comes to about 90% of all e-Manifests (Figure 7).



**Figure 7. Ratios of business categories by e-Manifests created in FY2010**

## **PROMOTION**

### **Efforts for the promotion of the increased use of e-Manifest**

In order to further increase e-Manifests in use, we are implementing various promotion activities including providing good operational examples and subscriber information, and participation in a variety of exhibitions. In addition, we implemented the “Model project for promoting the increased use of e-Manifest” from FY2003 to FY2007. Many entities such as corporations, industry groups and local governments took part in this project. Now we are pursuing the target of a 30% share of e-Manifests as a proportion of total Manifests by the end of FY2011.

### **Provision of explanatory sessions for e-Manifest**

We provide explanatory sessions nation-wide under cooperation with local governments, the National Federation of Industrial Waste Management Association and its member Associations. The core contents of the sessions include the following:

- How e-Manifest works
- Benefits expected from its use
- How to operate it
- Operational examples

### **Development of tools for promoting increased use**

We are providing several kinds of pamphlets and videos for the various stages of customers who are considering the use of e-Manifest. Usually, the exploration of the use of e-Manifest by a business includes the following steps so that we develop suitable tools for each study step (Table 2).

**Table 2. Operational modes of e-Manifest**

<b>Step</b>	<b>Contents</b>
<b>1</b>	<b>Pamphlet; brief explanation the e-Manifest system</b>
	<b>Movie; brief explanation the e-Manifest system</b>
<b>2</b>	<b>Guidebook; book showing operational examples by industry, and explaining the e-Manifest system in detail.</b>
	<b>Operation guide movie; movie which explains how to operate the system</b>
<b>3</b>	<b>Demonstration version of e-Manifest system; trial version of e-Manifest system which has the same resources as a real system</b>

### **Formation of a nation-wide support system**

In order to promote the nation-wide dissemination of e-Manifest, we have built up an operation support system in cooperation with the National Federation of Industrial Waste Associations and its member Associations from FY2008. The local member associations carry out the following services:

#### **A Services relating to sign-up procedures**

- a. Distribution of leaflets, booklets and application forms**
- b. Response to inquiries on sign-up procedures**
- c. Accepting applications and checking their descriptions**
- d. Sending accepted application forms to the Information Processing Center.**

#### **B Services relating to the support of users**

- a. Providing notice of legal information on e-Manifest**
- b. Responding to inquiries on how to operate**
- c. Providing explanatory workshops using PC training sessions**
- d. Providing notice of information on e-Manifest system modifications**
- e. Providing guidance regarding the Information Processing Center**

### **Release of information of subscribed waste management businesses**

We post subscriber information on our website. Generators can easily find transporters and disposers who are subscribed using e-Manifest. Also, by posting on the web, companies receive a good impression because of their work in protection of the environment.

## Reporting of e-Manifest information to local governments

Under the Ordinance of Enforcement of the Waste Management Law amended in September 2006, a generator is required on a site to site base to report the status of Manifests created in the last year to their local government. Thus, to fulfill the requirements of the Waste Management Law, the IPC prepares and submits reports by processing the e-Manifest information of the previous year to governors and mayors. To streamline administrative reporting, the IPC provides services through its built-in sub-systems for helping the preparation of various administrative reports required by regulations from April, 2008 (Table 3).

**Table 3. Administrative reports on industrial waste which can be prepared through our built-in sub-systems**

Reporter	Title of report	User
IPC	Annual status report on e-Manifests created	Generator
User	<ul style="list-style-type: none"><li>• Annual status report on Manifests created</li><li>• Performance report on the waste disposal plans of mass generators</li><li>• Performance report on the disposal of specially controlled waste</li></ul>	Generator
	<ul style="list-style-type: none"><li>• Performance report on the transporting of industrial waste</li></ul>	Transporter
	<ul style="list-style-type: none"><li>• Performance report on the disposal of industrial waste</li></ul>	Disposer

## Goals

We are now especially promoting e-Manifest to generators who emit a large quantity of waste, such as the major manufacturers and the water departments of local governments. Use by these generators leads to the use of transporters and disposers. Furthermore, use by generators influences other generators who have not used e-Manifest yet because transporters and disposers who have started using e-Manifest promote the use of e-Manifest. Consequently, we have decided to target generators who emit a large quantity of waste. To promote their use, we are actively providing explanations, not only to companies directly but also to associations established by industry groups.