



NEWSLETTER

No.38

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October 2001

THE JAPAN SOCIETY OF WASTE MANAGEMENT EXPERTS

Dear Waste Management Experts

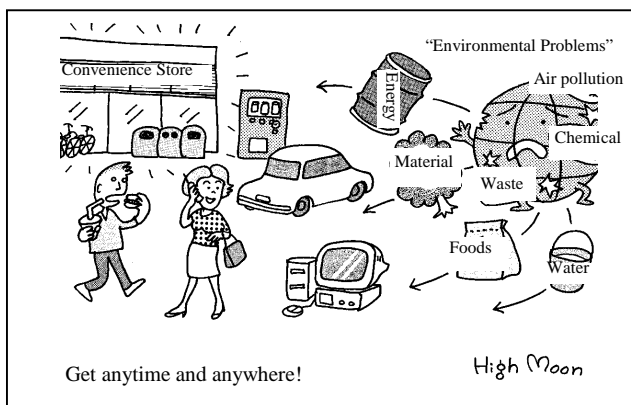
We mourn many valuable lives' losses by the terrible terrorism last September. May their souls rest in peace!

After a series of typhoons having struck the Japanese Islands and left quite a few damages behind, just has come the Autumnal Equinox. And, strong summer sunlight has rapidly left the Islands.

A series of laws, concerning recycling and waste management with the aim of establishing a Recycling-based Society, were enacted last year and some of them have been put in force. As the laws will impose more responsibilities on waste dischargers such as payment of recycling fees, there emerges an anxiety about clandestine dumping by lawless people. The Electric Household Appliance Recycling Law is one of laws having fear of causing such unwelcome behavior. This issue of JSWME NEWSLETTER presents the situation after the enforcement of the law in last April 1. In addition, it carries an article of state of the art municipal waste incineration facilities in Japan. Don't miss the Japanese Municipal Waste Management on the move.

We have been preparing change of publication manner of our NEWSLETTER. Now recent ones are available on JSWME Home Page, and it is planned to deliver the NEWSLETTER through e-mail to our readers. Details of subscription manner will be presented in the next issue.

(Hideo Azuma)



(Translated by JSWME, taken from Monthly "the Waste" August 2001)

"The consumption behavior causes environmental problems at whenever and wherever."

By courtesy of Prof. Hiroshi Takatsuki (Taka-tsuki literally means "High Moon")

Electric Household Appliance Recycling Law

Japan is one of leading countries in the world in terms of creating a recycling system for used electric household appliances based on law.

Electric Household Appliance Recycling Law takes effect from April 2001, which aims to promote recycling of electric household appliances based on the idea of Extended Producer Responsibility (EPR) that imposes more responsibilities on the upper part of waste generation mechanism. The Law initially focuses on the recycling of large-size household appliances which are TV sets, refrigerators, washing machines and air-conditioners, as those are difficult to be recycled by municipalities and other some reasons. The discharge amount of these four items amounts around 600,000 tons per year.

1. Roles of parties concerned

The Law defines roles of parties concerned as follows.

Manufactures/Importers are obliged to receive appliances falling into four items upon request at designated places and to recycle them more than specified recycling ratios shown below.

- Air-conditioners: not less than 60%
- Braun tubes TV: not less than 55%
- Refrigerators: not less than 50%
- Washing machines: not less than 50%

Retailers upon request must collect the appliances that were sold by them before, or when they sell the same type of appliances. Once the retailers receive the appliances, they have to convey them to manufactures or other designated corporations except in case that the appliances are reused as second hand goods.

Municipalities must either convey collected appliances to the manufactures or the designated corporations. They also can recycle the appliances by themselves.

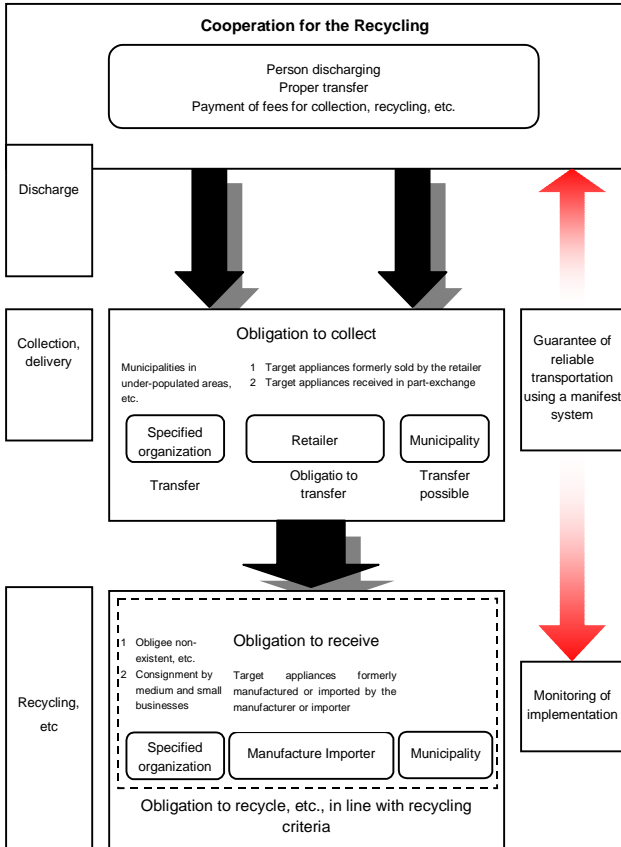
Consumers must cooperate for the recycling by, for example, carrying the appliances to retailers and paying fees for collection and recycling.

2. Present status after enforcement of the law

280,000 units of appliances were collected in the first month, April 2001, after the enforcement of the Law. The number of units collected has been increasing favourably,

then, 690,000 units were collected in June.

It is regarded that a household appliance ticket system managed by the Association for Electric Household Appliances has been effective for the favourable collection status of the appliances. The system is for collecting recycling fees from dischargers and distributing them appropriately for functioning the recycling system. About 60,000 retailers that receive the appliances



participate in the system.

Legal Framework for the Electric Household Appliance Recycling Law

On the other hand, municipalities are worried that clandestine dumping will increase, as a part of dischargers may hate to pay the recycling fee ranging between 2,700 and 4,600 Japanese Yen. The Ministry of Environment investigated illegal dumping status of the household appliances before and after the enactment of the law. Of 279 local governments, 52% reported increase of illegal dumping and 22% did decrease. The ministry is going to prevent further illegal dumping by disseminating the aim of the law and stringently executing it together with supervision of the illegal dumping status.

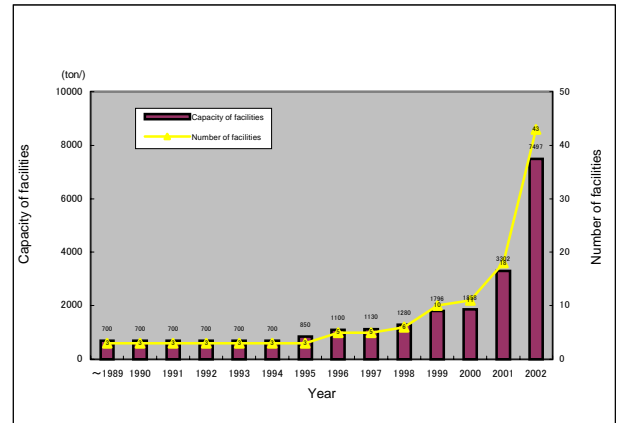
(Kimio Matsumoto)

Incineration of Municipal Solid Waste in Japan (4) / Background, Present Status and Issues of the Next Generation Type Incinerator Development

1. Background

38,013,000 ton/year of municipal solid waste, which was equivalent to 74% of 51,200,000 ton/year of total municipal solid waste amount generated in Japan, was burned by 1,843 incinerators in 1997. Among of the incinerators, the smallest one's capacity was 5 ton/day, meanwhile the biggest one's capacity was 2,000 ton/day. Stoker furnaces occupied 90% of the all incinerators, and fluidised bed furnaces and other type furnaces occupied 10%.

Recently, gasification-melting systems have been developed due to needs of 1) effective dioxins reduction, 2) material and thermal recovery, 3) effective use of ashes and 4) simple and compact facilities, and some local governments began to introduce the systems.

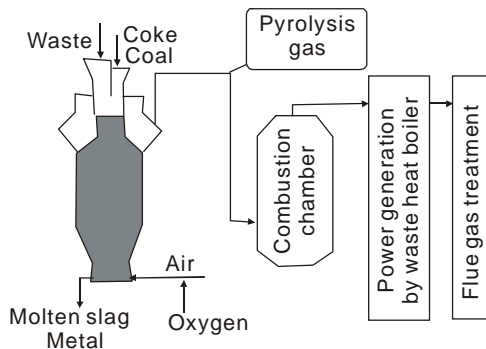


Number of Gasification Facilities (under operation)

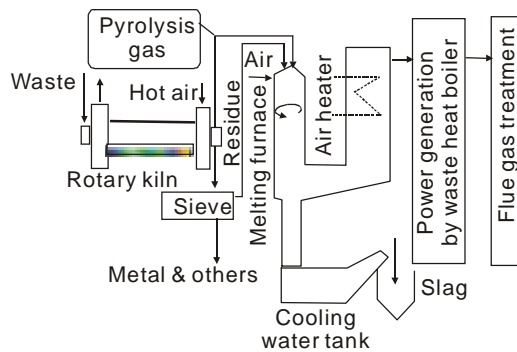
2. Present Status

Almost all the incinerator makers in Japan, about twenty makers, have participated in the development race of the gasification-melting systems. In 1999, some makers started to receive orders of gasification-melting system facilities, then, it is expected that number of the facilities will be 43 and total capacity of them will be 7,497 ton/day in 2002. Types of the gasification-melting systems under practical use in Japan are mainly categorized into 1) shaft type, 2) rotary kiln type and 3) fluidised bed type. In the shaft type, waste together with coke and limestone is fed into the centre of the upper part of furnace. The furnace is divided into pre-heating, pyrolysis, incineration and melting zones from the top. Molten slag is discharged from the bottom of the furnace. As for the rotary kiln type, waste put into a rotary kiln is decomposed by relatively low temperature in an oxygen-free environment. Pyrolysis gas together with char is sent to a furnace where ashes are made melted. From the bottom of the rotary kiln, residue

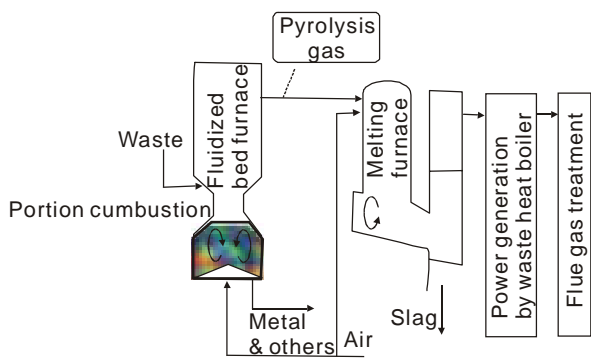
that is mix of non-combustibles, ashes and char is discharged. As for the fluidised bed type, pyrolysis gas is generated in the first furnace, then, the pyrolysis gas and carbon are incinerated in the next furnace and ashes are melted into slag.



Shaft Type



Rotary Kiln Type



Fluidized Bed Type

3. Issues to be considered in the Future

Development targets of the gasification-melting system have been 1) small environmental impact, 2) material recovery, 3) thermal recovery, 4) compact facility and 5) high efficiency. The gasification-melting systems are expected to bring good results in terms of environmental impact and recycling more than the conventional incinerators. However, it should be noted that it is more important to secure stability and safety of the systems

than conventional ones, as processes of gasification and melting are carried out in a system. In addition, the gasification-melting systems except the shaft type do not have enough experience of operating for a long period to verify their stability and safety. Meanwhile, it is said that the gasification-melting systems are not suitable for low calorific waste.

Consequently, 1) stability and safety of the systems should be verified, and 2) adaptability for the low calorific waste should be studied in the near future.

(Takashi Miyagawa)

**Office for the Development of Waste Reclamation
Environmental Services Bureau
Yokohama City**

Office for the Development of Waste Reclamation (ODWR), which belongs to the Environmental Services Bureau of Yokohama City, is a research organization of solid waste. The city is one of major cities in Japan, having a population of 3.3 million and struggling with many issues concerning Solid Waste Management (SWM). A forerunner of the office was established in 1973 with the aim of avoiding environmental pollution which might be caused by facilities of the bureau such as incinerators. Then, it was reorganized to the office in 1977 by changing the aim, from pollution control to waste recycling. The office at present operates with 27 staffs including 22 chemical engineers.

Recent major activities of the office are as follows:

1. Fundamental research of solid waste for minimization, recycling and proper disposal
 - Chemical and physical composition analysis of municipal/industrial solid waste
 - Chemical analysis of bottom and fly ash generated by waste incineration
2. Monitoring of emission gas and effluent from the facilities belonging to the bureau. The facilities targeted are currently one inland landfill, one coastal landfill and six incineration plants.
3. Research of material recovery of solid waste
 - Utilization of glass cullet as construction material
 - Utilization of molten slag as roadbed material (this was put practical use this year)
 - Utilization of biodegradable wastes such as composting and making used newspaper into plastic resin.
 - Utilization of incineration ash as cement material
4. Environmental protection technology development
 - Bottom and fly ash treatment

- Application of Life Cycle Assessment (LCA) for SWM
- Introduction of Environmental Accounting

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(Satoshi Hatazawa)

**Waste Management Research
and
Journal of the Japan Society
of Waste Management Experts**

The latest issues of the Waste Management Research and Journal of JSWME contain the following articles. The articles are written in Japanese with the abstract in English.

Waste Management Research

《Vol. 12, No.4 (July 2001)》

Special Issues: Green Purchasing

Outline and Future Direction of the Law on Promoting Green Purchasing

Kazuhiro Okuma

Past Five Years and Future of the Green Purchasing Network

Hiroyuki Sato

Development of Green Consumer Activities in Japan

Ikuo Sugimoto

NEC's Activities Related to Green Purchasing

Shigeyuki Miyamoto

What is Green? Reconsidering the Definition of Green/Eco

Itaru Yasui

Green Purchasing and Eco-Money –future perspective of recycling-based socioeconomic system-

Ken Morishita

Review

Overview and Future Subjects of Studies on Variable Rates: Literature Review

Hajime Yamakawa and Kazuhiro Ueta

Report

Hazard Trends and Problems for Safety in Industrial Waste Treatment

Masahide Wakakura

Journal of the Japan Society of Waste Management

Experts

《Vol. 12, No.4 (July 2001)》

Papers

Study of Flow and Mixing in Combustion Chamber of MSW Incinerator -No.3, Evaluation of computational fluid dynamic method by comparison with the experimental data-

Yoshitada Kakuta and Nobutoshi Tanaka

Studies on Improving Functions and Lowering Construction Cost of Landfill Sites

Katsumi Kotani, Tohru Furuichi and Kazuei Ishii

Effects of Reaction Condition on Conversions of Fish Meat into Organic Acids and Amino Acids by Sub-critical Water Hydrolysis

Hiroyuki Yoshida, Masaaki Terashima and Yohei Takahashi

Case Study on Life Cycle Carbon Dioxide Discharge in Small-scale Wastewater Treatment Plant

Seishi Okada

Ca-Fe Composite Oxide for Capturing Hydrogenchloride Evolved by PVC Combustion and Its Thermal Stability Function in PVC

Tomoyuki Imai, Toshiki Matsui, Yasuhiko Fujii and Tasuku Nakai

Current Members of JSWME	As of 30 September 2001 (values in parenthesis are differences from 30 June 2001)
Regular Members	3,537 (33)
Students	238 (10)
Non-Japanese Members	64 (3)
Public Institutions	116 (3)
Supporting Members	215 (4)
Total	4,170 (53)

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