



NEWSLETTER

No.40

This Newsletter is published four times a year, distributed by e-mail.

April 2002

THE JAPAN SOCIETY OF WASTE MANAGEMENT EXPERTS

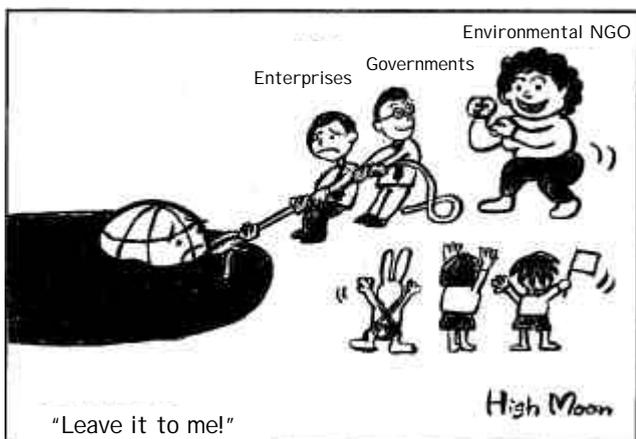
Dear Waste Management Experts

In the midst of prolonged economic stagnation, spring has come in Japan. The cherry blossoms in Tokyo came into bloom in the middle of March, the earliest in 50 years.

Hazardous waste management, as well as waste reduction and recycling, is becoming of great public concern in Japan, as people now realize their importance in preventing various environmental problems. This issue, the first e-publication of JSWME NEWSLETTER, explains the new regulation for proper PCB disposal that was enacted last July. Our NEWSLETTER also introduces a facility that will process and restore the waste and contaminated land from Teshima Island, a small island in the Seto Inland Sea where a historical scandal concerning the illegal disposal of industrial waste took place. The review of PCB in Okayama is also reported on including the "Okayama Declaration".

You can now find the latest issue of the e-NEWSLETTER and recent back numbers at JSWME Home Page <http://www.jswme.gr.jp/>. Readers who would like to subscribe to our NEWSLETTER can receive it by e-mail with PDF file on request.

(Hideo Azuma)



It's about time NGO had it's turn even in Japan.

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

(translated by JSWME, taken from Monthly "the Waste" January 2002)

Enactment of the Law for the Promotion of the Environmentally Sound Destruction of PCB Waste

Polychlorinated biphenyl (PCB) was once used in transformers and condensers as an insulating oil, a heat medium, pressure-sensitive paper, etc. However, the 1968 Kanemi oil poisoning scare revealed its toxicity and in 1974 the production, importation and use of PCB were prohibited in Japan. Although the 59,000 tons of PCB already produced should have been treated, a large part of it had been stored on the user's premises for almost 30 years, as the public had not accepted the construction of PCB treatment facilities. After it was found that some of the stored PCB had been lost, however, people came to fear environmental pollution and now recognize the need for the facilities.

In order to push forward the treatment of PCB waste, *the Law for the Promotion of the Environmentally Sound Destruction of PCB Waste* was enacted and enforced on the 15th of July, 2001.

This law requests enterprises to appropriately treat the PCB they possess within 15 years. In addition, the enterprises are required to report the amount stored to the corresponding Prefectural Governors every year. The law also prescribes that the Japanese government shall endeavor to establish a system for the steady and appropriate treatment of PCB and the Minister of Environment shall prepare and publish a Basic Plan. The prefectures shall also prepare and publish a Basic Plan for their own jurisdiction. Furthermore, the prefectures shall announce the storage situation of PCB reported by the enterprises. The law obligates the former manufacturers of PCB to collaborate with the national and/or local government in enforcing a policy such as the establishment of a fund for the promotion of treatment by small and medium sized enterprises (see attached figure).

For the national government to take the initiative in the construction of treatment facilities, the Japan Environment Corporation (JEC) Law was revised to expand its mandate to PCB waste treatment. JEC will construct 5 to 6 PCB treatment facilities throughout the country as a base within 5 years. As of today, JEC has decided to construct a PCB treatment facility in

Kitakyusyu City though local governments such as Osaka, Toyoda, Kanagawa, Tokyo and Hokkaido are still considering their treatment plans.

(Kimio Matsumoto)

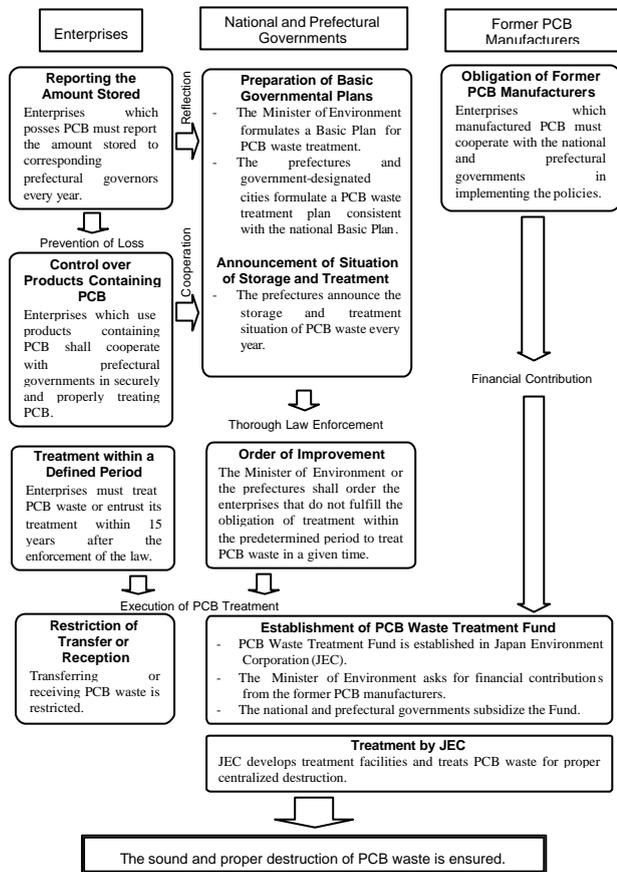


Fig. Framework of the Law for the Promotion of the Environmentally Sound Destruction of PCB Waste

2001 PBC in Okayama Successfully Closed

The 10th Pacific Basin Conference (PBC) on Hazardous Waste was held on December 5 - 7, 2001 in Okayama, Japan. Approximately 200 experts (researchers, policy makers, industrialists, and other professionals involved in hazardous waste management) from 17 countries and regions attended the conference. The theme of the conference was "Integrated Management for Hazardous Waste - From Cleaner Production to Waste Disposal", and included the growing concern over hazardous waste issues, such as the treatment of PCB waste, infectious waste, waste contaminated with dioxins and so on.

The conference was organized by Okayama University, the Japan Society of Waste Management Experts (JSWME), and the Pacific Basin Consortium for Hazardous Waste Research and Management, in

cooperation with Okayama Prefecture and Okayama City and with the support of Japan's Ministry of the Environment, and the National Institute of Environmental Health Sciences in the U.S.A.

On the first day, the opening ceremony, a keynote lecture, two plenary sessions and a welcoming reception were held at Okayama Royal Hotel. The conference officially began with the opening address by Dr. Masaru Tanaka of Okayama University, the President of the Conference and JSWME. He said, "We spent lots of time to prepare this international conference. As a result, 81 papers, including poster papers from 17 countries, were presented, which is the largest number of papers ever presented at a PBC conference. And I am happy to see so many experts from different countries participating in this conference." Following the opening ceremonies, welcoming addresses were given by Dr. Ichihiro Kono, President of Okayama University; Mr. Kazuyoshi Okazawa, General Director of Waste Management and Recycling Measures Department, Ministry of the Environment, Japan; Governor Masahiro Ishii of Okayama Prefecture; Mayor Seiji Hagiwara of Okayama City and Dr. Gene Peralta, Executive Secretary of the PBC.

Four keynote lectures followed. Dr. David Carpenter of the University of Albany in the U.S.A., presented human disease occurrence in relation to the distance of residence to hazardous waste sites. He mentioned that thyroid and endometriosis appear to be related with the contaminated sites. Mr. Liu Xianbing from China presented views on the increasing generation of hazardous waste in China that is now being cleaned-up through efforts by the government. Dr. Gil-Jong Oh from Korea presented the experiences of hazardous waste management in Korea in policy development and implementation. Mr. Hideto Yoshida from the Ministry of the Environment in Japan presented opposition by communities to the construction of hazardous waste facilities and possible options for the management of hazardous waste including medical waste.

In the first plenary session in the afternoon, Dr. Hiroshi Takatsuki of Kyoto University presented the Teshima Island industrial waste incident and its process towards resolution. Dr. Ira Salkin of the New York State Department presented the treatment and alternative technologies of infectious waste and reported the advantages and disadvantages of infectious waste treatment. Dr. Pierre Moszkowicz of INSA-Lyon, France, presented the methods of predicting leachate in landfill towards a unified environmental strategy.

In the second plenary session, Dr. Enri Damanhuri of the Bandung Institute of Technology presented hazardous waste management in Indonesia. Dr. Margaret-Ann Armour of the University of Alberta presented the

integrated management and disposal of the small quantities of hazardous chemicals for the 21st century. Finally, Mr. Yasuo Tanabe of the Ministry of Economy, Trade and Industry presented the promotion and realization of recycling-oriented society in Japan.

During the second and the third days, twelve technical sessions and one poster session were held at Okayama University, and technical tours were prepared (to Okayama Prefecture Environmental Conservation Center and Kawasaki Steel Co. Ltd. and Okayama City East Clean Center).

Gathering 81 papers and 41 experts from overseas, the conference was a valuable opportunity for the participants to share a great deal of experiences through enthusiastic discussions.

Finally, the Okayama Declaration, nicknamed the "Momotaro" Declaration (Momotaro is a boy warrior from a popular folk story originating in Okayama), was presented and approved by the general assembly during the closing ceremonies. Dr. Petchporn Chawakitchareon offered to host the 11th PBC Conference in Bangkok, Thailand, which is scheduled for April 2003. We, the executive committee of the conference, would like to express our sincere appreciation to all who cooperated and supported this successful conference.

(Haruo Matsumura and Hideo Azuma)

THE OKAYAMA DECLARATION

(The "Momotaro" Declaration)

We, the participants of the "10th Pacific Basin Conference on Hazardous Waste", recognize that this fastest growing region in the world generates the greatest amount of

hazardous waste. We are also aware that the potential threat to public health and the ecosystem should be given primary consideration in the inappropriate disposal of hazardous waste. We have reached the following common understandings:

1. In economic globalization, the exchange of information on hazardous waste management is essential for the mutual understanding among stakeholders. In particular, the definition of hazardous wastes should be unified to promote the preservation of the environment and to ensure resource recycling.
2. Further research and technological development are necessary to improve the reliability of hazardous waste treatment and the available technology should be shared among Pacific Rim countries.
3. Incinerators should be reevaluated as an effective hazardous waste treatment option, as long as it is designed and operated using appropriate combustion technology.
4. All hazardous waste generators should be required to practice source reduction/separation along with the 3Rs (Reduce, Reuse and Recycle). Above all, available cleaner production technology shall be promoted and implemented by producers.
5. In order to construct a sustainable society, we affirm that governments, producers, communities and all involved entities should work together to reduce and dispose of hazardous waste properly.

December 7, 2001, Okayama, Japan
Participants of The 10th Pacific Basin Conference
on Hazardous Waste



Participants of PBC

Waste Treatment Facility for Restoring Teshima Island's Industrial Waste

1. Outline

Teshima Island is a small island (approximately 16km²) in the Seto Inland Sea, and belongs to Kagawa prefecture. The total amount of industrial waste and contaminated soil that has accumulated in Teshima Island is estimated at about 600,000 tons. This means that even a treatment capacity of 200 tons/day will take about 10 years to complete the disposal. This article reports on the treatment facility now being constructed in a neighboring island in Kagawa prefecture's charge.

The waste and the accompanying contaminated soil are to be transported and treated at a plant that is being constructed on Naoshima Island, which neighbors Teshima. Melting rotary furnaces are adopted to minimize the waste and turn hazardous material into harmless slag that can be used as construction materials. Moreover, dust from the flue gas of the furnaces contains various heavy metals, which can also be used as resources. This facility will also be used to treat the municipal waste in Naoshima town.

2. Capacity of the facility

The plant consists of two melting furnaces with a capacity of 100 tons/day/unit and treats 200 tons/day. A rotary kiln with a capacity of 24 tons/day is also installed as ancillary equipment. The planned net operating rate is 300 days a year. To minimize the environmental impacts, the noxious fumes concentration of the flue gas is planned as

follows: SO_x 20 ppm, HCl 40 ppm, NO_x 100 ppm, and DXN's 0.1 ng-TEQ/m³N.

3. Treatment flow

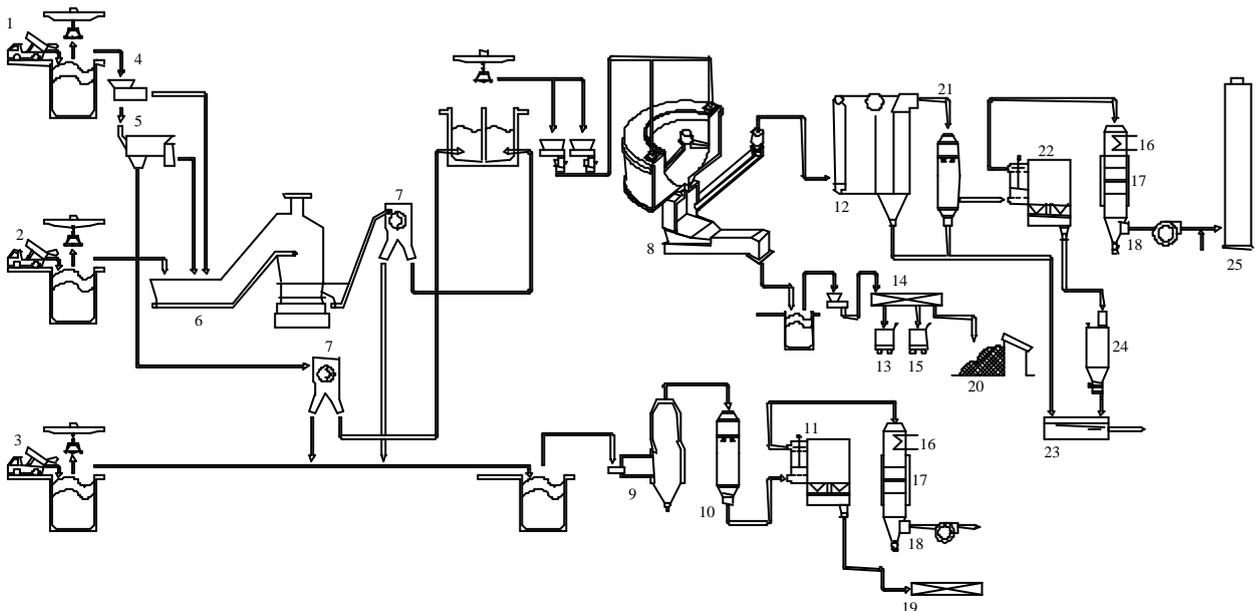
The flow from feeding waste into the facility to producing output as flue gas and fly ash is as follows:

The waste transported to the facility is measured then dropped into receiving pits. After crushed to a size under 30mm by crushers, the waste is carried to the next pits and then put into the melting furnace and melted at a temperature of 1,300°C or higher. The molten slag (called "eco slag") produced in the process is to be used as construction materials for public works by Kagawa prefecture. The thermal energy of the flue gas from the melting furnace is recovered in the boiler to be used for the combustion air heater as well as used at a dust refinery factory being constructed next to the facility. The exhaust gas through the boiler is reduced to a temperature appropriate to pass through the fabric filter by the cooling tower. A catalytic de-NO_x system is equipped before the smokestack. The filter dust collected is dissolved in water and transported to the refinery to recover heavy metals. Matter that does not need to be melted, such as irons and large stones, are treated with the rotary kiln.

4. Progress of construction

Construction is going as scheduled. The foundations of the structures were completed in February 2002, and the main equipment is being carried on. Rotary melting furnaces have already been installed.

(Seiichiro Ueda)



1. waste of Teshima, 2 municipal waste, 3. special pre-treatment waste, 4. rough screening and crushing machine, 5. pre-treatment screen, 6. crusher, 7. magnetic separation, 8. melting furnace, 9. rotary kiln, 10. reduced temperature reaction tower, 11. bag filter, 12. boiler, 13. copper container, 14. slag crush equipment, 15. aluminum container, 16. air heater, 17. catalytic de-NO_x system, 18. induced draft fan, 19. to melting furnace, 20. slag yard, 21. reaction tower, 22. bag filter, 23. slurry transportation, 24. melting fly ash, 25. smoke stack.

Fig. Waste Treatment Flow

Introduction of the Faculty of Environmental Science and Technology at Okayama University

Okayama University has eleven faculties of humanities, life sciences, and technology. Approximately 13,000 students including 400 foreign nationals are currently enrolled. The faculty of Environmental Science and Technology was established in October 1994 for research and education in creating pleasant and comfortable environments where the human activities harmonize with nature. It aims to provide opportunities of interdisciplinary training not only for the comprehensive knowledge of natural sciences but also for a basic understanding of humanities and social sciences. The faculty consists of four departments, namely (1) the Department of Environmental and Mathematical Sciences, (2) the Department of Environmental and Civil Engineering, (3) the Department of Environmental Management Engineering, and (4) the Department of Environmental Chemistry and Materials.

The Department of Environmental and Civil Engineering has two offices working on solid waste issues: the Office of Environmental Impact Assessment and the Office of Water Environment. Professor Masaru Tanaka of the Office of Environmental Impact Assessment, who acts as JSWME chairman, teaches the graduate and postgraduate students based on his abundant experience in waste management administration with the national government.

1. Main Projects of the Office of Environmental Impact Assessment

a. Study on indexes of a recycling-based society

The effective promotion of a recycling-based society requires indexes to measure its maturity. This project



The Department of Environmental and Civil Engineering,
Okayama University

attempts to evaluate the maturity of the recycling-based society by investigating the awareness and behavior of the general public in regard to waste disposal and recycling using questionnaires, and to develop clear and simple indexes.

b. Estimation of waste amount, management levels and management cost in the world

As the economy develops, the amount of waste keeps increasing, and many countries are faced with the problem of waste management. This project aims to estimate waste amount, management levels and management cost in the world at present and in the year 2050 using GDP as a parameter.

c. Estimation of the amount of infectious waste and safety assessment of alternative treatment technologies substituting incineration

Due to the enactment of the Law Concerning Special Measures against Dioxins, the use of small-size incinerators installed at many hospitals will be banned and new treatment routes of infectious waste must be explored. The project estimates the amount of infectious waste that needs a new way of treatment, and assesses the safety of alternative technologies such as autoclave treatment and electromagnetic treatment.

d. Study on risk communication

In recent years, construction projects of waste management facilities often encounter conflicts between the project executers and the neighboring communities, and there is a growing awareness of the necessity of risk communication to share risk information and reach mutual consensus. This project intends to examine the causes of conflicts and the methods of efficient risk communication by investigating the municipalities confronting the issue of the construction of waste management facilities.

e. Study on the effect of centralized incinerators to reduce dioxin emission

This project compares regional large-sized facilities as a result of the centralization of incinerators and small-sized facilities scattered in the region before centralization by air diffusion simulation, and examines the validity of centralized waste management.

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2. Main Projects of the Office of Water Environment

a. Analysis of heavy metals in leachate from waste landfills

The project analyzes heavy metals in leachate from waste landfills using ICP emission spectrophotometers. It also carries out leachate tests under different conditions in terms of such things as pH and liquid-solid ratio, assuming the various conditions of landfills.

b. Analysis of leachate from landfills using bioassay

This project assesses the safety of leachate from landfills using a method of bioassay and chemical analysis by looking at its carcinogenic and endocrine disruptive effects on killifish, and attempts to develop a rational risk control tool of chemicals.

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(Kaoru Ishizuka)

**Journal of the Japan Society of
Waste Management Experts, Vol.13, No.2
(March 2002)**

The latest issues of the Journal of JSWME contain the following articles. They are written in Japanese with the abstract in English.

Waste Management Research

Preface

A Consideration for Waste Plastic

Osami Nakasugi

Special Issues: Chemical Recycling of Municipal Waste Plastics

Implementation of the Containers and Packaging Recycling Law

Hirokazu Doi

Monomer Recycling Methods of PET Bottles

Akira Oku

Liquefaction of General Plastic Waste

Yoshiki Sato, Kiyoshi Saito and Hideaki Tachibana

Feedstock Recycling Technologies for Municipal Plastic Waste in Japan

Masataka Nifuku

Development of Technological Information Infrastructure for the Plastics Recycling System

Yuji Naka and Takashi Kagiya

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Papers

Evaluation of Specified Disposal Bag Distribution System related to Household Waste Emission

Koji Amamo and Atsushi Matsuura

The Possibility of Promoting Bio-recycling System by Green-consuming Action

Shusaku Sawaragi, Takasei Kusube and Masaaki Naito

A Leaching Test for Self-management of Toxic Metals in Wastes

Tomohiro Tasaki and Kohei Urano

Decomposition of 2-Chlorophenol at a Process Combining Pyrolysis with NaOH prior to Oxidation in Supercritical Water

Geun-Hee Lee, Teppei Nunoura, Yukihiro Matsumura and Kazuo Yamamoto

Phosphorus Removal with Hydrotalcite Compound –An Application for Secondary Effluent of Human Excrement–

Tomonori Kindaichi, Kazuyuki Nishimura, Takane Kitao, Kazumichi Kuzawa and Yoshiaki Kiso

Current Members of JSWME	As of 1 April 2002 (values in parenthesis are differences from 30 November 2001)
Regular Members	3,445 (-154)
Students	220 (-53)
Non-Japanese Members	60 (-11)
Public Institutions	112 (-4)
Supporting Members	210 (-6)
Total	4,047 (-228)

NEWSLETTER NO.40

Published by

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April, 2002