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"Hahn" <hkchu@foe.org.hk>

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Please respond to  
"Hahn" <hkchu@foe.org.hk>

To "Choy So Yuk" <sychoy@pacific.net.hk>

cc <pi@legco.gov.hk>

Subject 呈交文件：日本焚化設施經驗

致立法會環境事務委員會  
蔡素玉主席

附件為日本反焚化爐團體Non-incineration Citizens就焚化設施提供予立法會的意見書，煩請查收。謝謝！

祝安！

朱漢強 啟  
香港地球之友環境事務經理

電話：2528 5588



040605 paper for Legco Hong Kong [1].doc

## Incineration, unacceptable technology

05/17/2005

Setsuko Yamamoto

(rep. Non-incineration Citizens, Japan)

### 1. About my organization

Our group has been spontaneously formed in February 2002, reacting sudden announcement by the then-governor of Kanagawa(神奈川県), Okazaki to privatize the waste management of local municipalities. Until that time, he had made up secrete waste plan with huge industries to burn all kind of waste in one specific place, and recover energy produced from incineration. To stop this harmful plan and protect our children, we immediately started actions such as negotiations with stakeholders, send opinions and alternative plans, lectures to make people notice the situation, and activities to stop dirty export to Asian countries.

### 2. Waste policy in Japan

(1) Numbers of incinerators, categories, classification of municipal waste PPT

(2) Governmental policy on waste

Japanese government has been adamantly supporting incineration and burn-all policy under following laws and ordinances. If we look back the change in this field, there are three important changes.

**Waste Management Law (1970):** They started to incinerate waste, and it helped.

**Dioxin guideline (1996): Important notification** to promote gasification incinerators for traditional ones. Since then, more than 100 gasificators are operating.

**‘Basic Law for Promoting the Creation of a Recycling-Oriented Society (2000):** It defines waste as resources to generate energy, and is promoting “Waste to Energy” (WtE) system for new ones.

They are going to amend related laws to **burn plastics, law-level nuclear waste** etc. and in coming 3R ministerial meetings of OECD, they are going to announce this stand as a tool to improve global environmental degradation.

### 3. Traditional incinerators and new models (gasification)

	Traditional model	New model
Temperature	around 800	1250-1450
Ash	should be treated separately	could be melt down collectively
Emission	Dioxin formation at low temp.	Even heavy metals are evaporated, emission could be more toxic
Cost	high cost needed to treat ash	high cost in construction, maintenance

The safety and efficiency of new models have not been confirmed. There are many accidents are

reported all over Japan.

#### 4. Worst dioxin emission case in Japan

**Emission to air:** Nose, Osaka prefecture, Hitachi-zosen incinerator. 8500pg/g (more than 8 times as high as environmental standard) It caused the secondary contamination for the workers to demolish the facility. Blood concentration is, maximum 806pg/g (fat)、average 85pg/g (fat) , background 20-30pg/g.

**Emission to water:** Fujisawa, Kanagawa pref. From Ebara corporation, It emitted dioxin-contaminated wastewater to public waterway for almost 8 years (from 1992 to1998). It was found the maximum concentration of dioxin in downstream was 8.100 pico gram/l ...8.100 times as high as environmental standard.

荏原製作所藤沢工場付近で高濃度ダイオキシン

3月24日、環境庁と神奈川県は、荏原製作所藤沢工場付近の雨水路の水から、最高で8100pg/lのダイオキシン類を検出したと発表した。これまでの公共水域でのダイオキシン類濃度測定値では津市岩田川の25pg/lが最高で、今回の値はこれを大きく超える。

98年の全国一斉調査で、藤沢市本鵜沼富士見橋の引地川の水から、3.5pg/lのダイオキシン類が検出されていたため、藤沢市の再調査で、富士見橋上流の雨水路排水口から、平成12年1月26日の調査で約3200pg/l、2月16日の調査で約8100pg/lのダイオキシン類を検出した。この雨水路上流の同工場を、3月23日、県と藤沢市が立入検査したところ、焼却炉排煙処理水が、設置された92年7月から施工ミスにより誤って汚水処理施設ではなく雨水路に流れ込むよう接続されていたことが分かった。排出された汚水は8年間で最大1.4万トンとみられる。なお、ダイオキシンの排水基準は、既存施設については、1年間の猶予期間が設けられているため罰則適用にはならない。(00.3.25)

#### 5. New Models still emit high dioxin

According manufactures, the merit of new models is 'dioxin control', but actually, since its introduction to Japan, so many dioxin contamination cases are reported.

In Takasago city, high dioxin concentration was found around newly built Babcock Hitachi's gasification incinerator.

Accordingly the facility was designated control area where people not allowed to get inside



管理基準を越すダイオキシンが検出された施設内部＝高砂市梅井、市美化センター Takasago Clean Center

without protective gear.

(Babcock Hitachi: [English Site](#))

And it was found, the facility caused at least 12 accidents since it started operation in April 2003. ( <http://ioku.cool.ne.jp/gomijiko/gomijiko.html> site of City council member)

## The List of 12 Accidents

	Month	Date	Place of accident	
( 1 )	4	9	Crane	Defect of electrical conduction
( 2 )	5	16	Waste crusher	Defect of bearing
( 3 )		26	2 nd incinerator	Trouble in gasify section
( 4 )	6	7	1 st incinerator	Trouble in gasify section
( 5 )		9	2 nd incinerator	Trouble in secondary combustion section
( 6 )		21	1 st incinerator	Failure in waste hopper control section
( 7 )		21	2 nd incinerator	Oil leakage in gasify section
( 8 )	8	24	2 nd incinerator	Blockade of slag exit
( 9 )	9	11	Working area	<b>Dioxin</b> in working site around the facility (not reported until December)
(10)	11	27	1 st incinerator	<b>Fire</b> at joint flange (operation continued without report)
(11)	12	10	2 nd incinerator	Trouble in gasify section
(12)		18	1 st incinerator	Trouble in gasify section

### 6. Standard for dioxin

**TDI** Tolerable Daily Intake... 4 pg-TEQ/kg/day (present ...about 1.5pg-TEQ/kg/d)

#### Environmental standard

Air should be lower than 0.6 pg-TEQ/m<sup>3</sup>

Water “ “ 1 pg-TEQ/l

Bottom soil “ “ 150 pg-TEQ/g

Soil “ “ 1000 pg-TEQ/g

Soil exceeds 250pg-TEQ/g is subject to inspection or monitoring, exceeds 1000pg-TEQ/g in community area subject to soil contamination treatment law

**Emission standard** for new waste incinerators ... should not exceed 0.1 nano grams per 1 square meter gas. (ng-TEQ/m<sup>3</sup>N, nano-1 billion).

Emission standard	Facilities	Capacity	New facilities	Existing facilities
	Waste incinerator(can treat more than 50 kg/h )	4t/h 以上	0.1	1

## 7. Other hazards from incineration

Hazardous heavy metals ... mercury, lead, cadmium, chromium etc. They give serious impact to small children because their metabolize system is yet developed.

SPM (Suspended particulate matters) PM2.5 is directly absorbed in human body and cause health damage like asthma, heart attack. (Well documented in USA and Europe.)

VOC (Volatile Organic Compound) Benzene, toluene. They promote SPM and may accelerate forming green house gas.(1.85 million ton is emitted in Japan)

## 8. Can incinerator promote recycling and cost effective?

On the contrary, once we introduce incineration in community, much money is needed to support the system. Japanese government is spending much more money to keep this system, giving huge subsidies for construction, technology development, and export. If local government decided to have gasification incinerator, the central government covers half of construction fee, thus supporting incineration industry.

(The idea of Japan's Incinerator-based society had been developed and supported by industry (Nippon Keidannren...Japan Business Foundation)

## 9. Down side of adopting incinerators?

More waste is necessary to keep gasification operating / heavy traffic/ people lose their will to recycle, lower incentive for sorting and recycling / destruction of resource/

Waste of energy / aggravate global warming / air pollution / water pollution / soil contamination / higher health risk / more consumption...and waste mafia.

## 10. About Ebara

Examples of accidents of Ebara's new model.

2000 Aomori city, Newly built IWI (225tx2) gasification incinerator to treat shredder dust of car scraps caused many troubles including blockage of ash. The cost for improvement reached 8.5 billion yen for two years.

2003 July 17, Hirosaki city, ash-melting furnace has exploded (started in April.) The facility is still out of use as of Feb. 2005.

Apart from environmental business, the company is famous for Dangou (Price setting for bid), tax

evasion, incorrect bill cases etc. Thus, it had cautions from Fair Trade Commission or Taxation office repeatedly.

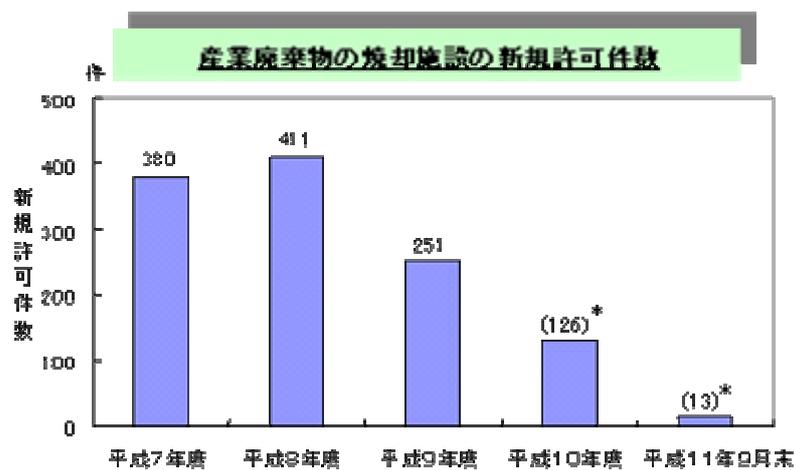
The company is now making effort to sell incinerator in Kuala Lumpur, Malaysia disregarding strong opposition from residents and from international NGOs.

And in Korea, Ebara Precision Machinery Korea Inc. suppressed workers who were trying to form worker's union. [韓国エバラ精密機械\(韓国語/英語\)](#) [日本の荏原製作所の Web サイト](#)  
(Report on the Application of the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions by OECD Working Group)

## 11. Why amidst in community in Japan?

It does not mean people are accepting incineration, but until recently, most of them believed the myth of incineration because it is a quite profitable business in Japan.

People were not informed of the danger of incineration, but things are changing. They started to fight against it. It is reflected in abrupt decline of permission for facilities.



Only 13 industrial waste incinerators are permitted in 1999.



Only 9 industrial landfills are permitted in 1999. Yet, they need land to treat waste. That is the

reason OECD countries are looking for waste basket in Asia.

## 12. My advice for the HK people

Asian people have lived with nature, for the nature, and supported by nature. We are respecting nature as it is. Incineration is hostile technology for nature.

Nature does not incinerate, not consume only for destruction and not contaminate their belongings. We should protect our nature by avoiding this destructive technology.

If policy makers could have strong belief to protect our living environment, and have much knowledge about incineration, it will be easier to change the course to more environment- friendly direction. The key to success is 'education'.

To start with firstly, I recommend regulation on plastic bags and plastic cups now in use. It is a good hint to make people think about waste and one-way use of resources. Many cities in the world introduce this plastic bang bans.

And at the same time, I strongly recommend home composting. It can reduce household waste dramatically. This strategy is adapted in many cities in Australia, Canada, USA and Japan. By so doing, the society will recognize the necessity of real waste reduction strategy - producer responsibility and clean production system.

## 13. Chemicals used in waste incinerators

	Chemicals	Gravity	Conversion	Market price	Remarks
Hcl+Sox	Slaked lime	0. 20g/cm <sup>3</sup>		¥25	Mainly used to remove hydrogen chloride, but effective for sulfur oxide.
<b>Dioxins</b>	Activated carbon				
Nox	Ammonia waste	0. 93g/cm <sup>3</sup>	1. 08m <sup>3</sup> /t	¥40	To remove Nitrogen oxide
Fly ash	<b>Chilate</b>	1. 20g/cm <sup>3</sup>	0. 83m <sup>3</sup> /t	¥109	To capture and solidify heavy metals captured from fly ash and waste water
Waste water	Sulfuric acid (7 2%)	1. 62g/cm <sup>3</sup>	617. 3L/t	¥34	To adjust PH (between 4~11)
	Caustic soda (4 5%)				To adjust PH
	Iron chloride	1. 39g/cm <sup>3</sup>	0. 72m <sup>3</sup> /t	¥24	To take heavy metals (additional)

	High molecular chemical for Condensation	1.00g/cm <sup>3</sup>	10L/10kg	¥560	To condense captured materials
<b>Overheating</b>	Machine coolant	1.07g/cm <sup>3</sup>	93.5L/100kg	¥1,600	To control temperature of cooling water in machines
Floating materials	Chemicals for bottom ash wastewater	1.10g/cm <sup>3</sup>	91L/100kg	¥470	To prevent scale adhesion & dispersion of particles in bottom ash cooling unit
Water	Caustic soda (25%)	1.28g/cm <sup>3</sup>	0.79m <sup>3</sup> /t	¥17	To wash ion-exchange resin
	Hydrochloric acid (35%) for pure water	1.18g/cm <sup>3</sup>	0.85m <sup>3</sup> /t	¥28	To wash ion-exchange resin
Boiler unit	Cleaner	1.00g/cm <sup>3</sup>	100L/100kg	¥660	To prevent scale adhesion
	Deoxygen			¥970	To prevent corrosion
Fly (insects)					Fly poison for waste pit

#### 14. Expenditure of Incineration

Labor cost      In case of two 300t/day incinerators      Average personnel :40(1)~50(2)      20 people is necessary for operation

Construction cost      Stoker furnaces, fluidized bed furnaces      30million ~ 40 million yen per ton      Varies according to types

   Gasification incinerator, ash-melt furnace      40million ~ 50million yen per ton      Varies according to types

Maintenance cost      5~20% of construction fee is necessary for annual maintenance. As the plant gets older, the cost rises accordingly.

The data above is collected and provided by person who is actually working in some plants in Tokyo district. First data of its kind in Japan, yet price for electricity, gas, kerosene, water and sewage charge are not known.

Personnel expenses: About 300million to 400 million yen annually for 600 ton/day plant (300t/d ×2). (40 to 50 people are necessary for each unit. 20 people are needed for operation.

Chemicals are different according to incinerator types, and price is based on hearing from manufacturers.

(2005/05/17 Setsuko Yamamoto)