

# Welcome to the City of Minamata Environmental Clean Center



# What triggered separate collection?



**An  
accidental  
explosion**

**March 1992**

**A partially-filled gas  
cylinder for a table stove  
was brought to the  
crusher of the Clean  
Center**

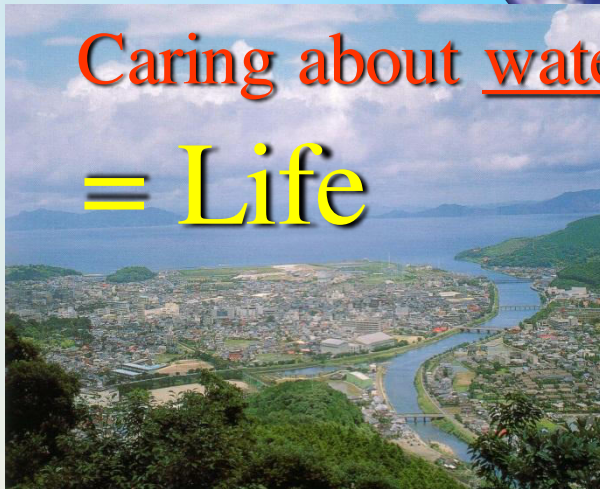
**Before deeper separation of trash began in  
1992, there were  
only **two categories**:  
**Combustibles** and **Non-combustibles****

Starting in 1992,

# We began building an environmental model city

- Never repeat a pollution like Minamata disease
- Develop a town with the utmost attention to the Environment

The “Environment” in our daily life ...



First, with model neighborhoods



20  
categories

Over 300 town meetings



6 months later, began city-wide

# Steps toward deep separation (Growth of categories)

**Until  
FY1992**  
(Before launch)

- 2 groups**
- Combustibles
  - Non-combustibles

**FY1993**  
(First year of deep  
separation)

- 20 groups**
- Combustibles 1
  - Resource/bulky 19

**FY2002**  
(Ninth year)

- 23 groups**
- Combustibles 1
  - Resource/bulky 22
- \* kitchen waste  
separation starts**

**FY2018  
(Now)**

- 22 groups**
- Combustibles 1
  - Resource/bulky 21

# The effect of separation

Fiscal year	Total volume of waste (ごみの総量)	Landfilled waste (埋立量)	Recycling rate (リサイクル率)	Population (persons) (人口)
1991 <sub>(H3)</sub>	10,926 t	4,013 t	0%	34,510
1994 <sub>(H6)</sub>	8,838 t	1,289 t	16.5%	33,671
2004 <sub>(H16)</sub>	9,278 t	1,009 t	41.2%	29,784
2009 <sub>(H21)</sub>	7,885t	531t	44.8%	27,896
2013 <sub>(H27)</sub>	7,885t	592 t	40.0%	26,773
2017 <sub>(H29)</sub>	6,889t	579t	41.6%	25,165

# City of Minamata Okayama Non-combustibles Landfill Site



# City of Minamata

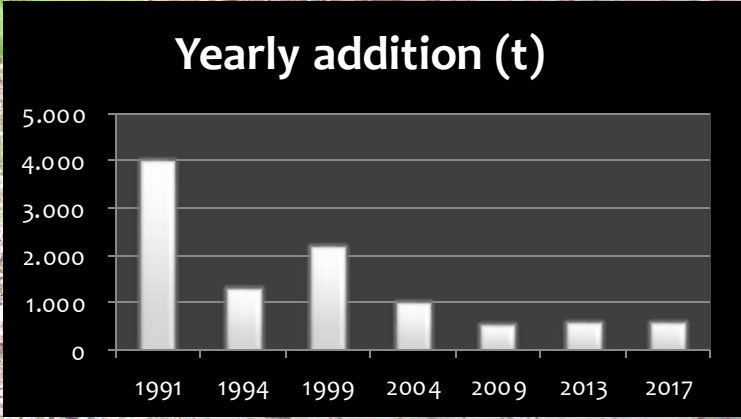
## Okayama Non-combustibles Landfill Site

Remaining capacity: 38,500 m<sup>3</sup>

Remaining life: approx. 41 years (2017 study)







# Container method (distribution)

Resource  
waste  
309 stations



# Residents put out containers and place tags of items on them



# Recycling promotion



**Workshop  
coming in  
April!**



**Once a month residents bring in waste items on a set date and time. A resource waste station is set up and run by the community association.**



**Junior high  
school students  
also help out**

# Waste if mixed, resources if separated



*Minamata is amazing!*

**From children to the elderly, everyone separates waste with no sweat**



Revenue from the sale of resources: 23,031,700 yen (2017)

**Returned to communities as a recycling refund**

**Refund in 2017: 10.6 million yen**





# The Minamata Eco-Town Project

★ ⇒ Facility doing the intermediate waste disposal for recyclable waste from the Clean Center



Used Oil Recycling Facility

★ Home Electronics Recycling Facility

Construction Waste and Asphalt Mixture Production and Recycling Facility

★ Bottle Reusing & Recycling Facility

Plastic Waste Recycling Facility

Raw Garbage Recycling Facility

★ Used Paper Recycling Facility

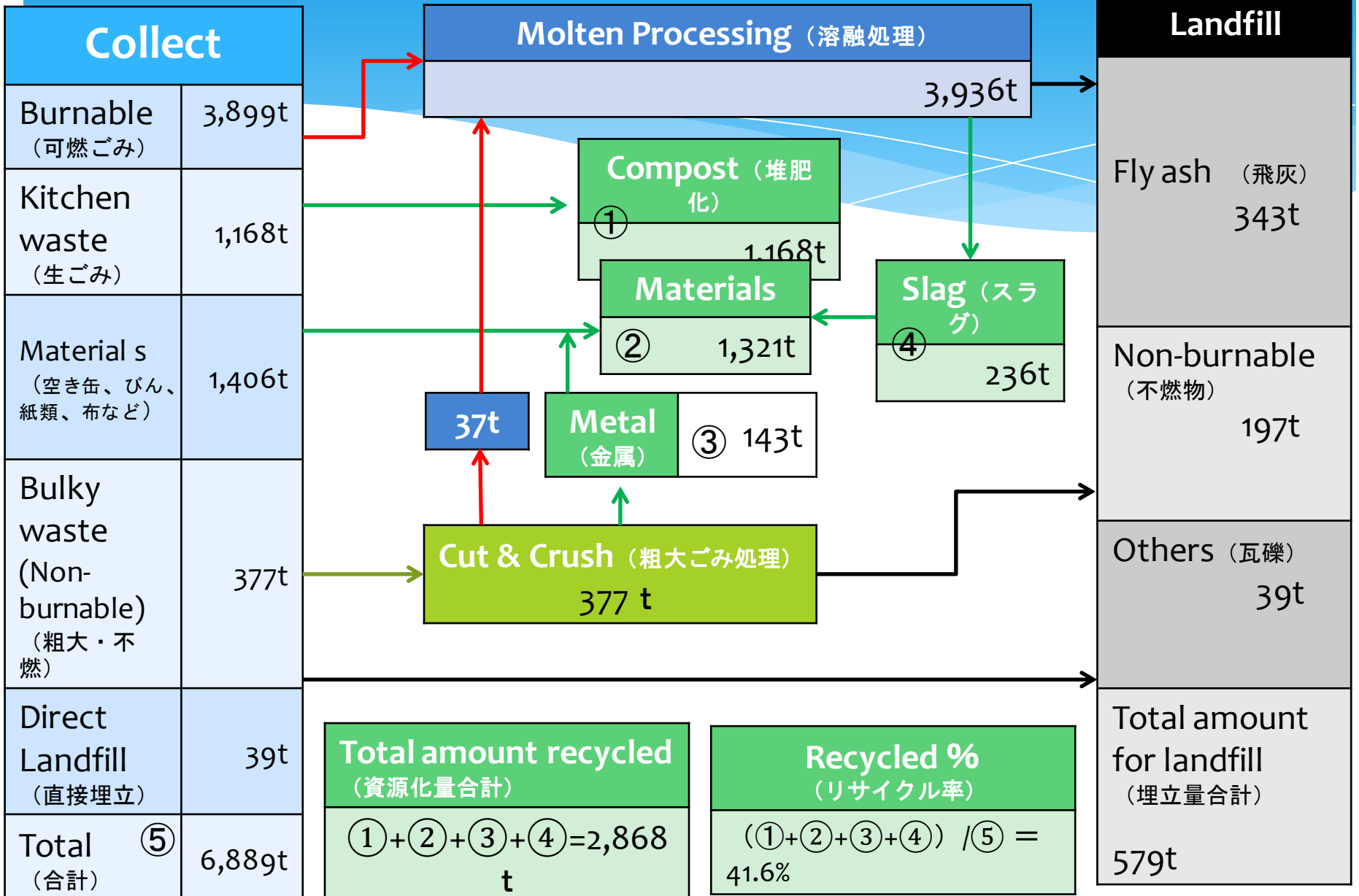
★ Plastic Bottle Recycling Facility

The Clean Center

# 2017 Domestic Waste in Minamata city

Population 25,165p(2017.10.01)

# Processing System



# 2017 Sales revenue of recycled resources

Materials		Shipping amount (t)	Sales proceed (¥)
Bottles	Reuse Bottles (生びん)	20	297,393
	Other Bottles (雑びん)	187	9,335
Paper	News paper (新聞)	262	6,099,44
	Cardboard (段ボール)	112	2,255,170
	Other paper (雑誌・牛乳パック)	284	4,820,033
Clothes (布)		146	73,090
Cans	Aluminum (アルミ缶)	32	4,548,556
	Steel (スチール缶)	36	910,180
Metal (金属)		120	3,302,49
Electric cables (電気コード)		4	567,050
Plastic bottles (ペットボトル)		61	132,820
Cooking oils (食用油)		4	16,157
<b>Total amount</b>		<b>1,268</b>	<b>23,031,700</b>

# 2017 Materials Processing costs

Materials		Processing amounts( t )	Processing costs(\\)
Kitchen waste (生ごみ)		1,170	16,662,410
Packing Plastics (容器包装プラ)		158	76,712
D e h u m i d i f i e r (除湿器)		22	76,680
Hazardous (有害)	Batteries (乾電池)	11	815,994
	Fluorescent tubes (蛍光管)	4	379,479
Total amount (合計)		1,365	18,011,275

Hazardous waste  
(dry cells, fluorescent tubes, etc.):  
collection, storage, and disposal

# Disposal of button cells and secondary (rechargeable) batteries

(Residents discharge after insulation)

Button cells



Remove battery cells from the equipment



Nickel-cadmium battery

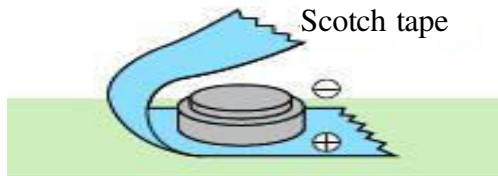


Nickel-metal-hydride battery

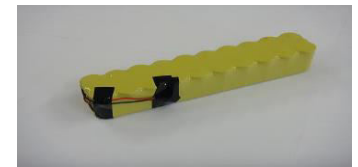
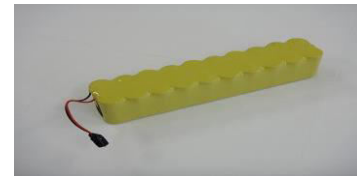
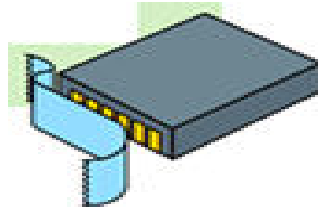


Lithium-ion battery

Look for the recycling mark



Scotch tape



Button cells and secondary (rechargeable) batteries pose a fire risk during collection, transportation and storage. According to the national guidelines, residents are required to insulate the anode and cathode with Scotch tape or the like before disposing as waste



# How to dispose of cells

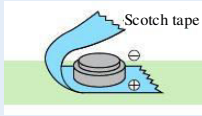
(Types 1 and 2 have fire risks during collection/transportation or storage. Make sure to insulate with tape.)

## 3 types!

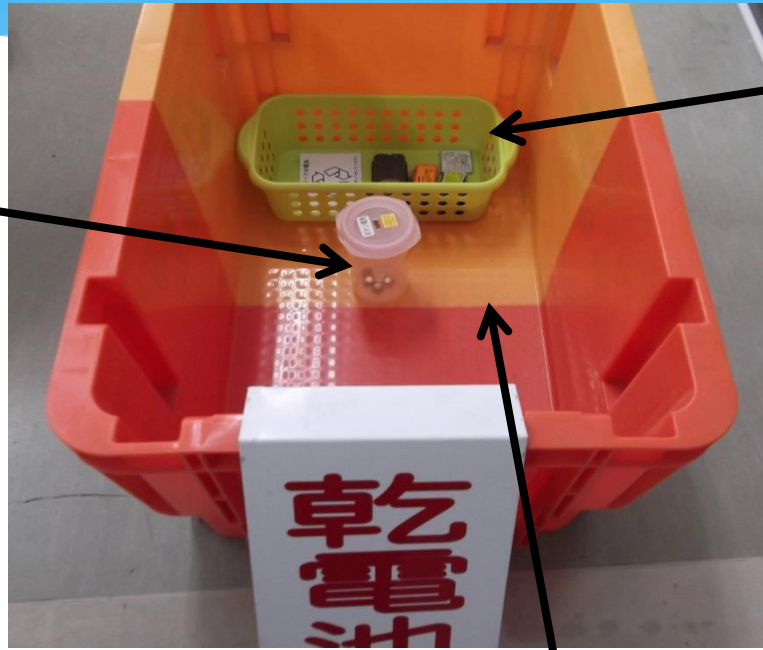
### 1

#### Button cells

Into a bottle with cut-out cover



Push a cell hard into a bottle because the cell was wrapped in tape. If the cell won't go into the bottle even with a push, you should go it into the container



Cells other than category 1 or 2

Place directly inside the container as before. The fire risk is nearly zero. Covering with tape is acceptable, but not required.

### 2

#### Cells with a recycling logo

Into the basket



Nickel-cadmium battery

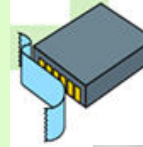


Nickel-metal-hydrate battery



Lithium-ion battery

Look for the recycling mark

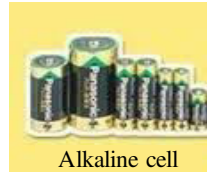


★Do not remove this information sheet from the container.

The containers travel around stations.



Manganese cell



Alkaline cell



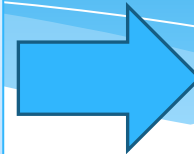
Primary lithium battery

This sheet must not be removed



The Clean Center stores  
the cells by type

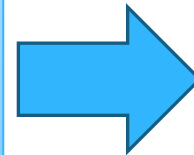
Button cells



Nomura Kohsan Co.,  
Ltd. (Hokkaido)

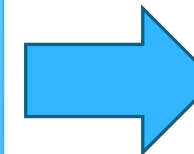
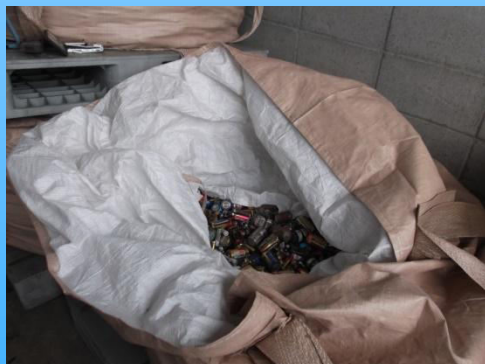
予定

Recyclable  
batteries



Sent to Japan Portable  
Rechargeable Battery  
Recycling Center  
(JBRC)

Other  
batteries



Determined by bidding

# Fluorescent tubes, light bulbs

Residents dispose of them in a net



The Clean Center sorts them according to type and stores them



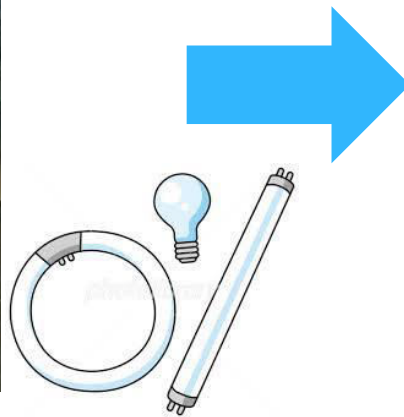
Mercury health thermometer  
Mercury thermometer  
Mercury sphygmomanometer



Packed into boxes and shipped to contractor periodically



# Introducing a new collection container



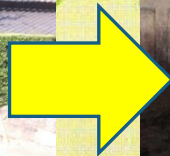
foldable container



- In line with the enactment of the Minamata Convention on Mercury, local governments were required to take ever more safety-conscious measures to protect mercury-based products against breakage and to prevent mercury from scattering and leaking out of the products at the time of discharging, collecting, transporting and storing them.
- As for the previously used vertical nets, it was cumbersome to put in and take out mercury-based products and they were sometimes damaged. Therefore, we are going to use stable horizontal containers so that products won't be broken and mercury won't scatter or flow out of them.

# Recycling of Garbage Since 2002

~不知火海~



# Lending garbage disposal containers (Kiero) free of charge since 2017



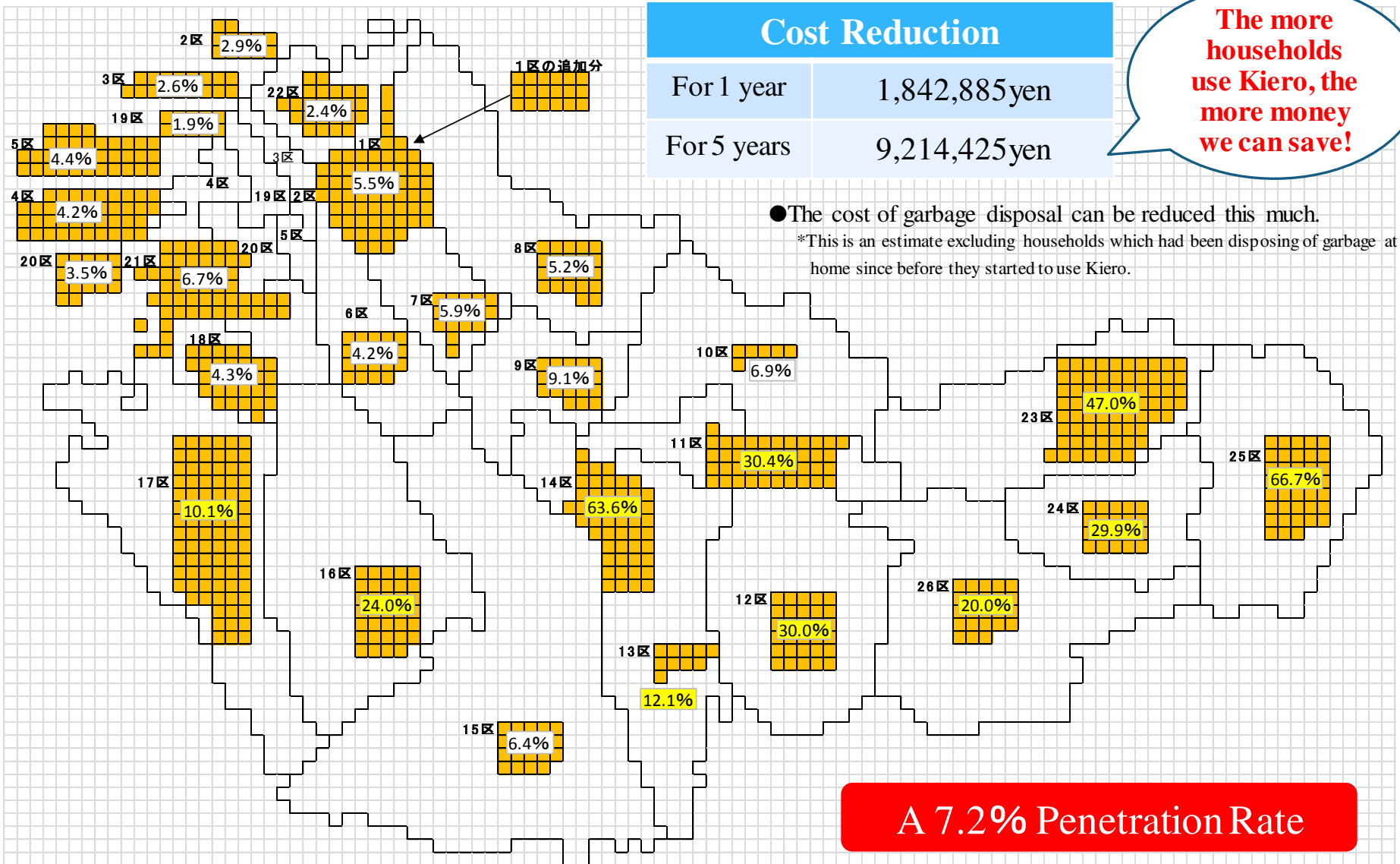
**Making a pledge for  
disposing of garbage  
at home:**

“We do not need garbage collection services as we dispose of garbage with Kiero as well as in farmland!”  
decided some communities.

**706 Kiero containers have been installed  
since August 15, 2017 (As of Dec. 31)**

# More and more residents use Kiero

Let's work on disposing of garbage at home in seeking to realize zero-waste



The more households use Kiero, the more money we can save!

## Cost Reduction

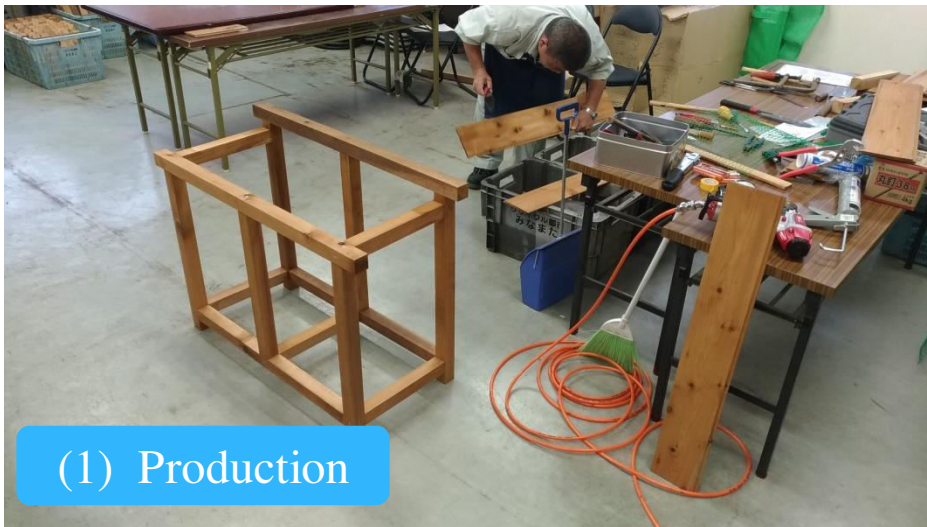
For 1 year	1,842,885yen
For 5 years	9,214,425yen

●The cost of garbage disposal can be reduced this much.  
 \*This is an estimate excluding households which had been disposing of garbage at home since before they started to use Kiero.

**A 7.2% Penetration Rate**







(1) Production



(2) Completion



(3) Delivery • Installation



(4) Earthing



(5) Instruction



(6)  
Demonstration

# The Effect of the Introduction of Kiero

- Get rid of garbage without worrying about the collection day and time
- No need to carry garbage to the station
- OK to simply put miso soup, dressing and oil into Kiero
- Not need to buy garbage bags  
(\*You can save about 3,000 yen per year.)
- Above all, you can reduce garbage!
- You can reuse the garbage decomposed and processed in Kiero as compost (quality soil) for growing flowers and vegetables in your gardens.

*Easy!*

*Convenient!*

*With proper usage,*

*Odorless!*

**The challenge of Minamata City  
toward the reduction of garbage  
and the development of  
a zero-waste town**