

Aerial photo of the Hibikinada-Nishi
Controlled Landfill Site during construction



Photo taken November 24, 1997

Landfill Site of the City of Kitakyushu

Environment Bureau
City of Kitakyushu



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Landfill Site

Landfill Method

In April 2014, the City of Kitakyushu shifted from its conventional method of waste dumping to a floating platform, where the generation of dust and odors is controlled by unloading waste directly into water. Any deterioration of water quality inside the site can be controlled in the final stages of the landfill as waste is landfilled across a wide and shallow area on the sea surface.

③ Floating platform method



③ Floating platform method



③ Waste dumping method



Hiagari Loading Site

The Hiagari Loading Site, in operation since March 1981, accepts waste generated in the eastern part of the city. The received waste is transported over land to the Hibikinada-Nishi Controlled Landfill Site using closed-type dump trucks.

③ Full view of facility ③ Delivery



Future Landfill Site

A long-term and stable landfill site must be secured to support the comfortable lives of Kitakyushu's residents and industrial activities, such as those of small- and medium-sized enterprises (SMEs), both now and in the future. Kitakyushu is promoting ways to extend the life of the existing facility and further develop the Hibikinada-Higashi Controlled Landfill Site to replace the current landfill site, with an eye on the impending approach of the end of the facility's serviceable period.

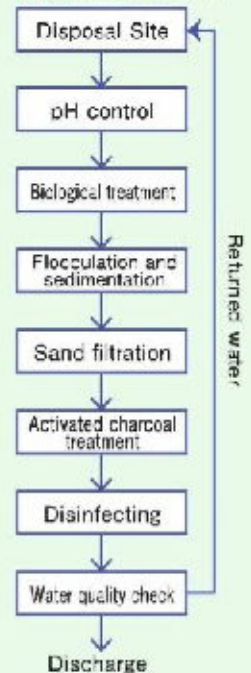
③ Disposal capacity

Landfill area	Landfill volume
219,000 m ²	2,530,000 m ³

Wastewater Treatment Facility

Water that has come into contact with waste is purified at a wastewater treatment facility and drained into the open sea. The discharged water is regularly inspected and checked to confirm that it is in full compliance with wastewater standards.

③ Full view of facility ③ Treatment flow



③ Treatment capacity

Volume of discharged water
170 m³/h

③ Checking water quality





Hibikinada-Nishi Controlled Landfill Site

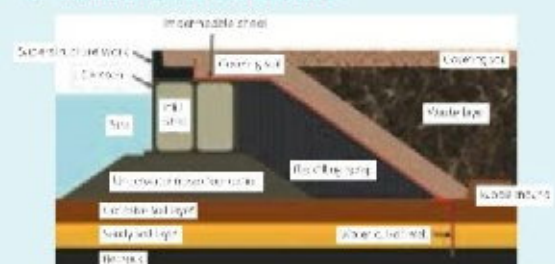
In October 1998, Kitakyushu started accepting incombustible domestic waste and industrial waste from SMEs generated in the city at the sea area landfill site constructed offshore in the Hibikinada area of Wakamatsu ward.

Since the controlled site is enclosed by a revetment that has been reinforced with an impermeable sheet and covering soil, water that may be contaminated through contact with waste does not seep out into the open sea.

© Disposal capacity

	Landfill area	Landfill volume
Section 2	371,000 m ²	4,571,000 m ³
Section 3	202,000 m ²	2,579,000 m ³
Total	573,000 m ²	7,150,000 m ³

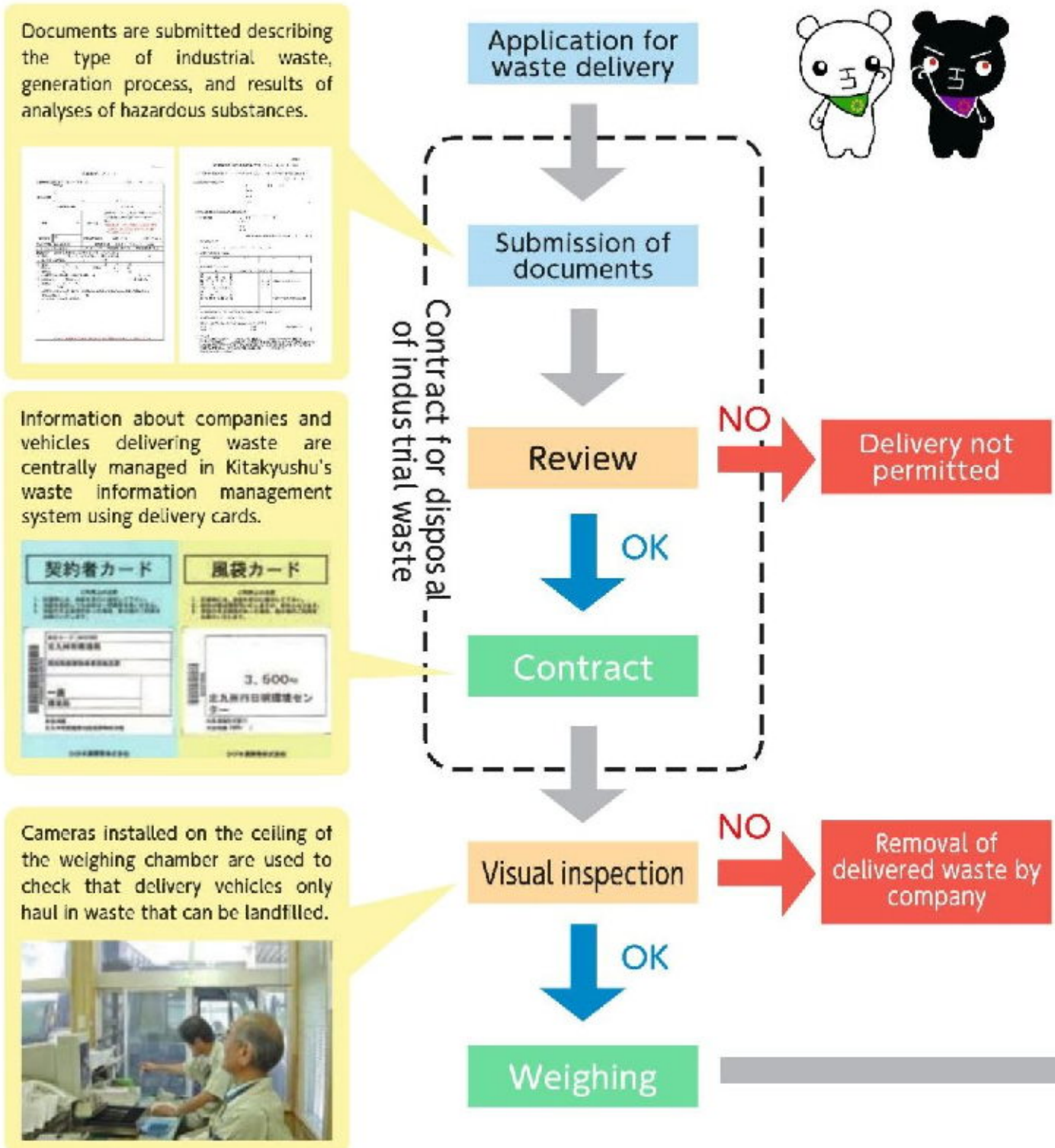
© Revetment structure



Waste Landfill Management

Landfilled waste must comply with standards set out in laws and regulations. For this reason, waste that is bulky or contains a high concentration of harmful substances (waste unsuitable for landfill) cannot be accepted.

Waste at the Hibikinada-Nishi Controlled Landfill Site is inspected with a variety of methods to ensure that only waste that can be landfilled is hauled in.





Landfill

In order to monitor the impact of water discharged from the landfill site, Kitakyushu checks the water quality in the sea area around the site each month.



Samples of delivered waste are collected and concentrations of hazardous substances in the waste are checked to ensure that it complies with receiving standards.



Before waste is tipped at the landfill site, it is temporarily removed from the vehicle to check that substances that cannot be landfilled are not mixed in with the waste.



Use of former site

The former landfill site that has served out its role has been repurposed as a site for experimental studies on green spaces and solar/wind power generation.



Lifting of suspension on waste delivery



Confirmation



Improvement measures



Inspection of samples



Suspension of waste delivery



Removal of waste by company

Detailed inspection



Type of Waste Accepted at Landfill

○ Types of Waste and Individual Standards

(As of April 1, 2016)

Type	Individual Standards	Examples of Waste
Burnt residue	<ul style="list-style-type: none"> Residue with an ignition loss of 10% or less Residue that has been pre-treated to ensure that it does not scatter into the atmosphere 	Ash residue, coal ash, coke ash, waste incineration ash, waste produced from cleaning furnace equipment, bottom ash, waste carbon, etc.
Sludge	<ul style="list-style-type: none"> Inorganic sludge (with an ignition loss of 15% or less) Dehydrated sludge with a water content of 85% or less 	Slurry discharged during the manufacturing process of manufacturing industries, bentonite sludge, cement sludge, polishing sludge, sewage sludge, sludge from water purification plants, etc.
Waste plastics	<ul style="list-style-type: none"> Solid plastics (without hollow centers, such as pipes, bottles, tires, etc.) Plastics that have been crushed or cut with a maximum diameter of 15 cm or less 	Synthetic resin, synthetic fiber, synthetic rubber, FRP, synthetic resin building materials (polyvinylchloride pipes and corrugated polyvinylchloride panels), waste tires, etc.
Waste rubber	<ul style="list-style-type: none"> Rubber that has been crushed or cut with a maximum diameter of 15 cm or less 	Natural rubber
Waste metals	<ul style="list-style-type: none"> Metal that has been crushed or cut with a maximum diameter of 15 cm or less 	Scrap iron, scrap, tin galvanized iron, foil, lead pipes, copper wire, iron powder, cutting chips, welding spatter, aluminum building materials, etc.
Glass waste, concrete waste (excluding debris), pottery waste	<ul style="list-style-type: none"> Waste that has been crushed or cut with a maximum diameter of 30 cm or less (Waste gypsum board that does not contain any paper) 	Glass waste, firebrick chips, cement product waste, pottery waste, silica, tiles, marble, roof tiles, thermal insulation materials, heat insulators, waste gypsum boards, etc.
Slag	<ul style="list-style-type: none"> Slag with a maximum diameter of 30 cm or less 	Waste casing sand, slag (discharged from blast furnaces, converters, and electric furnaces), lime wash, culm, sand blasting waste, low-grade ore, etc.
Debris (Fragments of concrete generated from new construction, remodeling, or removal of buildings, etc.)	<ul style="list-style-type: none"> Debris that has been crushed or cut with a maximum diameter of 30 cm or less Debris that does not contain waste wood, etc. 	Concrete fragments, brick fragments, block fragments, tile fragments, etc. from new construction, remodeling, or removal of buildings
Soot and dust	<ul style="list-style-type: none"> Soot and dust collected by a wet-type dust collector that has been dried with a water content of 85% or less Soot and dust that has been collected at other dust collectors and pre-treated to ensure that it does not scatter into the atmosphere 	Dust that has been collected by a dust collector attached to a facility that generates soot and dust and incineration facilities, etc.
Waste prescribed in Article 2, item(xii) of the Order for Enforcement of the Waste Disposal and Public Cleansing Act	<ul style="list-style-type: none"> Industrial waste that is confirmed to be stable as a result of pretreatment 	Solidified concrete material, solidified concrete

○ Types of Earth and Sand and Individual Standards

(As of April 1, 2016)

Type	Individual Standards
General earth and soil	<ul style="list-style-type: none"> Earth and soil with a maximum diameter of 30 cm or less Soil that has been confirmed to pose no danger of contamination
Treated soil	<ul style="list-style-type: none"> Soil with a maximum diameter of 30 cm or less Soil that exceeds judgement criteria for general earth and soil, but satisfies the receiving standards for waste, etc.

■ Waste that cannot be accepted

- Waste generated outside Kitakyushu City
- Industrial waste containing asbestos (asbestos slate, vinyl floor tiles, etc.)
- Waste that cannot be checked at the time it is loaded (waste delivered in plastic bags, soil bags, flexible container bags, etc.)
- Harmful substances such as toxic substances, agricultural chemicals, hazardous substances, etc., as stipulated in the Poisonous and Deleterious Substances Control Law, Agricultural Chemicals Control Act, and Fire Services Act
- Waste with one of the following properties:
 - Liquid, flammable, decomposed, containing oil, emitting odors, potential to scatter
- Other waste that will obstruct landfill disposal.

Site & Receiving Standards



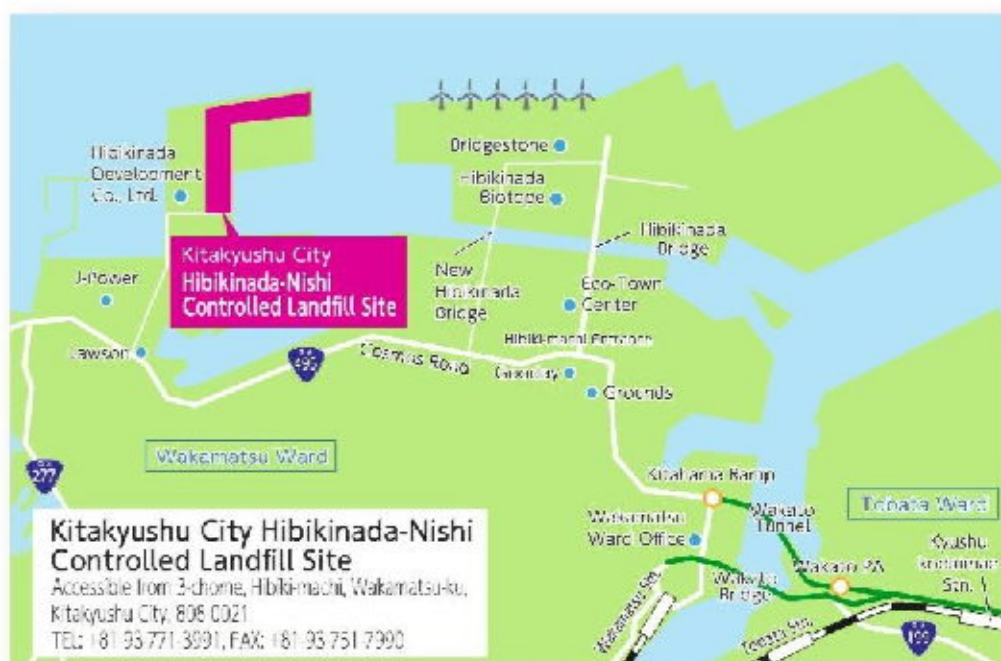
○ Standards

(As of September 15, 2016)

Item	Receiving Standards for Waste, etc.	Acceptance Criteria for General Earth and Soil	
	Leaching Reference Value	Leaching Reference Value	Content Reference Value
Alkyl mercury compounds	Not detected	Not detected	—
Mercury and its compounds	0.005 mg/L or less	0.0005 mg/L or less	15 mg/kg or less
Cadmium and its compounds	0.03 mg/L or less	0.01 mg/L or less	150 mg/kg or less
Lead and its compounds *1	0.1 mg/L or less	0.01 mg/L or less	150 mg/kg or less
Organophosphorus compounds	1 mg/L or less	Not detected	—
Hexavalent chromium compounds	0.5 mg/L or less	0.05 mg/L or less	250 mg/kg or less
Arsenic and its compounds	0.1 mg/L or less	0.01 mg/L or less	150 mg/kg or less
Cyanide compounds	1 mg/L or less	Not detected	50 mg/kg or less
PCB	0.003 mg/L or less	Not detected	—
Trichloroethylene	0.1 mg/L or less	0.03 mg/L or less	—
Tetrachloroethylene	0.1 mg/L or less	0.01 mg/L or less	—
Dichloromethane	0.2 mg/L or less	0.02 mg/L or less	—
Carbon tetrachloride	0.02 mg/L or less	0.002 mg/L or less	—
1,2-Dichloroethane	0.04 mg/L or less	0.004 mg/L or less	—
1,1-Dichloroethylene	1 mg/L or less	0.1 mg/L or less	—
cis-1,2-Dichloroethylene	0.4 mg/L or less	0.04 mg/L or less	—
1,1,1-Trichloroethane	3 mg/L or less	1 mg/L or less	—
1,1,2-Trichloroethane	0.06 mg/L or less	0.006 mg/L or less	—
1,3-Dichloropropene	0.02 mg/L or less	0.002 mg/L or less	—
Thiuram	0.06 mg/L or less	0.006 mg/L or less	—
Simazine	0.03 mg/L or less	0.003 mg/L or less	—
Thiobencarb	0.2 mg/L or less	0.02 mg/L or less	—
Benzene	0.1 mg/L or less	0.01 mg/L or less	—
Selenium and its compounds	0.1 mg/L or less	0.01 mg/L or less	150 mg/kg or less
1,4-dioxane	0.5 mg/L or less	—	—
Fluorine and its compounds *2	15 mg/L or less	0.8 mg/L or less	4,000 mg/kg or less
Boron and its compounds	30 mg/L or less	1 mg/L or less	4,000 mg/kg or less
Dioxins	3 ng-TEQ/g or less	—	1 ng-TEQ/g or less
Moisture content	85% or less		
Ignition loss *3	10% or less		

- *1 The receiving standard for lead and its compounds shall remain at 0.3 mg/L or less until otherwise noted.
- *2 The receiving standard for fluorine and its compounds shall not be applied until otherwise noted.
- *3 Burnt residue and sludge incinerated at facilities other than industrial waste incineration facilities specified in Article 7 of the Ordinance for Enforcement of the Waste Disposal and Public Cleansing Act (not considering incineration capacity) shall be 15% or less.





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