

# Environmental performance

## Local environmental conservation

### Air and water quality conservation

Each of our plants has its own regulation standards regarding the emission to environment.

These self-imposed standards are stricter than those of municipal regulations.

In this way, we prevent air pollution and water pollution.

### An example of water quality (Shiga plant)

(Effluent volume : 2000 m<sup>3</sup> / day)

Item	National standard	Prefectural or municipal standard	In-house standard	Measured value
pH (hydrogen ion concentration)	5.8 - 8.6	6.0 - 8.5	6.3 - 8.1	7.5
BOD (biochemical oxygen demand)	160 (mg / ℓ) (daily average 120)	20	15	3.3
COD (chemical oxygen demand)	160 (mg / ℓ) (daily average 120)	20	15	7.7
SS (suspended solids)	200 (mg / ℓ) (daily average 150)	20	15	2.8
Dissolved iron	10 (mg / ℓ)	10	8	0.05
Nitrogen	120 (mg / ℓ) (daily average 60)	8	6.5	1.2
Phosphorus	16 (mg / ℓ) (daily average 8)	0.8	0.65	0.10
Boron	—	2 (mg / ℓ)	1.5	0.02

All other items with no mention were under minimum limit of determination. (not detected)

N-hexane (mineral oil) / N-hexane (animal/vegetable oil) / Phenols / Copper / Zinc / Dissolved manganese / Chrome / Fluorine / Coliform group number / Cadmium and its compounds / Cyanides / Organic phosphoric compounds / Lead and its compounds / Hexavalent chromium compounds / Arsenic and its compounds / Total mercury / Alkyl mercury compounds / PCB / Trichloroethylene / Tetrachloroethylene / Dichloromethane / Carbon tetrachloride / 1,2-dichloroethane / 1,1-dichloroethylene / Cis-1,2-dichloroethylene / 1,1,1-trichloroethane / 1,1,2-trichloroethane / 1,3-dichloropropene / Thiram / Simazine / Thiobencarb / Benzene / Selenium and its compounds (Antimony: regulation substance by Shiga prefectural ordinance)

### An example of water quality (Funabashi plant)

No 1 Outlet (Effluent volume : 3600 m<sup>3</sup> / day)

Item	National standard	Prefectural or municipal standard	In-house standard	Measured value
pH (hydrogen ion concentration)	5 - 9	5 - 9	5.4 - 8.9	7.3
BOD (biochemical oxygen demand)	(in the sea)	Not detectable	Not detectable	Not detectable
COD (chemical oxygen demand)	160 (mg / ℓ) (daily average 120)	20	8	2
SS (suspended solids)	200 (mg / ℓ) (daily average 150)	20	8	3
Dissolved iron	10 (mg / ℓ)	5	4	0.2
Fluorine	15 (mg / ℓ)	10	8	0.3
Coliform group number	3000/cc	3000	1000	2
Nitrogen	120 (mg / ℓ) (daily average 60)	20	16	2.75
Phosphorus	16 (mg / ℓ) (daily average 8)	2	1.6	0.03

All other items with no mention were under minimum limit of determination. (not detected)

N-hexane (mineral oil) / N-hexane (animal/vegetable oil) / Phenols / Copper / Zinc / Dissolved manganese / Chrome / Cadmium and its compounds / Cyanides / Organic phosphoric compounds / Lead and its compounds / Hexavalent chromium compounds / Arsenic and its compounds / Total mercury / Alkyl mercury compounds / PCB / Trichloroethylene / Tetrachloroethylene / Dichloromethane / Carbon tetrachloride / 1,2-dichloroethane / 1,1-dichloroethylene / Cis-1,2-dichloroethylene / 1,1,1-trichloroethane / 1,1,2-trichloroethane / 1,3-dichloropropene / Thiram / Simazine / Thiobencarb / Benzene / Selenium and its compounds

### An example of air quality

Facility	Plant	Regulated substance	Unit	National standard	Local standard	Agreement standard	In-house standard	Measured value
Cupola	Mukogawa	Dust	g / m <sup>3</sup> N	0.1	0.1	0.1	0.05	0.0024
Cupola	Funabashi	Dust	g / m <sup>3</sup> N	0.1	0.1	0.1	0.05	0.01 or less
Wastes incinerator	Shinyodogawa	Dioxins	ngTEQ / m <sup>3</sup> N	80	80	—	64	0.91
Wastes incinerator	Shiga	Dioxins	ngTEQ / m <sup>3</sup> N	80	80	—	64	2.5
Wastes incinerator	Odawara	Dioxins	ngTEQ / m <sup>3</sup> N	80	80	—	64	4.2

### Measures for trouble or emergency

In order to improve the current status of environmental pollution prevention, we have been specifying some accidents and emergencies (leak accident from wastewater treatment facilities, leak accident from oil tanks, etc.) which are required in the article "4.4.7 the preparations and measures for emergencies" of environmental management system ISO14001 standards, at each workshops in our twenty plants since 1997. Pollution accident did not occur, since we have been promoting the measures such as strict maintenance of environment-related facilities, strict control of toxic chemical substances, installation of pollution prevention facilities, making manual for accident, and the training for accident.

### Examples in Sakai plant

Alarm confirmation on a switchboard on site

Display monitoring various kinds of data

Information route and measures for trouble or emergency


The bulletin board of information and instruction route in an emergency on site

### Record on emergency training in emergency control facilities


**Emergency**  
 Assumption 1 : safety valve worked because of abnormal pressure  
 Assumption 2 : an operator discovered abnormal pressure before safety valve worked

Training implementation day : January 28, 2001  
 Training time : 16 : 40 to 17 : 30  
 Training place : welding A line at east side in factory A6  
 Equipment name : carbon dioxide gas storage equipment  
 In-house number : G-0650  
 Applied law : the Law on Control of High-pressure Gas

**Assumption 1**



① safety valve worked because of abnormal pressure



② gas blew up automatically  
③ request of help to neighbor

④ inform it to the manager in charge



⑤ decrease pressure rapidly by opening discharge valve (S-1) according to the instruction of manager in charge


to inform according to the bulletin board of information and instruction route in an emergency on-site inform it to manufacturing technology section to confirm cause of abnormal pressure and safety of equipments

**Assumption 2**



pressure gauge  
① discovery of abnormal pressure


② inform it to the manager in charge



③ decrease pressure rapidly by opening discharge valve (S-1) according to the instruction of manager in charge

to inform according to the bulletin board of information and instruction route in an emergency on-site inform it to manufacturing technology section to confirm cause of abnormal pressure and safety of equipments

**On-site education and guidance for daily control**




Explanation of pressure gauge and safety valve



Explanation of valve for effluent



Effluent valve and pressure decrease in the vaporizer



Explanation of handling the vaporizer