

Japan Display Inc. CSR Report 2020 Environmental Data Collection

Our environmental data for domestic sites in FY2019 is shown in the table below.

1. Environmental Measurement Data

Wastewater Management

Living environment items

Name of plant	Discharge location	BOD ^{*1} (mg/L)					COD ^{*2} (mg/L)					SS ^{*3} (mg/L)					Hydrogen ion concentration (pH)				
		Legal limit	JDI standards	Minimum value	Average	Maximum value	Legal limit	JDI standards	Minimum value	Average	Maximum value	Legal limit	JDI standards	Minimum value	Average	Maximum value	Legal limit	JDI standards	Minimum value	Average	Maximum value
Mobara (1)	River	10	8	<0.5	0.9	1.9	25	20	1.4	2.1	2.5	20	15	<0.5	1.1	1.8	5.8~8.6	6.0~8.4	7.1	7.4	7.7
Mobara (2)	River	10	8	<0.5	1.4	2.5	25	20	1.6	2.3	3.1	20	15	<0.5	0.8	1.6	5.8~8.6	6.0~8.4	7.0	7.3	7.8
Tottori	Sewer	600	450	91	166	210	-	-	-	-	-	600	300	9	41	100	5.0~9.0	6.0~8.7	7.0	7.1	7.2
Higashiura	River	15	12	<0.5	0.5	0.9	10	8	2.4	2.8	3.2	15	12	<1.0	1.2	3	5.8~8.6	6.0~8.3	7.5	7.5	7.6
Ishikawa	River	80	29	5.6	6.9	8.1	160	125	1.8	2.4	3.0	120	60	3	4	5	5.8~8.6	6.1~8.2	7.0	7.2	7.3

Name of plant	Discharge location	Normal-hexane extracts (mg/L)					Phenols (mg/L)					Phosphorus (mg/L)					Nitrogen (mg/L)				
		Legal limit	JDI standards	Minimum value	Average	Maximum value	Legal limit	JDI standards	Minimum value	Average	Maximum value	Legal limit	JDI standards	Minimum value	Average	Maximum value	Legal limit	JDI standards	Minimum value	Average	Maximum value
Mobara (1)	River	2	1.6	<0.5	<0.5	<0.5	0.50	0.40	<0.05	<0.05	<0.05	16	6.4	<0.1	0.10	0.20	120	80	4.2	10.7	14
Mobara (2)	River	2	1.6	<0.5	<0.5	<0.5	0.50	0.40	<0.05	<0.05	<0.05	16	6.4	<0.1	0.10	0.10	120	80	20	25.4	30
Tottori	Sewer	5	2.5	<1.0	<1.0	<1.0	5	2.5	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
Higashiura	River	2	1.6	<0.5	<0.5	<0.5	5	4	<0.05	<0.05	<0.05	1	0.8	0.08	0.22	0.58	10	8	2.2	3.4	5.5
Ishikawa	River	5	4	<1.0	<1.0	<1.0	5	4	<0.05	<0.05	<0.05	16	14.9	1.00	1.4	1.7	120	95	4.6	5.4	6.4

Hazardous substances

Name of plant	Discharge location	Ammonia, ammonium compounds, nitrites, and nitrates (mg/L)					Boron and its compounds (mg/L)					Fluorine and its compounds (mg/L)				
		Legal limit	JDI standards	Minimum value	Average	Maximum value	Legal limit	JDI standards	Minimum value	Average	Maximum value	Legal limit	JDI standards	Minimum value	Average	Maximum value
Mobara (1)	River	100	80	3.6	9	12	10	8	<0.01	0.10	0.17	8	6.4	0.3	0.4	0.6
Mobara (2)	River	100	80	17	21	26	10	8	0.34	0.56	0.82	8	6.4	0.9	1.4	1.7
Tottori	Sewer	380	190	4.8	8.7	13.7	10	5	<0.2	<0.2	<0.2	8	5	0.2	1.3	2.6
Higashiura	River	100	80	1.9	3.1	5.3	10	8	<1.0	<1.0	<1.0	8	6.5	2.3	3.0	3.7
Ishikawa	River	100	80	3.1	3.30	3.4	10	8	<0.1	<0.1	<0.1	8	6	0.6	0.72	1.0

*1 Biochemical Oxygen Demand *2 Chemical Oxygen Demand *3 Suspended Solids

Air Emissions Management

Name of plant	Once-through boiler	Number	Particulate matter ^{*4} (g/Nm ³)			Nitrogen oxides ^{*5} (vol ppm)			Sulfur oxides ^{*6} (Nm ³ /h)		
			Legal limit	JDI standards	Result	Legal limit	JDI standards	Result	Legal limit	JDI standards	Result
Mobara	Once-through boiler	20	0.1	0.01	<0.01	150	120	21	-	-	-
Tottori	Once-through boiler	7	0.1	0.05	<0.001	150	75	27	-	-	-
	Absorption chiller	2	-	-	-	-	-	-	-	-	-
Higashiura	Flue and smoke tube boiler	4	0.1	0.08	0.003	150	120	39	-	-	-
	Multitubular once-through boiler	7	0.1	0.08	0.003	150	120	35	-	-	-
Ishikawa	Once-through boiler	3	0.3	0.15	<0.01	180	105	55.0	2.05	0.28	0.0046
	Flue and smoke tube boiler	2	0.3	0.15	<0.01	180	164	76	6.4	3.21	0.084
	Gas turbine	4	0.05	0.025	<0.01	70	56	47.0	9.53	5	0.118

*4 "Particulate matter" refers to soot and other solid particulate matter resulting from combustion.
 *5 "Nitrogen oxides" is a generic term that refers to compounds that arise from a combination of nitrogen atoms (N) and oxygen atoms (O).
 *6 "Sulfur oxides" is a general term for sulfur trioxide and other compounds of sulfur and oxygen, particularly sulfur dioxide (sulfurous acid gas).

(Suspended)

Noise/vibration management:

Unit: dB

Name of plant	Category	Time period	Legal limit	JDI standards	Actual (maximums)	
Mobara	Noise	Morning 06:00~08:00	65	60	53	
		Daytime 08:00~19:00	70	65	54	
		Evening 19:00~22:00	65	60	58	
		Night 22:00~06:00	60	57	56	
	Vibration	Daytime 07:00~22:00	65	60	37	
		Night 22:00~07:00	60	55	36	
Tottori ^{*7}	Noise	Morning 06:00~08:00	70	70	48	
		Daytime 08:00~19:00	65	65	45	
		Evening 19:00~22:00	70	70	59	
		Night 22:00~06:00	65	65	48	
			65	65	46	
			65	65	47	
			65	65	48	
			50	50	42	
	Vibration	Daytime 08:00~19:00	65	65	41	
		Night 19:00~08:00	60	60	34	
Higashiura	Noise	Morning 06:00~08:00	55	55	54	
		Daytime 08:00~19:00	60	60	54	
		Evening 19:00~22:00	55	55	54	
		Night 22:00~06:00	50	50	50	
	Vibration	Daytime 07:00~22:00	60	40	23	
		Night 22:00~07:00	55	40	23	
Ishikawa	Noise	Morning 06:00~08:00	60	60	52	
		Daytime 08:00~19:00	65	65	47	
		Evening 19:00~22:00	60	60	49	
		Night 22:00~06:00	50	50	49	
	Vibration	Daytime 07:00~22:00	65	30	- *8	
		Night 22:00~07:00	60	30	- *8	

*7 Noise regulation areas are of two types, differing by position at the plant ground boundary.
 *8 No corresponding facilities.

Odor Management

Name of plant	Items	Compounds	Units	Legal limit	JDI standards	Results	Compounds	Units	Legal limit	JDI standards	Results	Compounds	Units	Legal limit	JDI standards	Results		
Mobara	No. 1 regulation (site boundary)	-	Odor inde	14	14	13	-											
Tottori	No. 1 regulation (site boundary)	Ammonia	ppm	5	5	<0.1	Hydrogen sulfide	ppm	0.2	0.2	<0.002	Xylene	ppm	1	1	<0.1		
		Toluene	ppm	10	10	<1	-											
	No. 2 regulation (gas outlet)	Ammonia	m3/h	740	740	<0.0020	Toluene	Exhaust tower for organic abatement	m3/h	1200	1200	<0.0019	Xylene	Exhaust tower for organic abatement	m3/h	120	120	<0.00019
		-						Air release port for organic abatement	m3/h	890	890	<0.0053		Air release port for organic abatement	m3/h	89	89	<0.00053
		-						Purge gas outlet for organic abatement	m3/h	1100	1100	<0.018		Purge gas outlet for organic abatement	m3/h	110	110	<0.0018
No. 3 regulation (effluent)	Hydrogen sulfide	mg/L	0.2	0.2	<0.0005	-												
Higashiura	No. 1 regulation (site boundary)	-	Odor inde	18	15	<10	-											
	No. 3 regulation (effluent)	-		34	27	<3	-											
Ishikawa	No. 1 regulation (site boundary)	Ammonia	ppm	2	1	<0.1	Methyl mercaptan	ppm	0.004	0.0012	<0.0001	Hydrogen sulfide	ppm	0.06	0.018	<0.0001		
		Methyl sulfide	ppm	0.05	0.01	<0.0001	Methyl disulfide	ppm	0.03	0.009	<0.0001	Trimethylamine	ppm	0.02	0.006	<0.002		
		Propionic acid	ppm	0.07	0.03	<0.0007	n-butyric acid	ppm	0.002	0.001	<0.0002	n-valeric acid	ppm	0.002	0.0009	<0.0002		
		Isovaleric acid	ppm	0.004	0.001	<0.0002	Acetaldehyde	ppm	0.1	0.03	<0.01	Propionaldehyde	ppm	0.1	0.03	<0.0007		
		n-butyraldehyde	ppm	0.03	0.009	<0.0005	Isobutyl aldehyde	ppm	0.07	0.021	<0.0005	n-valeraldehyde	ppm	0.02	0.006	<0.0004		
		Isovaleraldehyde	ppm	0.006	0.0018	<0.0004	Isobutyl alcohol	ppm	4	1.2	<0.1	Ethyl acetate	ppm	7	2.1	<0.3		
		Methyl isobutyl ketone	ppm	3	0.9	<0.1	Toluene	ppm	30	9	<1	Styrene	ppm	0.8	0.24	<0.04		
		Xylene	ppm	2	0.6	<0.1	-											
	No. 3 regulation (effluent)	Methyl mercaptan	mg/L	0.01	0.003	<0.0004	Hydrogen sulfide	mg/L	0.07	0.02	<0.007	Methyl sulfide	mg/L	0.3	0.07	<0.03		
		Methyl disulfide	mg/L	0.4	0.09	<0.04	-											

2. Substances Subject to Notification under PRTR

Table of Substances Subject to PRTR Notification

Unit: kg

Chemical substances	Quantity discharged				Quantity transferred			
	To air		To public water bodies		Sewer		Off-site	
	FY2018	FY2019	FY2018	FY2019	FY2018	FY2019	FY2018	FY2019
acetic acid 2-Methoxyethyl	3,570	155	0	0	0	0	0	0
2-Aminoethanol	112	95	1,272	843	0	0	0	2,900
Hydrogen fluoride and its water-soluble salts	1,330.3	1,270.3	0	0	0	0	490	700
Boron and its compounds	0	0	0	0	0	0	0	0
Indium and its compounds	0	0	13	20	0	0	150	550
Molybdenum and its compounds	0	0	770	520	0	0	2,502.5	6,301.7

Since the actual quantities discharged into soil and disposed in landfill for the concerned sites were zero, these were not recorded.

3. Environmental Accounting

Summary of Environmental Conservation Costs in Japan

Units: 1 million yen

Major category	Items	Details	Investment	Expenses
Environmental conservation costs *9 (cost within business area)	Pollution prevention cost	Costs for preventing air pollution, water pollution, soil pollution, noise, foul odors, and more	0	3,381
	Global environmental conservation cost	Costs for preventing global warming, conserving energy, preventing the depletion of the ozone layer, and more	11	273
	Resource recycling costs	Costs for the efficient utilization of resources, as well as the recycling, treatment and disposal of industrial waste and general waste	0	1,533
Total			11	3,177

*9 Analysis and measurement costs related to the environment are also included in the costs within business areas.

Summary of Environmental Conservation Effects in Japan

Major categories	Categories	Items	Effect	Units
Environmental conservation effects (physical unit)	Environmental conservation effects related to environmental burdens and waste *10	Emissions of energy-derived CO ₂	89	million t-CO ₂
		Emissions of waste, etc.	6,451	t
Economic benefits associated with environmental conservation activities	Operating revenue related to environmental burdens and waste	Revenue from the sale of valuables	19	1 million yen

*10 In order to consider the changes in the production output, values were derived using the following formula, which was established by referring to the Environmental Accounting Guideline.
Effects = emissions from the previous fiscal year x (glass substrate area from the fiscal year in question / glass substrate area from the previous fiscal year) - emissions from the fiscal year in question