

Site Reports

Tokuyama Factory

Location: 1-1, Mikage-cho, Shunan-shi, Yamaguchi 745-8648, Japan
 Number of employees: 1,512
 Total site area: 1.91 million m²
 Main products: Cement, inorganic chemical products, organic chemical products, polycrystalline silicon, fumed silica, polyvinyl chloride, and other products



Tokuyama Factory General Manager
Hideki Adachi



Still situated at the Company's first business site, the Tokuyama Factory is the Group's main manufacturing facility, and its products account for about 90% of non-consolidated sales. The factory operates with the motto, "Go to work healthy and return home happy." Aiming to achieve 5.4 million accident-free hours at the factory and 9 million accident-free hours at its contractors, the factory is working hard to keep everyone on site happy and safe at work. In fiscal 2016, the factory's top priorities include: (1) identifying and eliminating risks in the handling of hazardous substances, (2) conducting active safety dialogue to remove the root causes of risks that remain on the production floor, and (3) implementing hands-on hazard training for all employees in order to raise hazard awareness.

Performance Data

	Unit	FY2011	FY2012	FY2013	FY2014	2FY015
SOx emissions	metric tons	2,180	1,450	750	550	680
NOx emissions	metric tons	8,600	8,400	9,200	8,850	8,900
Soot emissions	metric tons	191	190	174	135	138
Industrial water consumption	Million metric tons	43.8	41.3	42.2	41.7	42.1
Effluent discharged	Million metric tons	24.2	24.8	22.1	23.9	24.2
COD level	metric tons	119	119	132	110	124
Total nitrogen discharged	metric tons	108	94	70	89	92
Total phosphorous discharged	metric tons	2.8	2.7	2.4	2.6	2.2
PRTR-designated substance emissions	metric tons	32	39	33	25	36
Waste generated	Thousand metric tons	379	381	395	354	389
Waste sent to landfills	metric tons	490	320	277	313	383
Energy consumption	Thousand gigajoules	52,400	44,100	43,700	44,200	45,100
CO ₂ emissions (originating from fossil fuel)	Thousand metric tons	4,730	4,020	4,010	4,040	4,110
Complaints	Cases	3	0	1	0	1

Emissions and Transfer of Specific PRTR-Designated Substances in Fiscal 2015

Substance name	Regulatory number	Amount of emissions				Amount transferred
		Atmospheric	Water	Soil	Subtotal	
1,2-Dichloroethane	157	10.6	0.0	0.0	10.6	0.3
Chloroethylene (vinyl chloride)	94	7.7	0.0	0.0	7.7	0.0
Toluene	300	5.1	0.0	0.0	5.1	51.0
Cresol	86	0.0	3.2	0.0	3.2	0.0
Chlorodifluoromethane	104	2.8	0.0	0.0	2.8	0.0
Chloromethane (methyl chloride)	128	2.4	0.0	0.0	2.4	0.0
Dichloromethane (methylene chloride)	186	1.3	0.0	0.0	1.3	0.0
Water-soluble compounds of zinc	1	0.0	1.4	0.0	1.4	0.0
Chloroform	127	0.7	0.0	0.0	0.7	0.0
1,2-Epoxypropane (propylene oxide)	68	0.6	0.0	0.0	0.6	2.1
1,2-Dichloropropane	178	0.4	0.0	0.0	0.4	165.7
Carbon tetrachloride	149	0.0	0.0	0.0	0.0	0.0
2,2-Azobisisobutyronitrile	16	0.0	0.0	0.0	0.0	0.0
Water-soluble copper salt	272	0.0	0.0	0.0	0.0	0.0
Hydrazine	333	0.0	0.0	0.0	0.0	0.0
Hydrogen fluoride and its water-soluble form	374	0.0	0.0	0.0	0.0	0.0
Benzene	400	0.0	0.0	0.0	0.0	0.0
Boron compounds	405	0.0	0.0	0.0	0.0	0.0
Dioxins	243	8.0	1.5	0.0	9.5	0.0
Total (excluding dioxins)		31.6	4.6	0.0	36.2	219.1

Substances are listed in descending order of emissions levels; substances with no emissions are listed in order of the regulatory number

Water refers to public waters

Amount transferred indicates the sum of the quantity transferred to sewage systems and the quantity subject to intermediate treatment

Total figures have been rounded to the first decimal place

Unit: metric tons (mg-TEQ equivalency for dioxins)

Kashima Factory

Location: 26 Sunayama, Kamisu-shi, Ibaraki 314-0255, Japan
 Number of employees: 76
 Total site area: 101,000m²
 Main products: **Produced by Tokuyama Corporation**
 Bulk pharmaceuticals for stomach and duodenal ulcer treatment drugs, and diabetes drugs; optical materials (plastic lens monomer, light modulating materials, and hard coating solutions); raw materials for electronic materials; metal cleaners
Produced by Tokuyama Dental Corporation
 Dental materials (restorative materials, adhesives, relining materials, impression materials and investment materials)



Kashima Factory General Manager
Yoshiyuki Kitajima



The Kashima Factory strives to recycle waste matter while placing the utmost importance on the proper management and handling of chemical substances. As a result of this approach, the factory achieved an 74% effective utilization rate of waste in fiscal 2015. Waste sent to landfills for final disposal amounted to 20 metric tons. "Zero emissions" amounted to 98 % .

Looking ahead, the Kashima Factory is examining the feasibility of material and thermal recycling as it works to increase its effective utilization rate for all types of waste matter.

Performance Data

	Unit	FY2011	FY2012	FY2013	FY2014	FY2015
Industrial water consumption	Thousand metric tons	71	76	51	48	43
Effluent discharged	Thousand metric tons	90	96	66	63	51
COD level	metric tons	4	4	3	3	2
PRTR-designated substance emissions	metric tons	2	1	2	2	1
Waste generated	metric tons	909	930	919	1,020	735
Waste sent to landfills	metric tons	7	7	7	11	20
Energy consumption*	Thousand gigajoules	57	59	36	36	33
CO ₂ emissions (originating from fossil fuel)*	metric tons	2,324	2,399	2,476	2,465	2,264
Complaints	Cases	0	0	0	0	0

* In accordance with a revision of Japan's Act on the Rational Use of Energy, figures based on calorific values and other factors have been recalculated retrospectively to 1990.

Emissions and Transfer of Specific PRTR-Designated Substances in Fiscal 2015

Unit: metric tons

Substance Name	Regulatory Number	Amount of Emissions				Amount Transferred
		Atmospheric	Water	Soil	Subtotal	
Chloroform	127	0.4	0.0	0.0	0.4	7.3
Toluene	300	0.4	0.0	0.0	0.4	24.6
Dichloromethane	186	0.4	0.0	0.0	0.4	0.0
Acetonitrile	13	0.0	0.0	0.0	0.0	2.1
1,4-Dioxane	150	0.0	0.0	0.0	0.0	0.1
N,N-Dimethylacetamide	213	0.0	0.0	0.0	0.0	2.8
N,N-Dimethylformamide	232	0.0	0.0	0.0	0.0	2.0
N-Vinylpyrrolidone	338	0.0	0.0	0.0	0.0	0.2
Total		1.3	0.0	0.0	1.3	39.1

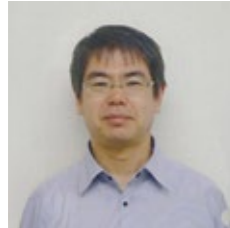
* Total figures are the numerical sum for Tokuyama Corporation and Tokuyama Dental Corporation. Substances are listed in descending order of emissions levels; substances with no emissions are listed in order of the regulatory number

Water refers to public waters

Amount transferred indicates the sum of the quantity transferred to sewage systems and the quantity subject to intermediate treatment
 Total figures have been rounded to the first decimal place

Sun • Tox Co., Ltd.

Established: February 14, 1992
 Shareholder: Tokuyama Corporation (80%), Rengo Co., Ltd.(20%)
 Head office: Akasaka Enoki-zaka Mori Building, 1-7-1 Akasaka, Minato-ku, Tokyo, Japan
 Business activities: Manufacture and sale of biaxial-oriented polypropylene films and cast polypropylene films



Plant Manager
Kazunori Shimada



Location: 3075-18 Shimasu, Itako-shi, Ibaraki, Japan
 Number of employees: 188
 Total site area: 89,800m²

Kanto Plant

Sun-Tox's Kanto Plant manufactures biaxial-oriented polypropylene films and cast polypropylene films, which are used for food packaging and other applications, totaling about 29,000 metric tons annually. As a Type 1 Designated Energy Management Factory under the Japan's Act on the Rational Use of Energy, the Kanto Plant strives to cut down on its overall energy consumption on a per-unit basis.

The plant also conducts initiatives to improve productivity and reduce waste, and actively interacts with its local community by participating in cleanup activities within the industrial park where it is located. As it continues to implement three management systems, namely Japan's Occupational Safety and Health Management System (OSHMS), ISO 14001, and ISO 9001, the Kanto Plant is building on its achievements with the aim to be a community-based factory.

Performance Data

	Unit	FY2011	FY2012	FY2013	FY2014	FY2015
Waste generated	metric tons	57	26	15	20	15
Waste sent to landfills	metric tons	43	7	4	10	5
Energy consumption	Thousand gigajoules	341	340	360	351	356
CO ₂ emissions	Thousand metric tons	19	19	20	20	21
SO _x emissions	metric tons	0.4	0.3	0.2	0.3	0.3
NO _x emissions	metric tons	0.7	0.6	0.7	0.6	0.7
Soot emissions	metric tons	0.04	0.03	0.06	0.05	0.04

Tokuyama Plant

Sun-Tox's Tokuyama Plant manufactures environmentally friendly biaxial-oriented polypropylene films, which are mainly used for food and beverage packaging, amounting to about 23,000 metric tons annually.

As part of its environmental initiatives, the plant is actively working to reduce per-unit energy consumption and increase recycling rates. With respect to safety, it acquired OSHMS certification in 2013 for all of its departments including R&D departments. Under the slogan, "Strictly following safety procedures, making manufacturing enjoyable, and never compromising quality," the plant aims to keep its facilities operating safely so it can be depended upon by the community, customers and employees.

Performance Data

	Unit	FY2011	FY2012	FY2013	FY2014	FY2015
Waste generated	metric tons	70	67	66	76	74
Waste sent to landfills	metric tons	1	2	2	1	1
Energy consumption	Thousand gigajoules	448	445	463	458	471
CO ₂ emissions	Thousand metric tons	26	26	27	27	27
PRTR-designated substance emissions	metric tons	0.0	0.0	0.0	0.0	0.0
Complaints	Cases	0	0	0	0	0



Plant Manager
Naoki Ueda



Location: 7-7, Harumi-cho, Shunan-shi, Yamaguchi, Japan
 Number of employees: 154
 Total site area: 24,100m²

Sun Arrow Kasei Co., Ltd.

Established: February 1, 1999
 Shareholder: Tokuyama Corporation (100%)
 Head office: 1-2 Harumi-cho, Shunan-shi, Yamaguchi, Japan
 Business activities: Manufacture and sale of polyvinyl chloride compounds



Plant Manager
Yasuhito Yasusawa



Location: 1-2 Harumi-cho, Shunan-shi, Yamaguchi, Japan
 Number of employees: 24
 Total site area: 3,280m²

Tokuyama Plant

Sun Arrow Kasei's Tokuyama Plant manufactures and sells polyvinyl chloride compounds used for pipes, joints, and other items essential for upgrading infrastructure, as well as resin window frames, which are highly effective for saving energy. The plant practices ISO 14001 environmental management, and ensures safety and prevents accidents by having all employees participate in activities designed to eliminate problems, identify near-miss situations, and practice the 5S principles. Owing to this approach, the plant has maintained an accident- and disaster-free record for 16 years since its establishment. In fiscal 2016, the plant intends to strictly enforce internal controls while carrying out Responsible Care activities based on a safety-first policy for all operations.

Performance Data

	Unit	FY2011	FY2012	FY2013	FY2014	FY2015
Power consumption	Thousand kilowatt hours	2,763	2,455	2,562	2,473	2,659
Waste plastic produced	metric tons	110	107	125	108	141
Waste plastic effectively used	metric tons	110	107	124	105	141
Waste sent to landfills offsite for disposal	metric tons	10	15	7	8	6
Steam usage	metric tons	240	240	240	240	240
Industrial water consumption	Thousand metric tons	65	65	65	65	65

Tokuyama Polypropylene Co., Ltd.

Established: April 2, 2001
 Shareholder: Tokuyama (50%), Prime Polymer Co., Ltd. (50%)
 Location: 1-1 Harumi-cho, Shunan-shi, Yamaguchi, Japan
 Business activities: Manufacture and sale of polypropylene resin and flexible polypropylene resin



Plant Manager
Hiroaki Endo



Location: 1-1 Harumi-cho, Shunan-shi, Yamaguchi, Japan
 Number of employees: 62
 Total site area: 70,997m²

Tokuyama Plant

Tokuyama Polypropylene's Tokuyama Plant conducts risk assessments of processes, facilities, and operations, and takes measures to identify near-miss situations and points of concern, in order to enhance the plant's safety culture. The result has been a perfect accident- and disaster-free record since the time it was first established as Tokuyama's polypropylene film business 40 years ago. The plant is scheduled to obtain recertification in 2016 under the High Pressure Gas Safety Act and the Ordinance on Safety of Boilers and Pressure Vessels, and is pursuing Responsible Care activities with the goals of extending its accident- and disaster-free record, reducing its environmental impact, and eliminating customer complaints related to quality.

Performance Data

	Unit	FY2011	FY2012	FY2013	FY2014	FY2015
Industrial water consumption	Thousand metric tons	366	343	411	308	370
Waste generated	metric tons	123	160	116	89	35
Waste sent to landfills	metric tons	0	1.9*	15	2.4*	0
Unit Energy Consumption Index (Fiscal 2002=100)	%	88	88	84	76	71

* Year with periodic maintenance