Control of Chemical Substances

Targets

[Chlorinated organic solvents]
- **Elimination of use of chlorinated organic solvents in wash at workplaces including major manufacturing subsidiaries in Japan by fiscal year end.**

Chemical substances have the potential to improve our lives in many ways, but at the same time can cause many serious problems such as ozone layer depletion, dioxin poisoning and the environmental endocrine effect — the spread of harmful elements throughout nature. In order to forestall this sort of damage, it is vital that the use of chemical substances be carefully controlled, that the amount of chemicals used is reduced, and that safer substances are substituted wherever possible.

Nikon is currently devising a management system that will enable us to effectively take all of these actions.

Substance Control Procedures

Nikon performs chemical substance control at every phase of the product life cycle, from purchase through use and disposal, in order to stop pollution caused by these substances. When first purchasing a new chemical substance, we obtain a Material Safety Data Sheet (MSDS) for the item, and carry out an assessment of the potential dangers of its use in the workplace. Based on the results of this assessment, our Environment, Safety and Hygienics section performs a review and confirmation of actions taken.

In addition to these measures, our Data Centre, located at the Ohi Plant, carries out intensive management of registration, updates and storage of MSDS.

We have also started disclosure via the intranet.

Nikon's PRTR

Each Nikon plant manages its chemical substances — from purchased inventories, to safe control, handling, use and disposal according to MSDS.

The "Nikon PRTR Guide" was released in March 2000, and the range of chemical substances under management was extended.

In March 2002, Nikon established a company system for legal notification, adding to and revising existing procedures for filling out such notifications.

Reporting quantities of one ton or more (0.5 tons or more for specific chemical substances of first kind) is by law. In accordance with the statute, here are the reports for each of our plants.

Nikon PRTR Guide

PRTR Survey Results for fiscal 2006

Nikon Corporation

Unit: kg/year

Facility	Substance No.	Substance name	Volume handled	Amount released			Amount transferred		Amount in on-site landfill	Amount removed for processing	Amount shipped in product
				Air	Public water	Soil	Sewage	Waste			
Yokohama Plant	227	Toluene	1,168	934	0	0	0	234	0	0	0
Sagamihara Plant	230	Lead and lead compounds	3,401	2	0	0	0	1,392	0	30	2,007
	304	Boron and boron compounds	6,041	4	0	0	1	2,467	0	40	3,569
Kumagaya Plant	232	Nickel compound	592	0	0	0	0	112	0	0	480

*No substances reported at the Ohi and Mito Plants.

Major manufacturing subsidiaries in Japan

Tochigi Nikon	144	Dichloropentafluoropropane	4,340	4,145	0	0	0	0	0	0	195
Sendai Nikon	63	Xylene	1,655	671	0	0	0	984	0	0	0
	69	Hexavalent chrome	569	0	0	0	0	296	0	0	273
	227	Toluene	2,171	1,285	0	0	0	886	0	0	0
Zao Nikon	132	1,1-dichloro-1-fluoroethane	2,110	1,806	0	0	0	0	0	0	304

* No substances reported at Mito Nikon or Kurobane Nikon.
* The above table includes data only for specified substances of which one ton or more (0.5 tons or more for certain chemical substances) is handled at the facility in a given year.

Reduction in Chemical Substances

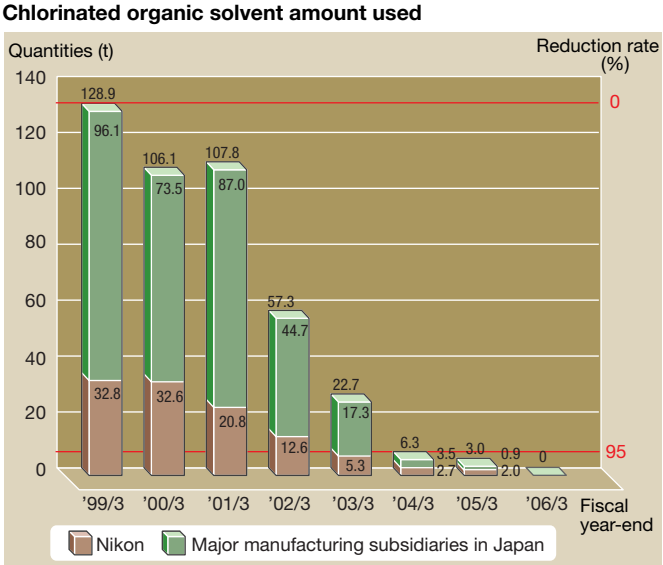
The key question is how to best reduce the amount of chemical substances used. This is more than merely avoiding the risk of environmental pollution, and in fact signifies an improvement in Nikon's design and production systems. We are constantly working to reduce the volume of chemical substances used which have the most adverse effects on the environment, searching for alternatives, and making every effort to achieve zero chemical pollution.

<Efforts to eliminate chlorinated organic solvents>

We have established a target for total elimination of chlorinated organic solvents in wash applications by the end of fiscal 2006, and are now switching over to hydrocarbon wash agents and similar substances that have minimal effect on the environment.

As the graph at right shows, chlorinated organic solvents in wash were finally eliminated.

Chlorinated organic solvent amount used



Prevention of Pollution and Conservation of Water

To help preserve air and water quality, Nikon not only observes applicable laws and regulations, but has also established its own independent plant standards for management.

Each plant regularly measures pollutants released into the air and water, and inspects equipment such as boilers and waste water processing systems periodically to ensure safety.

Air and Water Quality Environmental Data for Fiscal 2006

Ohi Plant

1-6-3, Nishi-Ohi, Shinagawa-ku, Tokyo 140-8601
+81-3-3773-1307

Air (Air Pollution Control Law, Metropolitan Regulations)

Unit: Dust: g/Nm^3, NOx (nitrous oxides): ppm

Item		Regulatory standard	Plant standard	Actual (max.)
Boiler	Dust	0.15	0.12	0.003
	NOx	45	45	41
Cooling and heating equipment/ appliance	Dust	0.15	0.12	0.001
		0.15	0.12	0.001
		0.15	0.12	0.001
	NOx	45	45	23
		45	45	25
		45	45	24

Water Quality (Sewerage Law, Metropolitan Regulations)

Unit: mg/l, except for pH

Item		Regulatory standard	Plant standard	Actual (max.)
Living environment	pH	5.8-8.6	5.9-8.5	6.5-8.1
	BOD	300	240	33.7
	SS	300	240	49.5
	n-hexane (animal/vegetable)	30	24	14.5
	Iodine demand	220	176	2.42
	Copper	3	2.4	0.1
	Zinc	5	4	0.81
	Soluble iron	10	8	0.41
	Total chrome	2	1.6	0.0
	Fluorine	15	12	0.62
	Nitrogen	120	96	9.1
	Phosphorous	16	12.8	42.9*
Health	Lead	0.1	0.08	0.00
	Dichloromethane	0.2	0.16	0.00

* Occurred May 2005 (exceeded regulatory and plant standards)
Cause: Solutions containing harmless phosphorous were mistakenly released into the general sewage system.
Corrective action: Cautionary notice plates were provided for the sinks connected to general sewage system, and cautions were given to workplace staff.

Yokohama Plant

471 Nagaodai-cho, Sakae-ku, Yokohama, Kanagawa 244-8533
+81-45-852-2111

Air (Air Pollution Control Law, Prefectural Regulations)

Unit: NOx (nitrous oxides): ppm

Item		Regulatory standard	Plant standard	Actual (max.)
Boiler	NOx	65	60	36
		65	60	33
		65	60	32
		46	42	25
		46	42	34
		46	42	27

Water Quality (Sewerage Law, Prefectural Regulations, City Regulations)

Unit: mg/l, except for pH

Item		Regulatory standard	Plant standard	Actual (max.)
Living environment	pH	5.0-9.0	5.5-8.5	6.4-7.2
	BOD	600	540	1.2
	SS	600	540	11.5
	n-hexane (mineral)	5	4.5	1.7
	Iodine demand	220	200	1.0
	Copper	1	0.9	0.0
	Zinc	1	0.9	0.01
	Soluble iron	3	2.7	0.03
	Soluble manganese	1	0.9	0.01
	Total chrome	2	1	0.0
	Nickel	1	0.9	0.02
	Fluorine	8	7	0.76
	Boron	10	8	0.29
	Nitrogen	240	135	26.9
	Phosphorus	32	18	0.1
Health	Lead	0.1	0.1	0.01
	Arsenic	0.1	0.1	0.00
	Hexavalent chrome	0.5	0.4	0.00
	Trichloroethylene	0.3	0.2	0.00
	Tetrachloroethylene	0.1	0.1	0.00
	Dichloromethane	0.2	0.1	0.00

Sagamihara Plant

1-10-1 Asamizodai, Sagamihara, Kanagawa 228-0828
+81-42-740-6300

Air (Air Pollution Control Law, Prefectural Regulations) Unit: Dust: g/Nm^3, NOx (nitrous oxides): ppm, Fluorine, lead in fusion furnace: mg/Nm^3

Item		Regulatory standard	Plant standard	Actual (max.)
Boiler	Dust	0.1	0.05	0.0038
		0.1	0.05	0.0022
		0.1	0.05	0.0023
		0.1	0.05	0.0021
		0.1	0.05	0.0017
		0.1	0.05	0.0052
	NOx	60	57	55
		60	57	57
		60	57	55
		105	100	9
		105	100	5
		60	57	24
Absorption chiller	Dust	0.1	0.05	<0.001
		0.1	0.05	<0.001
	NOx	60	57	33
		60	57	30
Fusion furnace	Dust	0.15	0.1	0.016
	NOx	800	20	<5
	Fluorine	2.5	2	<0.25
	Lead	10	5	<0.038

Water Quality (Sewerage Law, Prefectural Regulations) Unit: mg/l, except for pH

	Item	Regulatory standard	Plant standard	Actual (max.)
Living environment	pH	5.8-8.6	6.0-8.0	6.4-7.7
	BOD	300	60	37
	SS	300	90	0.08
	Zinc	5	0.5	4.3
	Fluorine	8	7.5	1.2
	Boron	10	5	17.3
	Ammoniac nitrogen	100	50	0.03
Health	Lead	0.1	0.08	<0.01
	Arsenic	0.1	0.05	

Kumagaya Plant

201-9 Miizugahara, Kumagaya, Saitama 360-8559
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Air (Air Pollution Control Law, Prefectural Regulations) Unit: NOx (nitrous oxides): ppm

Item		Regulatory standard	Plant standard	Actual (max.)
Boiler	NOx	150	100	35
		150	100	30
		150	100	32
		150	100	32
		150	100	37
		150	100	34
		150	100	35
		150	100	86
		150	100	66
		150	100	49
		150	100	53
		150	100	53
		150	100	56
		150	100	62
		150	100	39
		150	100	39
		150	100	33
		150	100	28
		150	100	30
		150	100	29
		150	100	75
		150	100	60

Water Quality (Sewerage Law, Prefectural Regulations) Unit: mg/l, except for pH

	Item	Regulatory standard	Plant standard	Actual (max.)
Living environment	ppH	5.1-8.9	5.9-8.2	6.8-7.5
	BOD	600	150	13.0
	SS	600	50	<0.1
	n-hexane (mineral)	5	4	<0.1
	n-hexane (animal/vegetable)	30	20	<1.0
	Iodine demand	220	170	95.0
	Copper	3	0.5	<0.2
	Zinc	5	0.5	<0.05
	Soluble iron	10	3	<0.3
	Total chrome	2	1	<0.2
	Boron	10	4	<0.5
	Nitrogen	240	60	25.0
	Ammoniac nitrogen	100	30	19.9
	Phosphorous	32	15	7.8
Health	Lead	0.1	0.05	<0.01
	Hexavalent chrome	0.5	0.1	<0.05

Mito Plant

276-6 Motoishikawa-cho, Mito, Ibaraki 310-0843
+81-29-240-1112

Air (Air Pollution Control Law, Prefectural Regulations)

Unit: Dust: g/Nm^3, NOx (nitrous oxides): ppm, SOx (sulfurous oxides): Nm^3/h

Item		Regulatory standard	Plant standard	Actual (max.)
Boiler	Dust	0.3	0.27	0.011
		0.3	0.27	0.012
		0.3	0.27	0.011
	NOx	180	162	68
		180	162	86
		180	162	67
	SOx	3.25	0.67	0.047
		3.25	0.67	0.043
		3.25	0.67	0.04

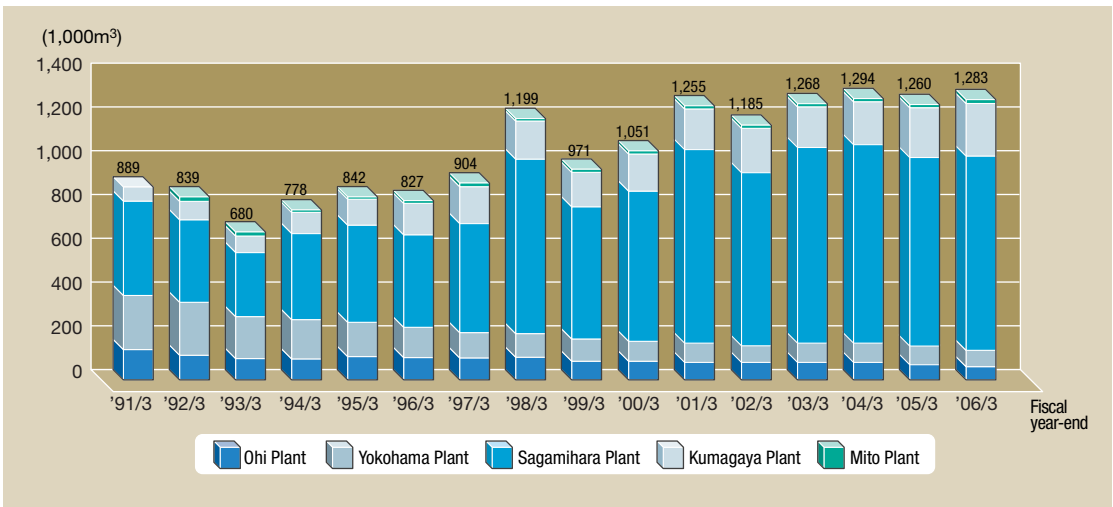
Water Quality (Water Pollution Control Law, Prefectural Regulations)

Unit: mg/l, except for pH and E. coli (colonies/ml)

Item		Regulatory standard	Plant standard	Actual (max.)
Living environment	pH	5.8-8.6	6.0-8.2	6.9-7.7
	BOD	20	20	18
	SS	30	30	29
	n-hexane (animal/vegetable)	10	10	1.0
	E. coli (daily average)	3,000	2,700	61
	Nitrogen	60	60	36
	Phosphorous	8	8	3.8

Water Usage

Plants engaged in manufacturing continuously expand and evolve structurally, but since the introduction of the "Environmental Management System" in fiscal 1999, efforts have been made to promote reuse of process waste water, and reduce water usage by involving all employees in water-saving activities.



Glossary

ppm: Parts per million

pH: Hydrogen ion concentration
Indicates the acidity or alkalinity of a substance, where a solution of pH 0 to 7 is acid, pH of 7 is neutral, and a pH over 7 is alkaline. A change of one pH number indicates a 10-fold change in the concentration of hydrogen ions.

BOD: Biochemical oxygen demand
The amount of oxygen required for microorganisms to oxidise and consume organic pollutants in water. Used to gauge the degree of pollution of rivers.

SS: Suspended solids
Also referred to as substances that cause water clouding, they include small particles, plankton, organism carcasses and detritus, excretions and other organic materials, as well as sand, mud and inorganics and a range of man-made pollutants.

n-hexane (mineral or animal/vegetable): Normal hexane mass
Used to measure the total content of oils and hydrocarbons in waste water, it indicates the amount of materials extracted to normal hexane and which do not volatilise at about 100°C. Covers animal and vegetable oils, fatty acids, petroleum-based hydrocarbons, wax and grease.

Iodine demand
The amount of iodine used by the reducing substances (sulphide, etc.) in waste water during iodine oxidation. It is an index of the presence of the reducing substances in waste water.