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# Realizing a Healthy and Environmentally-safe Society

The Nikon Group sets some initiatives as environmental targets and executes steadily. The initiatives are related to products and business facilities such as chemical substances management for the provision of healthy and environmentally-safe products, and contribution to sustain the environment in the local communities.

## Reducing Hazardous Substances in Products

The Nikon Group strives to reduce hazardous substances and implement measures, including the items listed below for all of our products, in order to comply with international regulations for hazardous substances.

### ■ Response to Regulations on Hazardous Chemical Substances

Currently, new regulations on chemical substances are being enacted around the world. Background of this trend is the tremendous progress that has already been made toward the establishment of an international framework for the appropriate management of chemical substances. Significant milestones include the announcement of the Rio Declaration on Environment and Development\*<sup>1</sup> in 1992, in which the “preventive approach” was proposed, and the adoption of the Johannesburg Plan of Implementation\*<sup>2</sup> and SAICM\*<sup>3</sup>. In order to protect human health and reduce environmental risks, the Nikon Group endeavors for chemical management that adheres to international frameworks. We also make sure to respond to the environmental laws and regulations worldwide including the European RoHS directive\*<sup>4</sup> and the REACH Regulation\*<sup>5</sup> through following measures.

As Nikon products are made of a great number of materials and components, reduction of use and emission of hazardous chemical substances are implemented throughout the entire supply chain with the cooperation of our procurement partners.

### Main Measures for Chemical Substance Management

1. Survey on global law and regulation trends
  - Collect information from external committees
2. Survey on hazardous chemical substances in products
  - Conduct surveys throughout supply chain
  - Manage data efficiently through informatization
  - Chemical analysis, etc.
3. Discuss countermeasures as the Nikon Group
  - Utilize internal systems (various committees) related to the environment
4. Communicate countermeasures both internally and externally in a timely manner
  - Instructions to reduce the usage amount and provide information about alternatives for hazardous chemical substances

- Establishment and updating of the Nikon Green Procurement Standards
5. Confirm response to laws and regulations
    - Implement assessments
  6. Confirm and promote the chemical management of procurement partners
    - Audit the chemical substance management system of procurement partners
    - Support procurement partners to establish chemical substance management system

- > [Promoting Green Procurement \(P101\)](#)
- PDF [Nikon's declaration on compliance with REACH Regulation \(PDF: 32KB\)](#)  
[http://www.nikon.com/about/sustainability/environment/Nikon\\_REACH.pdf](http://www.nikon.com/about/sustainability/environment/Nikon_REACH.pdf)

\*1 Rio Declaration on Environment and Development  
 Declaration composed of 27 principles that was made at the United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil in 1992.

\*2 Johannesburg Plan of Implementation  
 This plan, which was made in 2002, sets out the specific issues to be tackled by governments of each participating country for the achievement of the following target: “By 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.”

\*3 The Strategic Approach to International Chemicals Management (SAICM)  
 The Strategic Approach to International Chemicals Management, an international agreement on the management of chemical substances made to achieve the target of the Johannesburg Plan of Implementation.

\*4 RoHS Directive (Restriction of Hazardous Substances)  
 “RoHS” stands for “Restriction of Hazardous Substances.” This directive was adopted by the European Union (EU) in 2003. It restricts the use of certain hazardous chemical substances in electrical and electronic equipment with a view to minimizing the risks that these substances pose to the environment and human health. The RoHS Directive has been revised in 2011.

\*5 REACH Regulation  
 A regulation on chemical substances issued by the EU in 2007. “REACH” stands for the “Registration, Evaluation, Authorization and Restriction of Chemicals.” Under the regulation, manufacturers and importers of chemical substances are mandated to register information on the safety and use of these substances.

### ■ Discontinued Use of Ozone-layer-depleting Substances

The Nikon Group gradually decreased the use of ozone-layer-depleting substances\* (HCFCs) as refrigerants required to regulate the temperature for semiconductors and FPD lithography systems until finally discontinuing their use in all Nikon products for equipment shipped in and after the year ended March 31, 2009.

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\* Ozone-layer-depleting Substances

This is a causative agent leading to the destruction of the ozone layer. It often refers to substances that are the subject of regulations in the Montreal Protocol. In Japan, the focus is on specific substances, based on the ozone layer protection laws, such as organic chlorine compounds like specific freon and organic bromine compounds like specific halon.

■ **Technology Not Using Hazardous Substances**

The Nikon Group contributes to the realization of a healthy and environmentally-safe society through the development of technology that does not use hazardous substances.

The Nikon Group developed a lead- and arsenic-free glass\* in the 1990s as we recognized that lead and arsenic used in most optical glass had serious environmental impact. Today, the ratio of lead- and arsenic-free glass in new designs is 100% with the exception of some products with unique specifications for industrial use. We have achieved 100% lead-free circuit boards for all our consumer products. In principle, we have also eliminated lead from new circuit boards used in industrial products (such as steppers and scanners, microscopes, and measuring microscopes).

In addition, we established a strict technical standard to discontinue the use of heavy metals (hexavalent chromium, lead, cadmium, and mercury) in all surface treatment processes including plating. To ensure practices of the standard, we provide individual technical assistance and check actual items by chemical analysis for our procurement partners contracted to perform surface treatment processes.

\* Lead- and arsenic-free glass

For the optical glass used in the lenses and prisms of optical instruments, Nikon has developed a new type of glass that contains absolutely no lead or arsenic. The proportion of lead-and arsenic-free glass is 100% of almost all Nikon products.

**Management and Reduction of Hazardous Chemical Substances**

The Nikon Group properly manages and reduces the use of chemical substances in each facility and Group manufacturing company. We also report and disclose information in line with the relevant laws and guidelines while working to reduce the use of hazardous chemical substances.

Furthermore, in order to prevent air pollution, water pollution and soil contamination by emission of hazardous chemical substances, the Nikon Group not only complies with the appropriate laws and regulations, but also manages various

initiatives. For example, we work closely with relevant local organizations regarding the local environment and set voluntary standards to prevent pollution.

■ **Control and Reduction of Chemical Substances in Manufacturing**

The Nikon Group manages chemical substances from their purchase and use through to disposal to prevent chemical pollution of the environment and promote safety.

As an example, Nikon Corporation obtains a safety data sheet (SDS)\*<sup>1</sup> for any new chemical substance purchased. The workplace where the substance will be used conducts a prior assessment of the risks associated with that substance. Then, the implemented measures based on the assessment are checked and confirmed by the environment, health and safety department from a professional point of view. 1,266 cases were confirmed in Nikon Corporation and the Group manufacturing companies in the year ended March 31, 2016.

The Nikon Group strictly controls the use of chemical substances, in particular those with a high environmental impact that are specified in laws and ordinances, so as to minimize their use. We will continue conducting research into alternative substances and maintain our efforts to reduce the risk of chemical contamination to as close to zero as possible at each local environmental sub-committees and other associations.

For example, we created the Nikon PRTR\*<sup>2</sup> Guide for Nikon Group companies in Japan and expand our management activities to each business facility where the chemical substances listed in PRTR are used.

In addition, Tochigi Nikon Precision Co., Ltd. uses organic solvent in the parts' cleaning process. Use of organic solvents will cause VOC (volatile organic compound) gas. We introduced a system that captures, liquefies, and reuses the VOC gas in the cleaning process. This has allowed us to reduce the amount of VOC emissions and organic solvents usage by 47%.

\*1 Safety Data Sheet (SDS)

It is obligatory to provide in advance a safety data sheet when transferring or providing to other corporations a "chemical substance or products containing a chemical substance", as specified in the Pollutant Release and Transfer Register law. The SDS describes the characteristics and the handling of the substance and aims to improve chemical substances management.

\*2 PRTR

In Japan, the "Pollutant Release and Transfer Register" system is a system used by governments to collect, tabulate, and disclose data on chemical substances that might have harmful effects on human health and ecosystems. They are identified and reported to governments once per year by companies.

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## ■ The Nikon Group's PRTR

The Nikon Group in Japan created the Nikon PRTR\* Guide in March 2000. All of its facilities in Japan have been using this guide to manage the chemical substances used at their facilities,

including quantity management from purchase and use through to disposal as well as safe handling and disposal of chemicals according to SDS. Moreover, we are revising the Nikon PRTR Guide according to the trends of relevant laws and regulations.

### Release and Transfer of PRTR Substances (Year ended March 31, 2016)

(Unit: kg)

Facility		Nikon Corporation							
Substance No.		20	71	87	185	300	384	392	
Substance name		2-aminoethanol	Ferric chloride	Chrome and trivalent chromic compounds	Dichloropentafluoropropane	Toluene	1-bromopropane	Normal hexane	
Volume handled		1,540	483	88	54	98	20,896	3	
Amount released	Air	1,540	0	0	53	0	20,820	3	
	Public water	0	0	0	0	0	0	0	
	Soil	0	0	0	0	0	0	0	
Amount transferred	Sewage	0	0	0	0	0	0	0	
	Waste	0	483	88	1	98	76	1	
Amount in on-site landfill		0	0	0	0	0	0	0	
Amount removed for processing		0	0	0	0	0	0	0	
Amount shipped in products		0	0	0	0	0	0	0	
Facility		Group manufacturing companies in Japan							Total
Substance no.		71	185	300	384	392	405		
Substance name		Ferric chloride	Dichloropentafluoropropane	Toluene	1-bromopropane	Normal hexane	Boron compounds		
Volume handled		4,480	1,522	3,953	37,114	10	30,982	70,241	
Amount released	Air	0	1,522	3,471	36,728	10	31	64,179	
	Public water	0	0	0	0	0	2	2	
	Soil	0	0	0	0	0	0	0	
Amount transferred	Sewage	0	0	0	0	0	0	0	
	Waste	4,480	0	482	386	0	9,895	15,989	
Amount in on-site landfill		0	0	0	0	0	0	0	
Amount removed for processing		0	0	0	0	0	0	0	
Amount shipped in products		0	0	0	0	0	21,054	21,054	

\* Nikon Corporation: Head office, Ohi Plant, Shonan Branch, and Mito Plant do not handle substances that are subject to reporting.

\* Main Group companies in Japan: Nikon Instech Co., Ltd., Nikon Systems Inc., and Nikon Vision Co., Ltd. do not handle substances that are subject to reporting.

\* The total volumes handled may not always sum due to rounding.

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## ■ Control and Disposal of Polychlorinated Biphenyl (PCB) Waste

The Nikon Group observes stringent safekeeping and notification practices for PCB-containing waste and electrical equipment in use in compliance with laws and regulations.

The facilities that possess these devices are three Nikon plants and three Group manufacturing companies in Japan. The main devices are capacitors for high-density PCB waste and transformers for low-density PCB waste.

In addition to high-density PCB waste that has been disposed properly, we plan to dispose the remaining PCB-containing waste and electrical equipment in use. This will be carried out in order to meet the deadline specified in the Law Concerning Special Measure against PCB Waste\* in cooperation with JESCO (Japan Environmental Storage & Safety Corporation) for high-density PCB waste and a government-certified waste disposal operator for low-density PCB waste.

\* Law Concerning Special Measure against PCB Waste

Special disposal measures to promote the appropriate processing of Polychlorinated Biphenyl waste. Under this law, business operators that have polychlorinated biphenyls (PCBs) in store were required to properly dispose of them by July 2016. As a result of partial revisions to this law in December 2012, the period was extended to March 2027.

## ■ Prevention of Pollution of the Air, Water, and Soil

Neither Nikon Corporation nor any Group manufacturing company in Japan emitted regulated substances into the air at levels exceeding the standards in the year ended March 31, 2016. There were two cases of wastewater quality exceeding the legal standards, both of them were restored to normal values after measures were taken.

Detailed information and data are available in the environmental data sheet for each business facility.

 Environmental Data (Japanese only)

<http://www.nikon.co.jp/sustainability/environment/data/>

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## Community Contribution Activities in the Environmental Field

Believing that the resolution of environmental problems is imperative for human coexistence and sustained business growth, Nikon Group supports environmental conservation activities conducted by non-profit organizations and non-government organizations and works towards the environmental enlightenment of the next generation. In addition, we are conducting environmental conservation activities rooted in local communities at each business facility as well as Group companies.

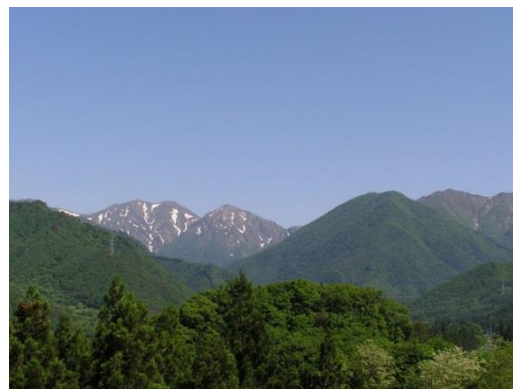
### ■ Supporting the AKAYA Project in Japan

Nikon has been supporting the AKAYA Project\*, which is an initiative to cooperate with countries, local municipals, and associations that protect the environment to recover biodiversity and build a sustainable environment by providing products for research and recording activities to the Nature Conservation Society of Japan since 2005.

The target area of this project is the Akaya Forest, a 10,000-hectar national forest located on the border between Gunma and Niigata prefectures. The forest is home to various wild animals and plants, and almost all the mammals that live in Honshu have been confirmed. The results are driving the shape of national forests in Japan.

We have been furthering an initiative that aims to improve the habitat of golden eagles (endangered Japanese eagles) since 2014 and we are utilizing monitoring and recording of eagle nesting sites with tools such as binoculars and digital cameras that are provided by Nikon Corporation, Nikon Imaging Japan and Nikon Vision. In addition, we are continually assisting in efforts from the environmental education of the local children to the use of timber scheduled to be taken from the forests.

\* Officially called the "Biodiversity Restoration Program for Mikuni Mountains and Akaya River." The Program is commonly known as the "AKAYA Project" because its activities are conducted in the areas around Tone River tributaries and upstream of the Akaya River.



Full view of the Akaya Forest

### ■ Supporting Children's Forest Program in Thailand

Since 2012, Nikon has been supporting the Children's Forest Program in Thailand—an international program organized by OISCA. This program educates children on the importance of forests, while also promoting global greenery through the planting of trees and it is expanding to each country around the world.

Nikon started supporting the program, when severe flooding occurred in Thailand in 2011, causing heavy damage to the area as well as Nikon (Thailand) Co., Ltd. (Thailand). The program seeks to raise environmental consciousness among the local populace and plants trees near schools in areas where improvement of the watershed protection capability of the forest is needed. We have deemed Maepaklae Village in Northern Thailand (Mae Sai, Chiang Rai Province) as a region of focus in 2015 and begun new planting and environmental education project centered around schools in Maepaklae Village. A total of 286 children and local residence participated in activities to plant roughly 3,100 trees on 2.5 hectares of land in the year ended March 31, 2016.



Tree planting in Chiang Khong (picture provided by OISCA Thailand)

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## ■ Providing Educational Tools for Environmental Education

Nikon has planned and created educational tools focusing on the environment that can be used in educational venues, such as schools and nature observation gatherings. They target elementary school students and junior high school students so that the children will more fully enjoy nature and at the same time increase their knowledge and interest in biodiversity and environmental conservation.

The tools have been effectively used in educational institutions in many places throughout Japan. Nikon has created "AKAYA NOTE" in connection with support over many years of the AKAYA Project. "AKAYA NOTE" introduces the story of biodiversity in Akaya Forest and tells it with a variety of interesting anecdotes and an abundance of photos and illustrations. Nikon has provided a total of about 7,745 copies of "AKAYA NOTE" (up to the year ended March 2016) to educational sites in Japan in response to their requests. "KIMONO KARUTA" is a Japanese card game developed for children so they can learn about living things while having fun. It has been used at a total of 234 educational communities including elementary schools, junior high schools and other public facilities in Japan (up to the year ended March 2016).



Summer Schools using Nikon's educational tools

## ■ Local Community Activities

In order to contribute in sustaining the natural environment in local communities, Nikon and Group manufacturing companies in Japan are actively participating and cooperating in activities for environmental conservation and regional revitalization held in the local areas in addition to daily initiatives such as cleaning and cutting grass around our facilities.

Roughly 650 employees in total participated in activities held at each Nikon facility in the year ended March 31, 2016. Yokosuka Plant holds cleaning activities around the plant four times each year and around 30 employees participate every time. Sagamihara Plant participates in the Sagamigawa Cleaning Campaign held in the local community twice a year. Ohi Plant also sponsors events held in the Shinagawa district twice a year and explains our environmental initiatives.

The Nikon Group continues to strive for environmental activities rooted in the community.



Cleaning activities around Yokosuka Plant



ECOECO Festival (Ohi Plant)