



— Initiatives for Health and Safety

The Nippon Kayaku Group is committed to promoting initiatives for occupational health and safety aimed at completely eliminating accidents and injuries in the workplace. This includes developing a system for safety training, implementing safety training on a company-wide scale, preventing accidents and injuries before they happen, and conducting health promotion programs.

Initiative for Safety

Within its health and safety activities, the Nippon Kayaku Group places special emphasis on pointing and calling, KYT (Danger Prediction Training), and danger prediction prior to a work processes. Furthermore, we continually make efforts to prevent accidents and occupational injuries before they occur through systematic brainstorming of potential risks including non-regular work, while also carefully ensuring that risk assessments for chemical substances are conducted in accordance with legislation in Japan.

For example, we carry out safety inspections during the development and design stages when manufacturing a new product or installing new equipment, and implement risk assessments to account for any potential risks thereby preventing accidents, occupational injuries, and environmental incidents.

Moreover, we also promote safety training and enhance awareness of KYT and near misses at our overseas group companies.

Safety Performance (targets and results)

The Nippon Kayaku Group has set targets for safety performance based on the following categories: serious accidents and injuries, serious environmental incidents, lost worktime accidents, non-lost worktime accidents, motor vehicle accidents, and non-injury related accidents. With regard to motor vehicle accidents, starting in fiscal 2016, we have subdivided this category further into the following sub-categories: serious accidents, personal injuries, property damage, and self inflicted injuries for incidents counted with a separate target per subcategory, in order to analyze incidents and facilitate preventive measures.

1. Safety Performance (results)

The safety performance of Nippon Kayaku business sites as well as all group companies inside and outside Japan during fiscal 2017 is presented below.

● Fiscal 2017 Safety Targets and Performance

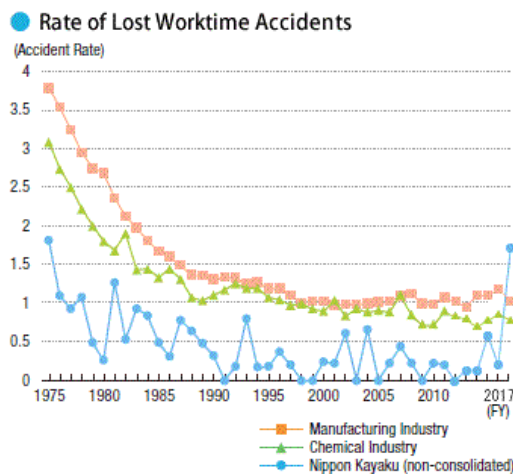
Items	Target	Actual	Group companies
Major Injury / Accidents	0	1 cases	0
Serious environmental accidents	0	0	0
Lost worktime accidents	0	11cases	10 cases
Accidents not accompanied by lost worktime	Rate of lost worktime accidents*1 of under 1	1,55	-
	Less than 5 cases	9 cases	5 cases
Non-injury related accidents	0	0	10 cases
Work-related automobile collisions*2	Serious accidents	0	0
	Personal injuries	0	1 cases
	Property damage	Less than 3%	4.8 %
	Self inflicted	Less than 3%	5.9 %

*1 Frequency rate of lost worktime accidents: It expressed in terms of numbers of deaths of injuries in industrial accidents per 1 million work-hours in the aggregate.

*2 Work and commute-related automobile collisions: Only applicable to MRs using company-owned vehicles belonging to the Pharmaceuticals Group.

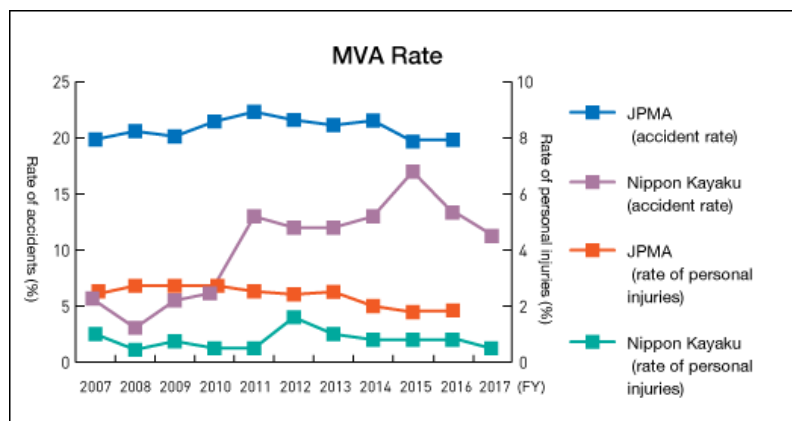
■ 2. Graph Comparison of frequency rate of Lost Worktime Accidents

The frequency rate of lost worktime accidents in fiscal 2017 greatly exceeded the rate observed by the manufacturing industry and chemicals industry. As a result, we decided to institute workplace patrol activities (fixed-point observations) with the goal of pointing out unsafe actions in order to prevent accidents and injuries during non-regular work.



■ 3. Efforts to Prevent MVA

While the rate of motor vehicle accidents at the Nippon Kayaku Group is lower than that of the Japan Pharmaceutical Manufacturers Association, our rate has remained somewhat elevated since fiscal 2011. Starting in fiscal 2016, we have added seminars at corresponding driving training centers as a new measure against motor vehicle accidents. Going forward, we aim to further reduce motor vehicle accidents.



Health and Safety Activities at Each Business Site

We define the health and safety policy and targets, and we are undertaking a wide range of health and safety activities at our business sites.

Safety Activities

- Risk Assessment
- Hiyari Hatto Activity
- TPM Activity*4
- 5S Activity*3
- KYT Activity

*3 5S Activity: An acronym of five Japanese words phonetically starting with the letter "S".

*4 Total Productive Maintenance (TPM): Activities that maintain equipment and facilities in good working order to ensure safety and maintain productivity.

1. Conducting Safety Assessments (Risk assessment, understanding potential risk factors)

Each of our business sites performs safety reviews for new processes and facilities and whenever changes are made to existing processes and facilities. And we implements "Risk Assessments" in order to prevent business sites accidents, injuries, environmental accidents, complaints and quality issues. Risk factors in chemical reactions are analyzed primarily based on HAZOP. *5

*5 HAZOP: Hazard and Operability Study. A safety evaluation methodology used at chemical plants. Potential hazards associated with chemical reactions can be comprehensively extracted for evaluation.

2. Elimination of Shortcuts and Omissions

Accidents that have occurred within the Nippon Kayaku Group in recent years have tended to result from shortcuts or omissions. As a result, the Nippon Kayaku Group is working to share safety awareness across different workplaces by distributing work flow checklists to help eliminate shortcuts or omissions, having employees issue a safety declaration to prevent shortcuts and omissions, as well as displaying this safety declaration clearly in each workplace.

3. Traffic Safety Initiatives

Many Nippon Kayaku Group employees drive a car as part of their work duties or to commute to work. We perform safe driving reviews using a camera-equipped drive recorder *6. And using the driving aptitude test approved by the National Police Agency*7. From now on, we will further strengthen the education of new employees in practical skills and engage in reducing traffic accidents.

*6 Camera-equipped drive recorder: A recorder that can analyze bad driving habits, such as sudden acceleration, sudden braking, and sudden turns using sensors for front/back and right/left acceleration, gyrocompass and GPS system.

*7 Driving aptitude test approved by the National Police Agency: An exam that measures the aptitude of driving based on seven written questions covering 11 topics, including decision making skills, ability to prevent collisions, and mental stability test.

4. Deployment of AEDs

Driving aptitude test approved by the National Police Agency: A driving aptitude test that measures driving ability based on responses to seven questions covering 11 items including situational awareness, collision prevention ability, and mental stability, among others.



AED training

5. Fire Response

Each business location is equipped with a fire truck, fire hydrant, and fire extinguisher for chemical substances in preparation for potential fire hazards. In addition to holding onsite training, employees also participate in local fire fighting competitions at which they have achieved strong results.

Related Articles



6. Natural Disaster Response

As a precaution for earthquakes and other natural disasters at each business sites, we have compiled the Employee's Handbook of Disaster (Earthquake) Prevention and distribute it to each and every employee. This handbook contains instructions on emergency response when an earthquake occurs, how to make contact and confirm one's safety, and alternative methods to reach home when public transportation is unavailable.

Employee safety during a disaster is monitored by a safety reporting and communication system that uses email. As an earthquake strikes, the disaster response headquarters will send out an instruction by email to all employees. Employees can reply to the email by a simple touch of a button, which allows data to be collected. This system will be used to confirm employee safety during an earthquake of a seismic intensity of 6 or higher in Japan.

Environment, Health and Safety (Integrated) Review with The labor union of Nippon Kayaku

The Environment, Health and Safety Review is conducted together with the Quality Review in an integrated review of Nippon Kayaku's business sites and certain Group companies based on the annual plan. This review process also involves the labor union of Nippon Kayaku.

During the review, the progress of the environment, health and safety policy and plan of the business sites and Group companies being reviewed is checked and results of activities are identified through meetings, documents and onsite audits. The labor union is also given the opportunity to point out issues, as part of efforts to increase the level of safety and health at the company-wide level.

Safety and Health Initiatives with the Labor Union

The labor union of Nippon Kayaku have items on safety and health at the top of the movement policy of labor unions, and every year hosts the "Level-up Seminar (Health & Safety)," inviting participants from each branch to attend to receive health and safety training co-hosted by the company.

In fiscal 2017, 24 employees took part in the training which was held over a two-day period.

On day one, participants took part in outside training using interactive safety training equipment to experience actual dangers first hand, including why getting caught in machinery or pocket hands (walking with both hands in pockets) are dangerous and what is dangerous about them.

On day two, members of the Environmental Protection & Safety Division led a lecture entitled, "About learning safety measures from past accidents of Nippon Kayaku, and learning to implement KYT and pointing-and-calling." Also, the labor union held a lecture called "What is a Health and Safety Committee?" which covered the initiatives being undertaken by health and safety committees at each business site in compliance with laws. Participants then learned by comparing these with the activities of their own health and safety committees. Furthermore, training participants were asked to identify positives and negatives related to the health and safety activities of each branch (business site) that were then used as part of a group discussion on sharing information about health and safety and how to improve the issues faced by participants' own business sites. This process greatly enhanced awareness of health and safety in the workplace.

Improving Operator Skills through the Forklift Certification Program

There was a time when there were frequent occurrences of near misses involving forklifts at the Kashima Plant. The following initiatives were undertaken in an effort to prevent accidents before they happened with the goal of improving the skills of forklift operators.

(1) Initiatives for improving skills

All forklift operators were required to take a practical skills short course led by an outside instructor covering the basics of forklift operations and approaches to operator skills and educational guidelines.

(2) Introduction of operator certification program

Only those who passed the certification exam are allowed to operate forklifts (certification lasts for six months).

(3) Environmental improvements

A permanent training course was set up so that operators can practice and take practical exams at any time.

(4) Analysis of driver techniques

An omnidirectional driving recorder was installed on all forklifts to analyze operator conditions and habits using video footage.

These initiatives have helped to drastically reduce the number of near misses involving forklifts. The Kashima Plant will continue to use this certification program in order to prevent accidents before they occur.

We are promoting safety experience education using Esperanza (safety experience equipment).

Kowa Sangyo mainly carries out contract manufacturing work for Nippon Kayaku's Asa Plant. Kowa Sangyo conducts interactive safety training using equipment they have fabricated to provide employees with a greater sense of the importance of safety in accordance with its policy of placing safety as a top priority.

This equipment was given the name Esperanza (or hope in Spanish) because this was the same name given to the child born to a worker who was buried alive with 33 others in the 2010 Copiapó mining accident in Chile only to



be rescued 69 days later miraculously along with all the missing workers.

The manufacturing floor involves work that carries with it an element of danger. Therefore, Kowa Sangyo is always heightening its awareness of safety, learning from past accidents and near misses, including through safety training. As part of these efforts, Kowa Sangyo uses Esperanza to simulate actual dangers to enable its employees to experience the scariness of accidents and reaffirm the importance of working safely. At the same time, interactive safety training enables employees to learn the correct usage of tools and the basics about equipment and component names, which helps to prevent accidents before they happen and to train employees about how to respond to accidents if they do occur.

All safety training equipment was created in-house. Also, the safety experience room makes use of an idle room, which was renovated, repainted and installed with unused work tables and equipment, making this learning lab completely homemade from reused equipment.

Learning with these interactive safety equipment helps to reaffirm dangers on the manufacturing floor, educating not only new employees, but veteran employees, too. Currently, Kowa Sangyo has nine kinds of equipment, which are also used by other workplaces for safety training. Kowa Sangyo will continue to further enhance these offerings so as to aid the safe operations of the Nippon Kayaku Group and train employees who are well versed in safety knowledge.



Polatechno Interactive Training on Getting Caught in Machinery

Polatechno fabricated original interactive machine in November 2012 to teach about and eliminate accidents involving employees getting caught in machinery. Initially, training was provided to all employees working at the company's plants and afterwards it has been held annually for new employees and workers using nip roll machines. The training includes reenactments of past accidents involving employees getting caught as well as how to operate the photoelectric tube sensor and the emergency stop button and rope switch to prevent accidents. Participants also get to experience the feeling of getting caught in machinery (a simple pinching feeling) using the proximity sensor function.

In the past, two lost worktime accidents have occurred at Polatechno involving employees getting caught in machinery. According to fiscal 2014 statistics of the Ministry of Health, Labour and Welfare, there were 180 fatalities in the manufacturing industry, and of these 36%, or 64 fatalities, were caused by getting caught in machinery. Of the 1,057 fatalities across all industries, 14%, or 151 fatalities, were attributed to getting caught in machinery. This indicates that this type of accident is quite serious and occurs quite frequently in the manufacturing industry.

Starting in fiscal 2015, Polatechno has been implementing a greeting campaign, mutual consideration, and onsite patrol instructions based on the general manager's policy, all on the theme of "Reinforcement of Safety Awareness." Going forward, Polatechno will implement the PDCA cycle to foster a corporate culture with an even greater focus on safety, as it underpins all corporate activities.



Kayaku Safety Systems (Huzhou) Co., Ltd. (KSH) Introduction of ISO 14001 and OHSAS 18001 Systems

KSH carries out various initiatives company-wide in order to safeguard the life and health of consumers, and support a comfortable life, based on continuously providing society with the best products through ceaseless progress and the combined forces of our consciences. In June 2016, KSH obtained ISO 14001 and OHSAS 18001 certification and constructed an environmental & occupational health and safety (ISO 14001 / OHSAS 18001 *8) management system. Currently, KSH is moving ahead with activities for environmental conservation and eliminating workplace accidents and injuries that improve overall employee satisfaction.

These activities are aligned with China's law on Prevention and Control of Occupational Disease, occupational disease hazard list, and safety standards in order to prevent occupational hazards.

KSH also identifies occupational hazard elements, measures occupational hazard elements, and carries out occupational health exams (prior to employment, during employment, and after employment), as basics of its assessments of occupational disease hazards.

*8 OHSAS 18001: An international consortium standard on occupational health and safety management systems.

Item	2015	2016	2017
Number of occupational hazard elements	7	7	13
Score of occupational hazard elements	50	56	68
Number of employees receiving occupational health exams (during employment)	119	142	161
Number of employees being reexamined	3	3	7
Fiscal year pass rate	100%	100%	100%

WUXI POLATECHNO OPTICS CO., LTD. (WPLC) Introduction of OHSAS 18001 System

WPLC obtained OHSAS 18001 certification for its occupational health and safety management system in November 2016.

WPLC's objective behind the introduction of OHSAS 18001 is to transition safety and health activities to a preventive and fundamental safety focus in response to changes in the legal environment and requests from



customers. To achieve this objective, WPLC had to construct a better system.

It took WPLC about nine months to complete the process behind system introduction. This included the multi-step process of preparation of introduction plan, education on the standard, system planning, preparation of system documents and training, system trial run, and certification screening.

The effects realized from introducing this new system compared to WPLC's old occupational health and safety management system were night and day.

- (1) Significantly strengthened initiatives for occupational health and safety
- (2) Proactive participation in occupational health and safety activities by employees
- (3) Standardization of process operations and management
- (4) Achievement of systematic and objective verification and assessment of occupational health and safety performance

Going forward, WPLC will continue to build a safe and secure work environment by operating its new occupational health and safety management system to the fullest.

Result of OHSAS 18001 System

	2015	2016	2017
Onsite work accidents	4	2	0
Accidents involving safety abnormality	8	6	6
Proposals on safety	422	466	435
KYT activities	77	120	138
Close call activities	167	221	189

Kayaku Safety Systems Europe a.s. (KSE)

The occupational health and safety of KSE employees is an indispensable element of all activities and a top priority of the company. A safe and healthy workplace is not only a fundamental right of workers, it also represents one aspect of KSE's daily operations. Therefore, KSE carries out regular training for confirming whether the optimal conditions are met with regards to employees' work. The company also carries out emergency training (hazardous chemical spills, etc.) and evacuation training to prepare for fires or explosions.

A great deal of attention is also paid to health in the workplace. In accordance with its occupational health and safety screening system, KSE carefully screens employees' aptitude for specific jobs. We carry out multiple checks on the work environment in order to monitor risk factors in each workplace. Based on the results, technical and organizational measures are proposed in order to eliminate jobs with latent hazards. For example, a gas extractor unit is installed on worktables where organic solvents are handled. These units ensure the thorough management of chemical substances in the work environment and eliminate hazardous jobs.

In this manner, KSE will continue to promote preventive measures and have employees propose ways to prevent close calls and actively participate in improvements in occupational health and safety.

Promoting Health Management

The Nippon Kayaku Group reviewed its Declaration on Environment, Health and Safety, and Quality in 2017 and as a result, decided to add an item on health. Employee health is an essential element in any company's prosperity and helps to enhance stakeholder satisfaction at the same time. For this reason, we are implementing various activities for not only preventing exposure to chemical substances handled during work, but also aimed at mental health care and reducing lifestyle diseases.

Promotion of Health and Productivity Management

All employees of the Nippon Kayaku Group receive regular health exams, which form the basis for the health and productivity management. After undergoing an exam, employees meet with an industrial physician to receive advice and guidance on how to manage their health.

In addition, employees who handle designated chemical substances receive special health exams. Furthermore, we have created a database of hazardous chemical substances handled in the workplace, which is utilized to help prevent occupational diseases.

Each workplace implements a THP*9 for building mental and physical health in order to maintain and improve employee health. The goal is to encourage employees to review their lifestyle habits and promote continuous and systematic health improvement from a young age to ensure a healthier lifestyle. Specifically, physical fitness measurement, health management contests, walk rallies, hiking and other programs are being organized.

*9 Total Health Promotion Plan (THP) is a program that utilizes the P-D-C-A cycle involving "health promotion plan," "health assessment," "health advice," "practical activities" and "improving lifestyle habit and invigorating the workplace."

Mental Health Initiatives

To balance improvements in operational productivity with the creation of added value, employees need to have workplaces where they can thrive and also be in good mental and physical health.

The President of Nippon Kayaku issued a Mental Health Declaration in 2005 and since then we have provided thorough guidance to managers on the subject. Mental health care requires that all employees have the correct knowledge and understanding to ensure they can prevent or detect mental health issues at an early stage. We focus the greatest efforts on mental health issue prevention.

As a concrete example, we invited a speaker from our contract EAP *10 to lead a mental health care training program mandatory for all employees to take part in at least once that was set up on five occasions – in fiscal 2005, between fiscal 2006 and 2008, between fiscal 2009 and 2011, between fiscal 2012 and 2014 and between fiscal 2015 and 2017.

And we formulated a new three-year plan in fiscal 2018 and all employees are currently undergoing necessary training.

In addition, with regard to obligations under the "Stress Check System" of the Occupational Safety and Health Act implemented on December 1, 2015, we already established the "Stress Check System", which is scheduled to once every year for all the employees.

*10 EAP is an acronym for Employee Assistance Program.

Health Improvement Initiatives at Business Sites

Responses at Business Sites without a Statutory Industrial Physician

Nippon Kayaku employee working at branches and business offices not required to appoint an industrial physician *11 were unable to receive follow-up by an industrial physician after undergoing statutory health exams or adult disease exams of the KAYAKU Health Insurance Association administered at the main business hub for each region. As a result, in fiscal 2013, after examining how to provide follow-up at branches and business offices without an appointed industrial physician, we decided to dispatch the industrial physician of the head office to meet with these employees directly.

Starting from fiscal 2014, the head office's industrial physician began annual visits to branches and business offices nationwide, from Sapporo in the North to Fukuoka in the south. The industrial physician reviewed the results of health exams before visiting and then selected certain employees for follow-up interviews. These employees meet with the industrial physician at a nearby location or by telephone conference.

Because one year was spent covering all of Japan, on some occasions the health exam results of the previous year were used as a basis for interviews, instead of the results of the health exam taken in the same fiscal year of the visit. As a result, we determined an annual itinerary for industrial physician interviews and adjusted the timing of health exams accordingly to ensure that interviews are based on the latest health exam results.

*11 Branches and business offices not required to appoint an industrial physician: Business sites that employ less than 50 workers are not required to appoint an industrial physician as per the provisions of Article 13 of the Industrial Safety and Health Act and Article 5 of the Order for Enforcement of the Industrial Safety and Health Act.

Health Promotion Project

Kowa Sangyo Co., Ltd. has been implementing a health improvement project since 2015 aimed at maintaining and improving employee health. The project team comprises representatives from each department and members from the Environment and Security Department. Its activities focus on support based on the fundamental precept of "health equals safety" indicating employee health is an important component of safe work.

The main initiative involves monthly self-assessments based on a health improvement challenge established by all employees for taking action to reduce or prevent certain lifestyle habits found in regular health exams. In addition, the project also held lectures called health outreach classes on lifestyle diseases and smoking with the cooperation of the city's Health Improvement Section, and organized events for employees including health checks (vascular age and 7 other items) and a walking event. The project also raised awareness through a regular article in the company newsletter about health. In the three years since the start of the project, employee awareness of health has increased and employees are now taking voluntary actions, with health exam results improving, too.

Specific results from this project include a 4.1% reduction in employees requiring follow up and a 2.0% reduction in employees that smoke.



Kayaku Safety Systems de Mexco, S.A. de C.V.(KSM) 1kg Weight Loss Program

KSM launched a program in 2013 to improve employee health. The name of the program was changed to the "1kg Weight Loss (Bájale 1 kilo menos) Program" in 2015. It is held twice a year for a period of four months each time. Currently the tenth session of the program is underway (February 6, 2018), which is focusing on improving participants' eating habits to prevent lifestyle diseases.

Participants manage their own weight and meet with a nutritionist biweekly to receive various advices. In addition, a diet-friendly menu has been prepared by the cafeteria, while at training for all employees held once a month, a nutritionist provides information about lifestyle diseases. To

encourage more to participate in the program, participants receive gift cards to a sporting goods store and t-shirt with the program's logo.

"1 Kilo Menos" Program	2017	
	8th Feb – Jun	9th Aug – Nov
Target weight (kg)	629.40	573.40
Number of participants (persons)	100	91
Participation rate (%)	25%	22%
Number achieving target (persons)	7	12
Participant achievement rate (%)	7%	13%
Total weight loss (kg)	141.20	98.30
Total waist loss (cm)	497.75	89.10

**Kayaku Safety Systems de Mexico. S.A. de C.V.
Opening of Futsal Court**

KSM created a futsal court to contribute to healthy lifestyles of employees, their families and everyone in the local community.

On February 21, 2018, a grand opening ceremony of the futsal court was held, with Mr. Kawafuji, the head of the Safety Systems Group of Nippon Kayaku and Mr. Gonzalo Elizondo of Salinas Victoria of Nuevo León in attendance.

The futsal court was constructed on the grounds of KSM and next to a parking lot. Next to the futsal court are ancillary facilities such as restrooms and showers as well as a square gazebo with a bench and grill. Employees are able to play soccer or enjoy a barbeque in their free time, which has helped to improve mental and physical health. Family and friends also visit to take part in the fun. Going forward, KSM will consider hosting soccer related events to foster communication between employees.



**KAYAKU CHEMICAL (WUXI) CO., LTD. (KCW)
Lectures on Health Check-ups at KAYAKU CHEMICAL (WUXI) Co. Ltd.**

KAYAKU CHEMICAL (WUXI) CO., LTD. (KCW) is a Nippon Kayaku Group company, which was established in China in 2002 to manufacture and market synthetic resins and also researches and develops technology services. KCW, as part of "employee health month," under the broader theme of environmental and safety month, organized health check-ups for all employees.

Furthermore, the physician from a medical institution who ordered medical check-ups as usual came to KCW, the physician answered questions from employees and provided health guidance. This enabled KCW to encourage employees to make improvements in their daily lives and focus on health issues as well. These efforts will be continued in the future.



Health check-up lectures led by a visiting specialist physician