

Sustainability

Based on our unique approach, Management of Sustainability (MOS), the MCHC Group drives corporate activities including development technologies, provision of products and services and improvement of manufacturing technologies to contribute to sustainability for people, society and our planet Earth.

Materiality Assessment

MCHC has identified the important issues in the medium-term management plan *APTSIS 20*, and has prioritized these issues based on their impact on corporate and other factors. Results of

this materiality assessment are used as a compass for our corporate activities.

Material Issues Related to the Global Environment

Key management issues that the MCHC Group should address through its corporate activities, innovation, and provision of products and services in the aim of achieving the sustainable well-being of our planet Earth.

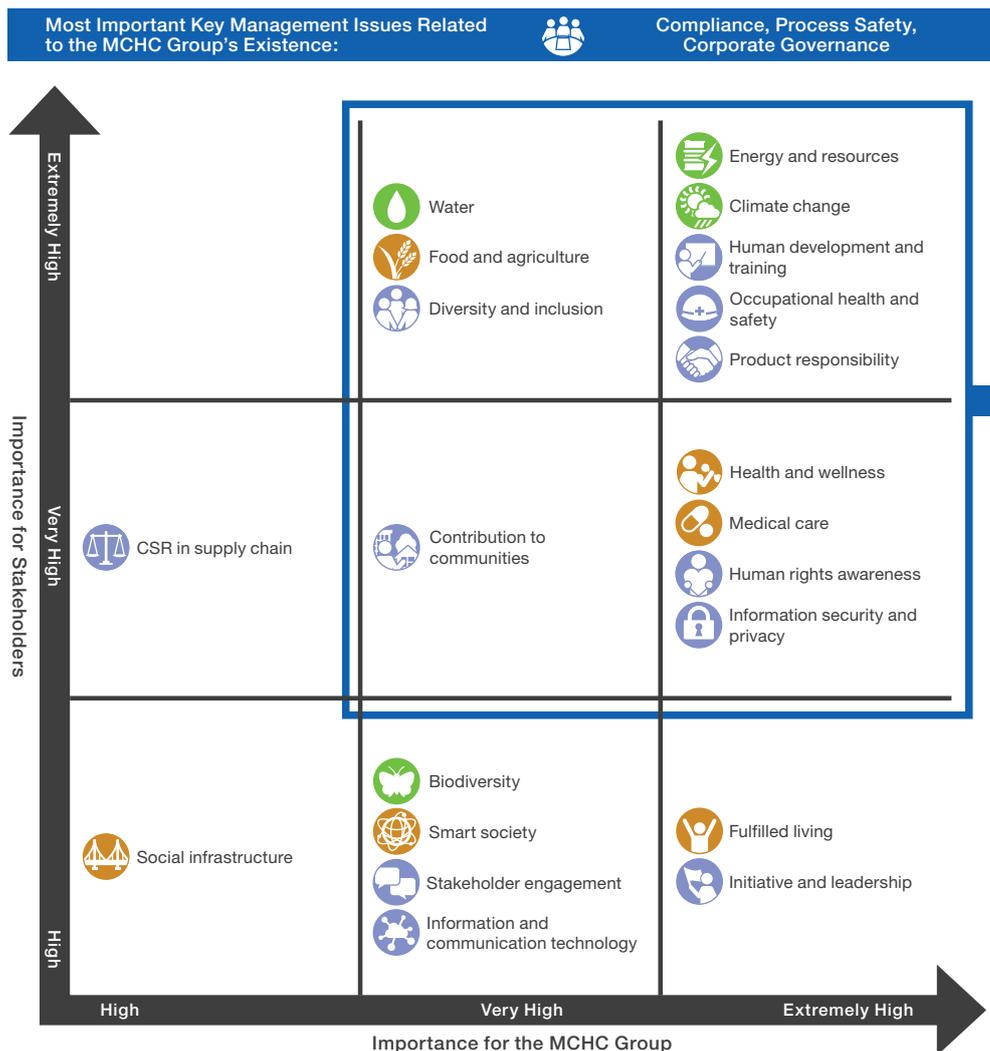
Material Issues Related to Social Systems

Key management issues that the MCHC Group should address through its corporate activities, innovation, and provision of products and services in the aim of creating the sustainable well-being of society.

Material Issues Related to the Company and Its Organizational Structure

Key management issues that the MCHC Group should address in its internal operations and external relations as a corporate group aiming to realize KAITEKI.

- PROCESS 1** Set issues to be researched and analyzed
As a starting point, ordered corporate activities under *APTSIS 20* by analyzing macro trends. Reviewed material issues identified in the previous assessment and added new issues.
- PROCESS 2** Assess issues from the viewpoint of stakeholders
Ordered and quantitatively assessed the importance of the issues based on public sustainability data, questionnaires, and interviews with experts.
- PROCESS 3** Identify and prioritize material issues the MCHC Group needs to address
MCHC management identified material issues accounting for management strategies and policies and activities under *APTSIS 20* and prioritized them (three issues of highest priority related to the MCHC Group's existence and 21 material issues to be addressed).
- PROCESS 4** Create the materiality matrix
Created the matrix along the two axes of importance (the magnitude of effect) for stakeholders and importance for the MCHC Group.
- PROCESS 5** Company approval procedures
Discussed and approved the process of materiality assessment and the materiality matrix in the MCHC Management Committee (currently the Corporate Executive Officers Committee) and the Board of Directors.



Material Issues	Recognized Opportunities and Risks	MCHC Group Management	Related SDGs
Material Issues Related to the Global Environment			
 Energy and resources	<ul style="list-style-type: none"> Transformation and diversification of resources and energy supply sources Practical application of renewable energy and accelerated technological development Depletion of rare metals and other natural resources 	Address the depletion of natural resources and energy saving by switching to renewable raw materials, curbing the use of rare metals, reducing raw fuel consumption and promoting 3R and zero-emission.	  
 Climate change	<ul style="list-style-type: none"> Increasing risk of extreme weather events and natural disasters associated with climate change Formation of international consensus and effectiveness of measures to prevent global warming Expand products and businesses to adapt and mitigate climate change 	Reduce GHG emissions, promote LCA and utilize low-carbon resources and energy, while striving to create and expand business opportunities that mitigate or adapt to climate change.	 
 Water	<ul style="list-style-type: none"> Expanding water stress due to higher demand, climate change and other factors Increasing health risk due to shortages of hygienic water Expanding businesses such as water purification and recycling 	Work to use water resources efficiently and clean wastewater while contributing in finding solutions to water resource issues by providing safe and clean water through our products and services.	
Material Issues Related to Social Systems			
 Health and wellness	<ul style="list-style-type: none"> Increasing incidence rate for adult-onset diseases and rising mortality Increasing risk of failing health insurance systems Expanding health information service market (shift from treatment to prevention) 	Promote the use of health information and disease prevention by improving lifestyle habits through self-medication and expanding healthcare products and services, and contribute to the advancement of people's health.	 
 Medical care	<ul style="list-style-type: none"> Manifestation of unmet medical needs Advancing digitization of data on medical treatment and health information through ICT Growing forays into the medical and healthcare fields from other industries 	Improve patient QOL and help people's lives and health by developing pharmaceuticals that respond to unmet medical needs and contributing to the sophistication of medical care through regenerative medicine and remote medicine technologies.	
 Food and agriculture	<ul style="list-style-type: none"> Population growth and increasing urban lifestyles Increasing shift to factory-produced foods 	Contribute solutions to food and agricultural issues by preserving food resources, resolving maldistribution, and providing products and services that improve agricultural productivity.	
Material Issues Related to the Company and Its Organizational Structure			
 Product responsibility	<ul style="list-style-type: none"> Growing interest in the quality, safety and environmental performance of products and services Reducing the use of chemicals and harmful substances, and demands for information disclosure 	To ensure that customers can use products and services in relief, pursue initiatives to ensure the quality and safety of products throughout lifecycle and minimize the adverse effect on the environment.	
 Human development and training	<ul style="list-style-type: none"> Developing the capabilities of human resources based on medium-term human resource development policies Enhancing the return on investment from human resource development 	Seek to offer equal opportunity in hiring, placement, advancement and skill development, while pursuing the acquiring and development of human resources based on a medium- to long-term perspective.	 
 Occupational health and safety	<ul style="list-style-type: none"> Ensure the health and safety of employees, while improving productivity and ensuring business continuity by preventing accidents 	Implement safety management in accordance with national and regional laws and regulations and develop safe workplace environments while maintaining and advancing the physical and mental health of employees.	
 Human rights awareness	<ul style="list-style-type: none"> Rising concerns over human rights violations through corporate activities Emerging risks to human rights in the supply chain 	Respect the dignity and rights of all people in corporate activities and require that business partners refrain from violating human rights or engaging in inappropriate discrimination.	
 Information security and privacy	<ul style="list-style-type: none"> Digitizing all manner of information including corporate information and personal information Increasing information security risks due to the widespread adoption of IT/IoT 	Recognize the importance and responsibilities associated with protecting information assets and manage information adequately to prevent the confidential information of customers, business partners, MCHC or other parties from being leaked.	 
 Diversity and inclusion	<ul style="list-style-type: none"> Retain and cultivate talented employees based on a human resource strategy that respects diversity 	Incorporate a diverse range of human resources and views without regard to their nationality, age or belief, and promote diversity and inclusion through our corporate activities in enhancing corporate value.	
 Contribution to communities	<ul style="list-style-type: none"> Building relationships of trust by actively engaging in exchanges with and contributing to communities in areas where we conduct business 	Broadly contribute to society through business activities while deepening understanding of various communities and continually responding to their requests and expectations.	

Relevance between Processes: MOS and SDGs

We believe that initiatives taken by the MCHC Group to realize KAITEKI largely contribute to achieving the sustainable development goals (SDGs). We will promote and develop MOS with awareness of the relevance between the 17 SDGs and our material issues to contribute to achieving SDGs and solving the material issues.



Cited/edited from SDG Compass*
* Developed by GRI, the UN Global Compact and the World Business Council for Sustainable Development (WBCSD)

Sustainability

APTSIS 20 - Progress of the MOS Indices

Begun in FY2011, the MCHC Group's the MOS Indices are management benchmarks for visualizing the degree of contribution to "Sustainability for people, society and our planet Earth." The MCHC Group has selected and systemized quantifiable initiatives where we can have a large impact on solving environmental and social issues that will emerge in the future.

For the MOS Indices incorporated into the current medium-term management plan *APTSIS 20*, we have made improvements including selection of index items that reflect material issues, upgrading of indices related to products that contribute to KAITEKI, and expansion to monitored Group companies inside and outside Japan. In FY2017, the second year of the medium-term management plan, our activities resulted in an annual target achievement rate of 108%, earning 152 points. (See the graph on the lower right.)

Outline of S Indices

We have achieved good progress in S Indices on the whole. We made progress on reducing environmental impact amid stable operation and achieved the target for reducing the environmental impact on the atmosphere, water and soil environment (S-1-1 to S-1-3). We also achieved better results than the annual targets for promoting activities to conserve energy (S-2-1), promoting use of renewable energy (S-2-3), providing products and services that contribute to reducing GHG emissions (S-3-1), and providing products and services that help solve food problems (S-3-3). However, we did not meet the targets on reduction of resource volume in the conversion to resource-saving and reusable materials (S-2-2) and providing products and services that help solve water resource problems (S-3-2).

Related Articles

Promote activities to conserve energy (S-2-1)
→ FOCUS The MOS Indices: (see page 71)

Outline of H Indices

We made good progress and achieved targets in terms of providing pharmaceuticals (H-1-1), providing health management and health checkup information (H-2-2), and providing products for the health field (H-3-1). However, we did not achieve notable progress and failed to meet our annual targets in terms of providing clinical testing services (H-1-2) and products for the sanitation field (H-3-2).

Related Articles

Provide health management and health checkup information (H-2-2)
→ Non-financial indicators: (see page 44)
Pharmaceuticals provision (H-1-1)
→ FOCUS The MOS Indices: (see page 71)

Outline of C Indices

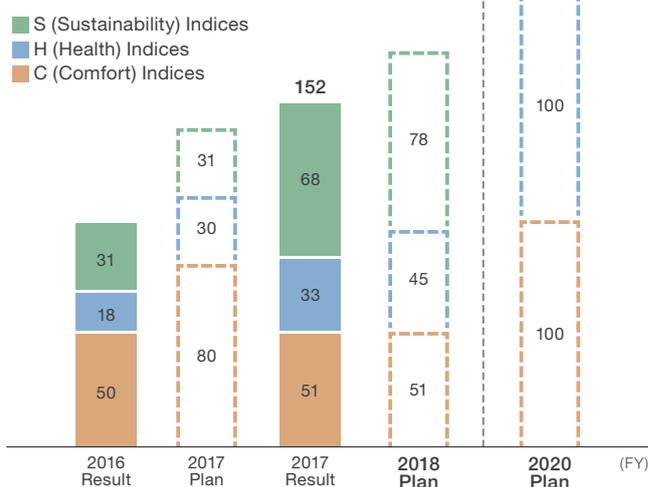
In terms of preventing accidents and injuries (C-1-2), we surpassed our targets concerning the reduction rate of safety incidents, but fell far short of the reduction rate of environmental incidents and lost-time injuries frequency index. We achieved steady progress in terms of improving awareness of compliance (C-1-1) and promoting communication with business partners (C-2-1). However, we did not achieve notable progress and failed to meet our targets in terms of customer satisfaction index and improvement rate in the number of complaints (C-1-3). We largely achieved steady progress in the employee wellness index (C-2-3), in which we have adopted eight measurement items: the employee satisfaction, the proportion of long-time workers, the paid leave utilization rate, the rate of days of work absences due to illness and injury, the percentage of female employees advancing to assistant manager level and above, the percentage of female employees among those joining main career track positions, the percentage of non-Japanese presidents of key local subsidiaries and employees' awareness of orchestration within the Group. We will aim to improve the indices by linking them with KAITEKI Health and Productivity Management.

Related Articles

Prevent accidents and injuries: lost-time injuries frequency index (C-1-2)
→ Non-financial indicators: (see page 44)
Improve awareness of compliance (C-1-1)
→ FOCUS The MOS Indices: (see page 71)

The MOS Indices Annual Trend Diagram

The MCHC Group introduced the MOS Indices as management benchmarks in FY2011. To coincide with the formulation of *APTSIS 20*, we undertook a revision of the MOS Indices and set updated targets. In FY2017, we achieved steady progress, earning 152 points. We will continue working towards achieving 300 points as a final year target.



APTSIS 20 MOS Indices Performance Evaluation List

MOS Indices		Assessment Criteria (Units)	FY2017 Plan	FY2017 Result	FY2020 Target	Annual Self-Assessment	Point allocation	Related materiality theme		
Index that need to be achieved Achieve zero occurrences of serious accidents and compliance violations										
S	Contribute to reducing environmental impact	S-1-1	Reduce burden on the atmospheric environment	Per-unit impact on the environment (LIME / ¥100 million)	646.2	554.0	548.7	★★★	10	
		S-1-2	Reduce burden on the water environment	Per-unit impact on the environment (LIME / ¥100 million)	6.9	6.1	6.1	★★★	8	
		S-1-3	Reduce burden on the soil environment	Per-unit impact on the environment (LIME / ¥100 million)	6.9	5.2	5.1	★★★	10	
	Efficient use of resources and energy	S-2-1	Promote activities to conserve energy	Energy-saving effects (equivalent tons of heavy oil)	36,430	51,699	66,000	★★★	13	
		S-2-2	Convert to resource-saving and reusable materials	Reduction of resource volume (equivalent tons of heavy oil)	2,984	2,194	12,000	★★	13	
				Growth rate in provision of resource recycling services (%)	19.8	30.1	28	★★★		
	S-2-3	Promote use of renewable energy	Volume of renewable energy generated and supplied (MW)	43.8	52.6	50.0	★★★	13		
	Contribute to the sustainability of the environment and resources through products and services	S-3-1	Provide products and services that contribute to reducing GHG emissions	Contribution to the reduction of GHG emissions (hundreds of millions of tons-CO ₂ equivalent)	0.65	0.78	1.5	★★★	13	
		S-3-2	Provide products and services that help solve water resource problems	Volume of reused water supplied (hundreds of millions of tons)	3.75	3.34	17	★★	10	
S-3-3		Provide products and services that help solve food problems	Growth in sales of related products and services (%)	-0.9	7.1	30	★★★	10		
H	Contribute to medical treatment	H-1-1	Pharmaceuticals provision	Contribution index for pharmaceuticals provision (points)	8.82	10.87	15	★★★	15	
		H-1-2	Provide clinical testing services	Contribution index for providing clinical testing services (points)	3.18	2.20	15	★★	15	
	Contribute to the prevention and early detection of diseases	H-2-1	Provide vaccines	Vaccine provision index (points)	4.39	4.17	14	★★★	14	
		H-2-2	Provide health management and health checkup information	Increase frequency of health information provisions (compared to base year, %)	154	154	325	★★★	14	
	Contribute to achieving healthy and hygienic lives through products and services	H-3-1	Provide products for the health field	Improve sales of applicable products (points)	4.21	7.84	14	★★★	14	
		H-3-2	Provide products for the sanitation field	Growth rate in sales of applicable products (%)	2.6	-2.4	60	★	14	
H-3-3		Provide products for the medical field	Growth rate in sales of applicable products (%)	25.0	20.3	60	★★	14		
C	Endeavor to earn greater recognition of corporate trust from society	C-1-1	Improve awareness of compliance	Compliance awareness improvement index (points)	21.0	21.0	21	★★★	21	
		C-1-2	Prevent accidents and injuries	Reduction rate of safety incidents (%)	57.9	57.9	60	★★★	19	
				Reduction rate of environmental incidents (%)	100	-40	100	★		
				Improvement rate of lost-time injuries frequency index (%)	17.6	-11.1	50	★		
	C-1-3	Initiatives to provide products and services trusted by society	Customer satisfaction index (points)	47	-4	47	★	17		
			Improvement rate in the number of complaints (%)	60.0	34.5	50	★			
	Promote communication and work in concert with stakeholders	C-2-1	Promote communication with business partners	Communication improvement index (points)	28.8	43.2	83	★★★	7	
		C-2-2	Improve evaluation by stakeholders	External evaluation index (points)	11.0	8.6	11	★★	11	
		C-2-3	Build a dynamic and cooperative organization	Employee wellness index (points)	9.17	8.43	16	★★	16	
Contribute to achieving a more comfortable society and better lifestyle	C-3-1	Provide products and services that contribute to a comfortable society and better lifestyles	Growth rate in the comfort value provision index (%)	14.3	14.0	40	★★★	9		

Sustainability

FOCUS

The MOS Indices

Indices **S-2-1**
Material Issues of MCHC
 Energy and resources

 Promote activities
 to conserve
 energy


Energy-efficient, super-large air separation unit

Approx. 90% of CO₂ emitted by the MCHC Group through its business activities is from energy. In response, the MCHC Group proactively promotes energy conservation activities, which lead to the prevention of global warming, and quantitatively evaluates the reduction effect.

Among the energy-saving activities, energy efficiency improvement in the manufacturing process is highly effective. We also work on the optimization of operating conditions, replacement of fuels and well-planned replacement of devices with energy-efficient ones.

For example, air separation units, which are used to produce oxygen, nitrogen and argon from the air, normally require a lot of energy for the air compression process. Replacement of those units with energy-efficient ones enables a significant reduction in energy consumption. In FY2017, this and a variety of other initiatives made progress, resulting in a 148% improvement in energy-saving effects from the previous fiscal year. The accumulated total amount of energy-saving effects in FY2016 and 2017 was 51,699 tons of heavy oil equivalent.

Indices **H-1-1**
Material Issues of MCHC
 Medical care


Pharmaceuticals provision



Radicava (product name in Japan: Radicut), treatment for ALS

The pharmaceuticals provision index consists of two items; the degree of contribution to treatment of disease and expansion of utility. The degree of contribution to treatment of disease is calculated based on the treatment satisfaction of diseases for which the products are administered and the number of patients to whom the products were actually administered. We monitor how much our products contribute to the medical care for hard-to-treat diseases. On the other hand, for the expansion of utility, we evaluate the level of expansion of indications for our products, increase the number of countries where they are marketed and other factors.

In FY2017, we released *Radicava* (product name in Japan: *Radicut*), the first new therapeutic agent in approx. 20 years in the U.S. for amyotrophic lateral sclerosis (ALS), a neurodegenerative disorder of unknown etiology. This product was administered to more than 2,500 ALS patients. Through this and other initiatives, we achieved steady progress, resulting in the contribution index for pharmaceuticals provision at 10.87 points, up 92.0% year on year. We will continue to contribute to medical treatment by providing more patients with treatment options through pharmaceuticals.

Indices **C-1-1**
Material Issues of MCHC
 Compliance, Process
 Safety, Corporate
 Governance


Improve awareness of compliance



Guidelines for the MCHC Group Charter of Corporate Behavior

The MCHC Group regards compliance as one of the most important managerial issues in its continued existence as a company that merits public trust. We take measures to impart a compliance culture in the Group, including the provision of training and awareness-raising activities inside and outside Japan.

In Japan, we outsource to an external agency surveys of compliance awareness among all employees within the MCHC Group. We use the responses from four of the survey items, which are highly relevant to awareness of compliance and workplace culture, to measure the MOS Indices.

In FY2017, annual targets were exceeded in all four items, demonstrating that our variety of initiatives steadily contribute to spreading and imparting compliance. We will continue to promote initiatives for raising the awareness of compliance, aiming to develop a corporate culture that is free from injustice and misconduct.

Case
01

Providing solutions that contribute to improving the water environment of Myanmar



Myanmar faces urgent need for improvement of access to water supply and sewage systems and other water-related technologies, including ones for water quality analysis. This is due to the low water-supply system coverage rate and aging waterworks facilities and also rising turbidity and salination of river water attributed to the prolonged rainy season and dry season, which are regarded as the effects of climate change.

The MCHC Group has established MW Aqua Solutions Co., Ltd. as a solution provider in Myanmar, which supplies safe drinking water by taking advantage of the advanced technologies of Wellthy Corporation that is engaged in the production of drinking water from groundwater. We will contribute to improving the water environment of Myanmar by operating a solution business that integrates water treatment engineering in conjunction with water quality analysis.

In addition, we contribute to improving the water quality analysis technologies in the country. For example, we provide technical support to the governmental laboratory in the JICA Project for Capacity Development in Basic Water Environmental Management and Environment Impact Assessment System in Myanmar.



Training on water quality analysis at the Mandalay City Development Committee in Myanmar



River Water Desalination System

Case
02

Initiatives to create a future in which anyone can enjoy sports



The MCHC Group is pursuing a number of initiatives aimed at a future in which anyone can enjoy sports.

Mitsubishi Chemical Corporation (MCC), one of the operating companies, concluded an official partnership agreement with Japanese Para-Sports Association (JPSA) in April 2017. The company will support para-sports under this agreement.

MCC is also proactive in carrying out activities for promoting understanding of para-sports among its employees, having its employees support the operation of sports competitions hosted by JPSA as volunteers (such as working as

receptionists and setting up venues), watch games and cheer for athletes, in addition to holding internal boccia competitions.

We will continue to support para-sports to help create a society that is physically and mentally healthy, where everyone enjoys the fun and pleasure of playing sports and the individuality of each person is respected, regardless of their age, gender, abilities and other attributes.



Internal boccia competition



2017 Japan Para Wheelchair Rugby Championship

Sustainability

KAITEKI Health and Productivity Management

Initiatives to maximize active participation of workers

The MCHC Group recognizes that “people” are the driving force behind the sustainable growth of society and business, and considers human resources as one of its most important management resources.

We are trying to promote initiatives that fully utilize people’s skills and maximize the active participation of workers as KAITEKI Health and Productivity Management*.

* “Kenkokeiei,” which means Health and Productivity Management in Japanese, is a registered trademark of the Workshop for the Management of Health on Company and Employee, an NPO. In terms of using “KAITEKI Health and Productivity Management,” the trademark is authorized to be used by the Workshop for the Management of Health on Company and Employee.

Message from the CHO

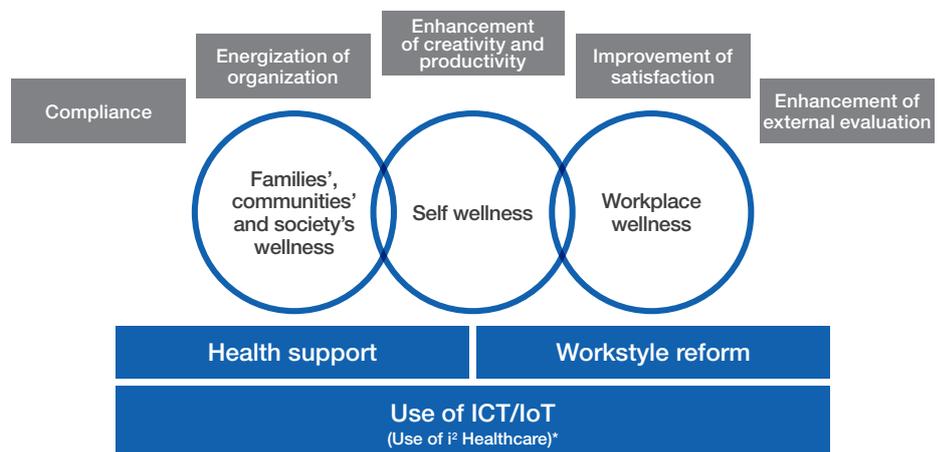
Since the declaration of Promotion of Health and Productivity Management in FY2016, MCHC has been carrying out a variety of activities from the view points both health support and workstyle reform as two sides on the same coin. The main focus of the previous workstyle reform was the reduction of overtime hours. Under KAITEKI Health and Productivity Management, we have changed the focus to employees’ job satisfaction and sense of personal growth, shift in their awareness of workstyle, life satisfaction, improvements in health-related items and other factors as Key Performance Indicators (KPIs) and promote this reform using ICT and IoT. We lend wearable devices to employees to obtain data on their sleep quality and amount of activity. We have also created My Page, a terminal from which each employee can check the above data, as well as the results of their health checkup and their workstyle along with health support information. Group companies carry out these and many other distinctive activities, including study sessions held by industrial physicians and support for smoking cessation. A workplace where diverse human resources work with energy and vitality is the foundation of the organization, which bustles with friendly competition, has an open atmosphere and builds high levels of trust. Through this virtuous circle, we will promote “workplace wellness” to become a company with high levels of creativity and productivity.



Director of the Board,
Managing Corporate Executive Officer,
Chief Compliance Officer,
Chief Health Officer **Ken Fujiwara**

Approach to KAITEKI Health and Productivity Management

We aim to build a basis for high levels of creativity and productivity by fostering offices and workplaces where diverse human resources work with energy and vitality.



*See details on “Examples of Activities 02” on the right page.

KPIs and target values

In promoting a wide range of activities and measures, we have selected three KPIs (Activeness index, workstyle index and health life index) and set target values to be achieved by FY2020, in order to share the direction and vision of achievement. Based on these KPIs, we promote the PDCA of KAITEKI Health and Productivity Management.

Descriptions	FY2020 targets	
1. Activeness index		
Index for employees' job satisfaction, enthusiasm, trust and growth	+15	Increasing positive choices by 15% or more in the health survey*1
2. Workstyle index		
Index for levels of workstyle awareness, behavior and initiatives	+10	Increasing positive choices by at least 10% or more in the health survey
3. Health life index		
Index for health checkup items, lifestyle quality and level of life satisfaction	+10	Increasing employees who gain the number of applicable items among the 10 items indicating the health standard by 10 points (one item) or more

*1 The health survey is aimed at discovering initiatives taken by each employee for Health and Productivity Management, in addition to matters covered by our conventional employee awareness survey.

Examples of Activities

01 Safety Fitness Tests

The MCHC Group takes measures against work injuries focusing on human element. MCC takes two core measures against injuries in a fall. They are KAITEKI exercises aimed at sufficiently strengthening the body not to fall easily, and safety fitness tests for assessing employees' risk of falling. There are three safety fitness tests for assessing balance ability, risk of stumbling and weight bearing capacity (muscle strength). Bodily functions are assessed through these tests and the results are used to develop physical strength to prevent falls.



02 Utilization of ICT Full-fledged utilization of i² Healthcare

MCHC has developed i² Healthcare, an ICT system that provides employees with support related to the health cycle. We have begun to fully implement this system within the Group. Many employees use wearable devices that allow them to monitor their physical condition, including their quality of sleep, amount of exercise and heart rate in real time. They make use of this system like enjoying a game.



Sustainability

Indicators with this icon have been assured by KPMG AZSA Sustainability Co., Ltd. for FY2017.

Environmental Data

Scope of data aggregation: The data for FY2015 covers the three operating companies (MCC, MTPC, and LSII), TNSC and their domestic Group companies. The data for FY2016 and 2017 covers these four operating companies and their domestic and overseas Group companies. (Group companies are directly-owned consolidated subsidiaries.)

Energy consumption/ Greenhouse gases (GHG) ^{*1}	FY2015	FY2016	FY2017
<input checked="" type="checkbox"/> Greenhouse gas emissions (Scope 1 + Scope 2) (1,000 t-CO ₂ e) ^{*2}	12,054 ^{*4}	14,269	14,815
<input checked="" type="checkbox"/> Scope1	7,771	7,223	7,470
<input checked="" type="checkbox"/> Scope2	4,283 ^{*4}	7,046	7,345
<input checked="" type="checkbox"/> Scope3 ^{*5}	43,240	54,370	49,640
<input checked="" type="checkbox"/> Energy consumption (GWh) ^{*3}	34,935 ^{*4}	38,950	40,977

*1 Energy used to produce electricity and steam sold externally and the resulting CO₂ emissions were excluded from figures for FY2015 and prior years (CO₂ emissions were excluded from Scope 2 emissions), but in conformity with the GHG protocol, they are not excluded starting in FY2016.

*2 The emission factors specified in the Act on Promotion of Global Warming Countermeasures are used for the calculation of emissions in Japan. GHG emissions that are not subject to reporting under the Act are mostly calculated based on the mass balance of chemical reactions. Overseas Scope 1 emissions are calculated with the emission factors specified in the Act on Promotion of Global Warming Countermeasures or by the IPCC, and overseas Scope 2 emissions are calculated with power company-specific emission factors or country level emission factors for electricity published by the IEA.

*3 The unit higher heating values for fuels specified in the Act on the Rational Use of Energy or by the IPCC are used.

*4 The FY2015 results include GHG emissions of 1.65 million tons and energy consumption of 1,942 GWh by affiliate companies that are closely associated in terms of energy management, but the FY2016 results and thereafter exclude GHG emissions and energy consumption of these companies.

*5 For the calculation method for Scope 3 GHG emissions, see page 3 of the non-financial data sheet on the MCHC website.

Environmental impact	FY2015	FY2016	FY2017
<input checked="" type="checkbox"/> NOx emissions (1,000 tons)	8.04	8.96	8.12
<input checked="" type="checkbox"/> SOx emissions (1,000 tons)	3.08	4.77	4.42
<input checked="" type="checkbox"/> COD emissions (1,000 tons) ^{*6}	1.74	2.00	2.08
<input checked="" type="checkbox"/> Total nitrogen emissions in water discharged (1,000 tons) ^{*6}	5.53	6.06	6.04
<input checked="" type="checkbox"/> Total phosphorous emissions (1,000 tons) ^{*6}	0.05	0.09	0.07

*6 Total COD emissions, total nitrogen emissions and total phosphorous emissions each show total volume of emissions discharged into rivers, lakes and oceans. Emissions into sewage systems are excluded.

Water use	FY2015	FY2016	FY2017
<input checked="" type="checkbox"/> water withdrawal (Million m ³) (excluding seawater)	171	189	193

Social Data

Constitution of employees (MCHC Group)	FY2015	FY2016	FY2017
Number of consolidated employees	68,988	69,291	69,230
Number of employees by district In Japan	44,858	44,034	43,406
Outside Japan	24,130	25,257	25,824

Aggregation period: Each fiscal year from April 1 to March 31, or as of March 31

Scope of data aggregation: The figures show those employed by MCC, MTPC, TNSC and LSII (including those seconded to other companies but excluding those seconded from other companies).

Diversity / Work-Life Balance / Occupational Safety	FY2015	FY2016	FY2017
<input checked="" type="checkbox"/> Number of employees	22,508	21,736	21,770
<input checked="" type="checkbox"/> Number of employees by gender Male	19,194	18,459	18,440
<input checked="" type="checkbox"/> Female	3,314	3,277	3,330
<input checked="" type="checkbox"/> Percentage of females (%)	14.7	15.1	15.3
<input checked="" type="checkbox"/> Percentage of female managers (%) ^{*7}	7.1	7.7	8.0
<input checked="" type="checkbox"/> Paid leave utilization rate (%)	66.8	67.6	65.4
<input checked="" type="checkbox"/> Lost-time injuries frequency rate (LTIFR) ^{*8,9}	0.48	0.30	0.26

*7 Percentage of female employees out of all employees at assistant manager level and above.

*8 Scope of data aggregation: Figures from domestic operations of the four operating companies (MCC, MTPC, LSII and TNSC) and their Group companies with operating divisions active within Japan.

*9 The LTIFR is the number of lost-time injuries, illnesses and fatalities per million hours worked.



Independent Assurance Report

To the President and CEO of Mitsubishi Chemical Holdings Corporation

We were engaged by Mitsubishi Chemical Holdings Corporation (the "Company") to undertake a limited assurance engagement of the environmental and social performance indicators marked with (the "Indicators") for the period from April 1, 2017 to March 31, 2018 included in its KAITEKI REPORT 2018 (the "Report") for the fiscal year ended March 31, 2018.

The Company's Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the "Company's reporting criteria"), as described in the Report.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the 'International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information' and the 'ISAE 3410, Assurance Engagements on Greenhouse Gas Statements', issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Report, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.
- Visiting the Sakaide Plant of Mitsubishi Chemical Corporation and PT. Mitsubishi Chemical Indonesia selected on the basis of a risk analysis.
- Evaluating the overall presentation of the Indicators.

Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Report are not prepared, in all material respects, in accordance with the Company's reporting criteria as described in the Report.

Our Independence and Quality Control

We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Control 1, we maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

KPMG AZSA Sustainability Co., Ltd.

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Tokyo, Japan

September 10, 2018