

Sustainability

Sustainability

Based on its unique Management of Sustainability (MOS) management approach, the MCHC Group develops technologies and delivers products and services that contribute to people, society and the sustainability of the planet, and drives corporate activities to improve manufacturing technologies and achieve other advancements.

Materiality Assessment

MCHC has identified the important issues in its materiality assessment for the medium-term management plan *APTSIS 20*, and has prioritized these issues based on their impact on corporate activities and other factors. This materiality assessment and its accompanying matrix are used as a compass for our corporate activities.

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 management issues the MCHC Group needs to address

MCHC management identified material issues accounting for management strategies, policies and activities under *APTSIS 20* and prioritized them (three issues of highest priority related to the MCHC Group's existence and 21 materiality 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 and the Board of Directors.

Key Issues Related to the Global Environment

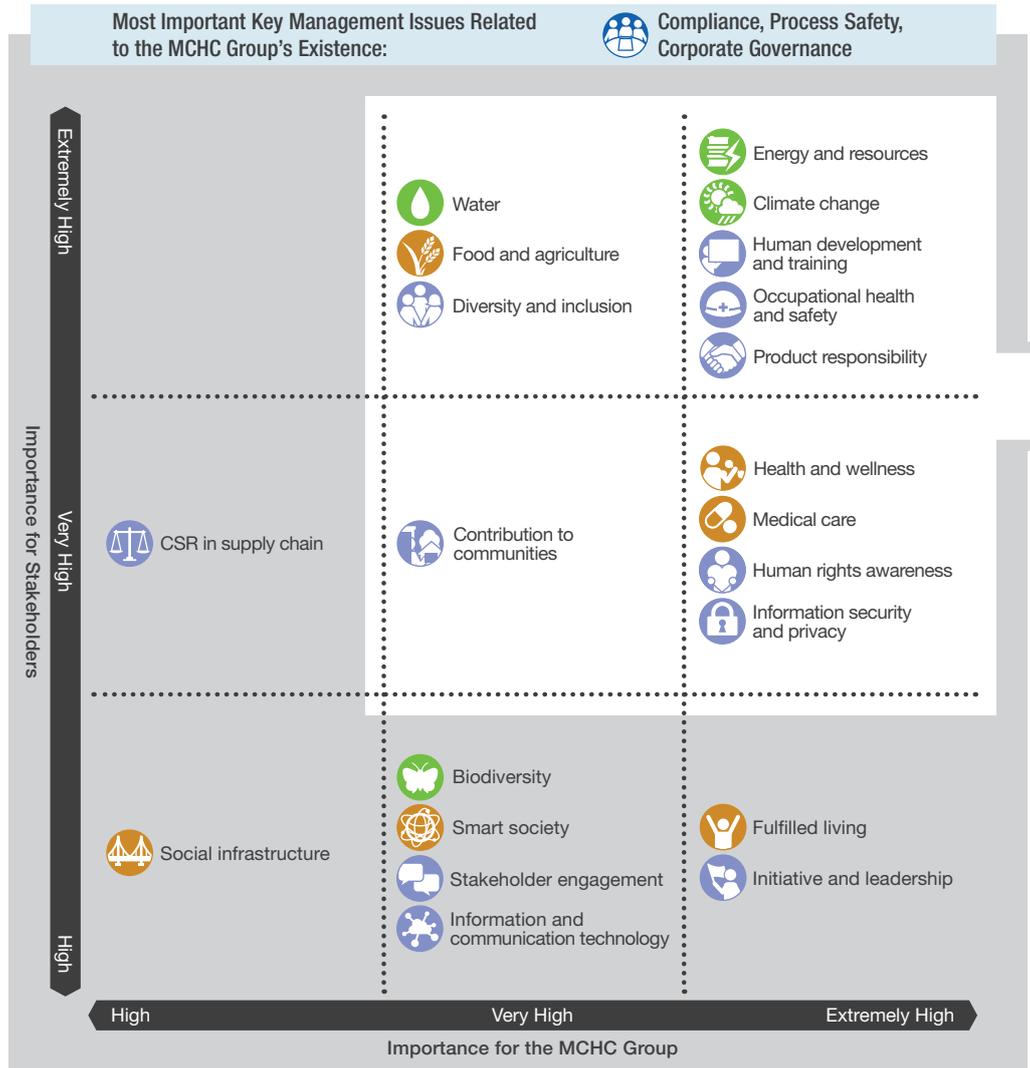
Key management issues that the MCHC Group should address through its corporate activities, innovation, and provision of products and services in the aim of achieving comfort for the Earth.

Key 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 a more comfortable society.

Key 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*.



Connection between the MOS and SDGs

“Transforming our world: the 2030 Agenda for Sustainable Development” adopted by the United Nations in September 2015 and “the sustainable development goals (SDGs)” targets correlates with many aspects of the MCHC Group’s KAITEKI vision and its efforts to realize a sustainable society.

We have taken U.N. 17 Sustainable Development Goals with 169 associated targets to be achieved by 2030 with the management issues we see as important, arranging them in terms of their relationship to materiality. To maximize its contributions to both solutions, the MCHC Group will continue to promote and advance the MOS.



Key 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.	

Key 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.	

Key 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.	

Sustainability

APTSIS 20 - Progress of the MOS Indices

Begun in fiscal 2011, the MCHC Group's MOS Indices are management benchmarks for visualizing the degree of contribution to "Sustainability for people, society and the 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 materiality, upgrading of indices related to products that contribute to *KAITEKI*, and expansion to monitored Group companies inside and outside Japan. In fiscal 2016, the first year of *APTSIS 20* resulted in an annual target achievement rate of 87%, earning 99 points.

Outline of S Indices

With many high-utilization factories, we have strived to achieve stable operation, and by making progress in reducing emissions that place a burden on the environment, we have achieved good progress in reducing environmental impact on the atmosphere and soil environment (S-1-1, 3). However, we did not achieve notable progress in helping to solve food problems (S-3-3).

Related Articles

- ➔ Promote activities to conserve energy (S-2-1)
Non-financial indicators: (See page 39)
- ➔ Promote use of renewable energy (S-2-3)
The MOS Indices Topics: (See page 67)

Outline of H Indices

Although we achieved good progress in providing pharmaceuticals, supplying vaccines and offering health management and health checkup information (H-1-1, H-2-1 and H-2-2), we failed to meet our annual targets in terms of providing products in the health, sanitation and medical fields (H-3-1, H-3-2 and H-3-3).

Related Articles

- ➔ Provide health management and health checkup information (H-2-2)
Non-financial indicators: (See page 39)
- ➔ Provide vaccines (H-2-1)
The MOS Indices Topics: (See page 67)

Outline of C Indices

In terms of preventing accidents and injuries (C-1-2), where we set ourselves ambitious targets, we surpassed our targets concerning safety incidents but fell far short of the targeted lost-time injuries frequency index. In terms of the employee wellness index (C-2-3), we continued to improve and enhance our performance concerning long working hours, the rate of work absences due to illness and injury, the percentage of female employees advancing to assistant manager level and above and the percentage of female managers, and met our annual targets in these areas. For comfort value provision index (C-3-1), the percentage of monitoring products that satisfy our annual target stalled at 25% and we failed to meet the targets of this index as a whole.

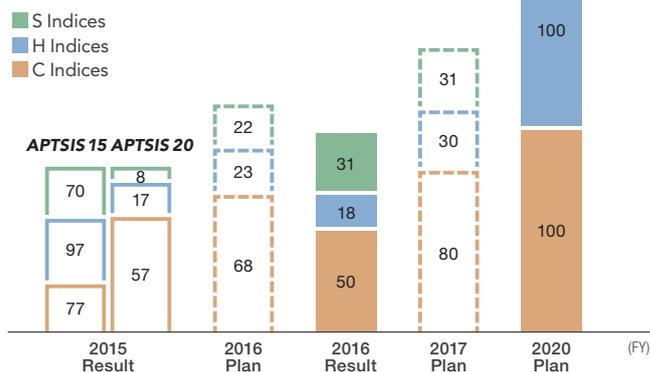
Related Articles

- ➔ Prevent accidents and injuries: lost-time injuries frequency index (C-1-2)
Non-financial indicators: (See page 39)
- ➔ Improve evaluation by stakeholders (C-2-2)
The MOS Indices Topics: (See page 67)

In fiscal 2017, the MCHC Group will continue to deepen and broaden the MOS promotion activities it has pursued to date. Further, to coincide with the formation of MCC and the full-scale launch of Health and Productivity Management, we will expand the range of products that contribute to *KAITEKI* in coordination with growth strategies, promote the building of a dynamic and cooperative organization in concert with Health and Productivity Management and proceed with initiatives to strengthen MOS coordination at overseas Group companies as we strive to achieve the annual targets.

The MOS Indices Annual Trend Diagram

The MCHC Group introduced the MOS Indices as management benchmarks in fiscal 2011. To coincide with the formulation of *APTSIS 20*, we undertook a revision of the MOS Indices and set updated targets. The results in the final fiscal year of *APTSIS 15*, earned 82 points based on the revised MOS Indices. For the current medium-term management plan *APTSIS 20*, we are working towards achieving 300 points as a final year target.



APTSIS 20 MOS Indices Performance Evaluation List

MOS Indices		Assessment Criteria (Units)	FY 2016 Plan	FY 2016 Result	FY 2020 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)	640.1	563.2	591.9	★★★★	10	
		S-1-2	Reduce burden on the water environment	Per-unit impact on the environment (LIME / ¥100 million)	7.1	7.3	6.1	★★	8	
		S-1-3	Reduce burden on the soil environment	Per-unit impact on the environment (LIME / ¥100 million)	7.0	5.9	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)	13,969	14,849	66,000	★★★★	13	
		S-2-2	Convert to resource-saving and reusable materials	Reduction of resource volume (equivalent tons of heavy oil)	2,326	1,965	12,000	★★	13	
				Growth rate in provision of resource recycling services (%)	9.2	14.2	28	★★★★		
	S-2-3	Promote use of renewable energy	Volume of renewable energy generated and supplied (MW)	36.2	42.0	50	★★★★	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)	0.56	0.46	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)	2.05	1.56	17	★★	10	
		S-3-3	Provide products and services that help solve food problems	Growth in sales of related products and services (%)	7.1	-0.7	30	★	10	
H	Contribute to medical treatment	H-1-1	Pharmaceuticals provision	Contribution index for pharmaceuticals provision (points)	5.25	5.66	15	★★★★	15	
		H-1-2	Provide clinical testing services	Contribution index for providing clinical testing services (points)	2.25	2.06	15	★★	15	
	Contribute to the prevention and early detection of diseases	H-2-1	Provide vaccines	Vaccine provision index (points)	0.41	0.85	14	★★★★	14	
		H-2-2	Provide health management and health checkup information	Increase frequency of health information provisions (compared to base year, %)	110	145	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)	5.43	3.02	14	★★	14	
		H-3-2	Provide products for the sanitation field	Growth rate in sales of applicable products (%)	20.9	-0.6	60	★	14	
		H-3-3	Provide products for the medical field	Growth rate in sales of applicable products (%)	27.7	20.5	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	15.8	21	★★	21	
		C-1-2	Prevent accidents and injuries	Reduction rate of safety incidents (%)	47.3	57.9	60	★★★★	19	
				Reduction rate of environmental incidents (%)	80	60	100	★★		
				Improvement rate of lost-time injuries frequency index (%)	52.4	-30.8	50	★		
	C-1-3	Initiatives to provide products and services trusted by society	Customer satisfaction index (points)	47	25	47	★	17		
			Improvement rate in the number of complaints (%)	18.3	24.2	50	★★★★			
	Promote communication and work in concert with stakeholders	C-2-1	Promote communication with business partners	Communication improvement index (points)	30.4	36.9	83	★★★★	7	
		C-2-2	Improve evaluation by stakeholders	External evaluation index (points)	11.0	9.3	11	★★	11	
		C-2-3	Build a dynamic and cooperative organization	Employee wellness index (points)	3.53	6.57	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 (%)	8.8	4.4	40	★	9	

Sustainability

FOCUS The MOS Indices

S Indices **S-2-3 Promote use of renewable energy** **Materiality** Energy and resources **SDGs** 7 AFFORDABLE AND CLEAN ENERGY

We set the new MOS Indices as a benchmark for contributions to encouraging the use of renewable energies that poses no concerns over the depletion of resources and promise to prevent global warming. In fiscal 2016, the MCHC Group facilitated the equivalent of 42MW of renewable energy, a 16% increase over the annual planned levels, due to strong supply of large tow carbon fiber for use in wind power generation. In wind power generation for offshore facilities and low wind velocity regions, as generator blades have become larger in recent years, there has been increasing demand for light and rigid blades. This had led to the increased use of high-performance large tow carbon fiber in place of glass fiber. In addition to strengthening its supply system for carbon fiber in fiscal 2016, the MCHC Group established a European joint venture to manufacture and sell carbon fiber composite materials for turbine blades. Thus, the Group is making progress with efforts to further expand the use of renewable energies.



H Indices **H-2-1 Provide vaccines** **Materiality** Health and wellness **SDGs** 3 GOOD HEALTH AND WELL-BEING

The vaccine provision index provides a quantitative assessment of the number of infectious disease cases, the number of people vaccinated to prevent increased disease severity and halt the spread in groups, the effective period of pharmaceutical benefits, and other factors. In fiscal 2016, the MCHC Group achieved a 13.9% increase over the annual planned levels and 18.9% of progress toward its medium-term management plan target thanks to strong shipments of *Mearubik*, a measles and rubella combined vaccine. In May 2017, a final agreement was reached on the establishment of BIKEN, a vaccine manufacturing joint venture with the Research Foundation for Microbial Diseases of Osaka University, with plans to commence operations in September. This development will reinforce production infrastructure and contribute to the stable supply of vaccines. Moreover, through the development of more effective vaccines, we will strive to achieve the targets set for fiscal 2020 to realize healthy lifestyles and communities.



C Indices **C-2-2 Improve evaluation by stakeholders** **Materiality** Stakeholder engagement **SDGs** 17 PARTNERSHIPS FOR THE GOALS

In fiscal 2016, regarding comfort index to improve stakeholder satisfaction, we achieved 84.4% of progress in the final fiscal year of *APTSIS 20*. In recognition of the management we have pursued to date on sustainability, MCHC was the only Japanese company to be awarded Bronze Class in the Chemical Sector of "RobecoSAM's Sustainability Award 2017." MCHC also obtained the highest rank in the Development Bank of Japan's environmental rankings for the first time since 2013, and also received a special commendation. In this environmental ranking assessment, MCHC was regarded highly for strengthening the links with MOE financial information in its MOS Indices while setting quantitative targets related to the provision of products and services in light of international trends such as the Sustainable Development Goals (SDGs).



Case 1

Providing solutions for environmental and social issues through products and services

The MCHC Group handles more than 20,000 products and services and offers a range of solutions to current environmental and social issues. In “the SDG Industry Matrix”, which summarizes cases where companies have contributed to the SDGs, *REPELARK* carbon fiber sheets for steel and concrete reinforcement, *BioPBS* biodegradable polymer and *Hydro Shuttle* package type hydrogen station were listed. MCHC also compiled examples of its solutions being used to address issues such as healthcare, biodiversity, disaster prevention and disaster mitigation, and released the information via its website and so on. Products contributing to biodiversity have been recognized by experts from both a scientific and comprehensive perspective, including direct contributions to ecosystems and the environmental impact over the product lifecycle, and selected as products with high levels of contribution. Among these, an “groundwater membrane filtration system “developed by Wellthy Corporation was awarded the Grand Prize

in the 4th Platinum Vision Award, while the *X-sheet* from Quadrant Plastic Composites Japan Ltd. won the Let’s Select Award in the Biodiversity Action Award Japan 2016. In the areas of disaster prevention and mitigation, selected products were compiled into a booklet along with opinions from experts in the industries, government, academia and private sectors and used as internal and external communication tools. Moving forward, MCHC will strive to find solutions to global agenda items such as SDGs and realize the *KAITEKI* concept by rolling out products that contribute to *KAITEKI* in a deeper and broader fashion.



Case 2

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. Aiming to create a world in which people with disabilities can embrace their individuality and achieve whatever they desire, The KAITEKI Institute, Inc. is engaged in the development of prosthetic legs for sports. MCHC signed a sponsorship agreement with athlete Kaede Maegawa, who competes in athletics events with a prosthetic leg (placed 2nd in women’s long jump T42 and 5th in the women’s 100 meter sprint T42 at World Para Athletics Championships London 2017). As well as supporting Maegawa’s athletic activities, we receive feedback based on prosthetic leg usage results and advice for product development while pursuing further development in the

lead-up to the 2020. On another front, the anti-doping laboratory of LSI Medience Corporation is the first in Asia and the only body in Japan to be certified as a doping test specimen analysis facility by the World Anti-Doping Agency. Through the promotion of anti-doping activities and related research, we are contributing to the sound development of sports.



Case 3

Initiatives to empower local communities

Embracing the concept of “continuing to act ethically to contribute to the development of regional environments and economies and to improving the lives of workers, their families and local communities,” PT. Mitsubishi Chemical Indonesia has been undertaking systematic efforts to help improve the living infrastructure, educational environment, health and sanitation in the village of Gerem in Merak, Banten Province, Indonesia, where the company has operated a plant since 2007. With the roadmap extending to 2023, the company’s activities to steadily empower the local community have been highly regarded by the local government. In 2012, the company received the “Platinum Award” from the government of the Republic of Indonesia for “the Deep Well Project” to supply water to people living in areas with harsh terrain, helping Indonesia meet its MDG targets. In 2014, the company won the Gold Prize in Indonesia’s CSR Awards operated by the government of Indonesia for “the SAUNG AKSARA” CSR program in the village of Gerem. These activities have attracted attention from Japan and overseas, and are visited by many observation groups each year.

MCCI’s CSR Roadmap

MCCI have Roadmap of External CSR program for 2007-2023:



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.

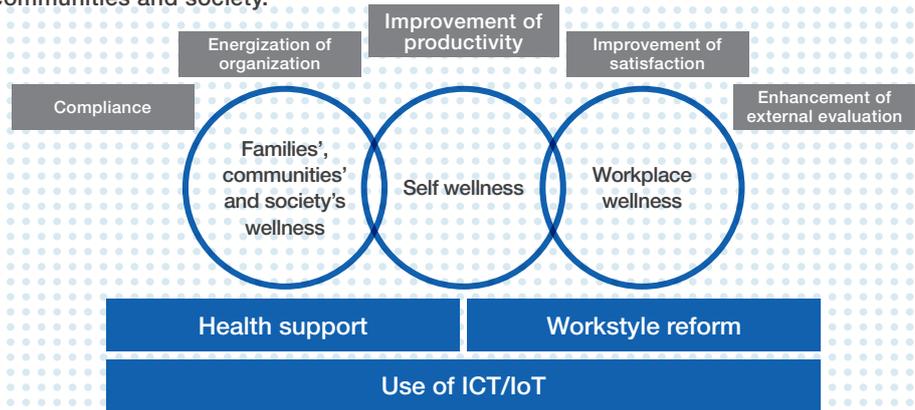
We refer to initiatives that fully utilize people’s skills and maximize the active participation of workers as *KAITEKI Health and Productivity Management**, and we promote such initiatives as part of *KAITEKI Management*.

* “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 Workshop for the Management of Health on Company and Employee.

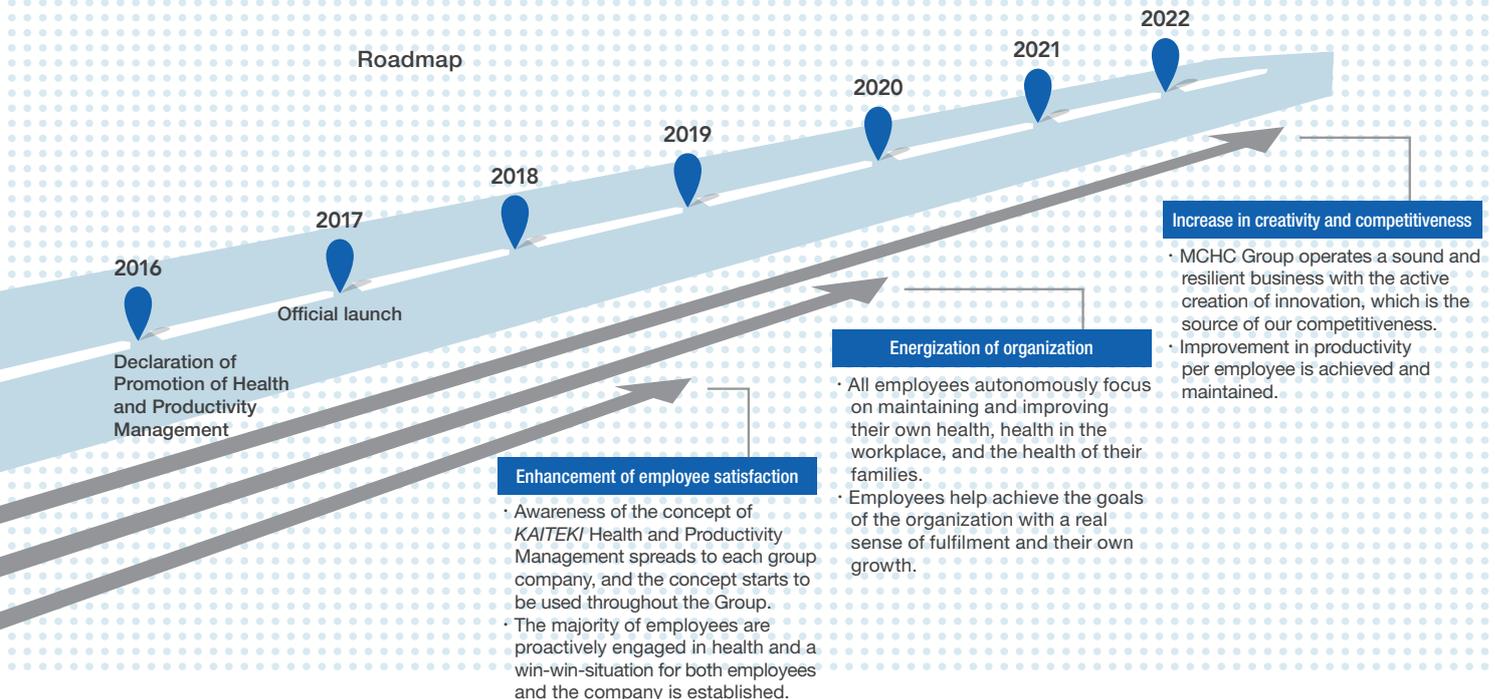
What is KAITEKI Health and Productivity Management?

Definition *KAITEKI Health and Productivity Management* refers to initiatives which maximize the active participation of “workers” - one of the most valuable assets - from the perspective of health. It has two main strands – “health support” and “workstyle reforms” for the employees and the workplaces. To realize *KAITEKI*, we are extending the scope of the Health and Productivity Management to encompass the wellness of families, communities and society as a whole, and we plan to integrate and utilize various innovative technologies such as ICT and IoT in these health-oriented initiatives.

- Objectives**
- To become a company where diverse human resources work with energy and vitality.
 - To become a company with high levels of creativity and productivity.
 - To become a company which also contributes to promoting the wellness of families communities and society.



Roadmap



Message from Chief Health Officer (CHO)

Every worker get on with their work independently, fully demonstrating their abilities and realizing how much value they have managed to create for society. Such a situation would give each individual a sense of fulfilment and satisfaction, energize the organization, and also lead to high levels of creativity and productivity. This is what we want to achieve through *KAITEKI* Health Management. Following the President's declaration to promote health management in fiscal 2016, MCHC has formulated a roadmap from now through to fiscal 2020, hinging on health support and workstyle reform and has begun taking concrete action.

We are promoting health and productivity management in the basic belief that if the health of employees, health in the workplace and the health of families and society as a whole can positively impact each other, then the entire company will be able to grow and continue to create significant value for society.



Representative Corporate Executive Officer, Deputy CEO, Chief Compliance Officer, Chief Health Officer **Noriyoshi Ohira**

PLAN

What we aim to achieve

Provide support for good health to help diverse human resources work with energy and vitality
 Develop high levels of creativity and productivity
 Contribute to promoting the health of families, communities and society

DO

Setting themes that embody the target

- Health support**
 - Increase in health awareness
 - Establishment of appropriate lifestyles
 - Measures against work accidents focusing on human factors
 - Creation of safe and healthy workplace
- Workstyle reform**
 - Work reform
 - Provision of diverse, flexible ways of working
 - Effective capability development
 - Proper management of working hours



ACTION

Proposal and execution of countermeasures

Examples

- Health exercise/Promotion of teleworking/ Lights out from 7:00 pm
- Improvement of meeting efficiency
- Distribution of wearable devices

CHECK

Monitoring and verification of effects

Examples

- Management leadership
- Level of health of employees
- Level of energization of organization
- work-life balance
- Use of ICT/IoT

Examples of Activities

Promotion of efficient use of time

Challenge to halve duration of meetings

We conducted the survey to find out how managerial personnel, such as section chiefs of manufacturing departments and managers of business departments, allocate their working time. The results revealed that they spend a great deal of time in meetings, preparing documents for meetings and contacting people by email. Based on top-down instructions for improvement, we review the meaning and attendees of meetings, shorten meeting time and simplify meeting documents. Not only for managers but for the entire workforce, we develop the systems including teleworking and promote efficient ways of working so that employees can concentrate on high priority work.



Utilization of ICT

Changing health awareness through visualization of the level of activity and sleep

The first step to good health is to notice your own health condition and lifestyle habits, to recognize them as something that concerns yourself, and to ensure an appropriate amount of exercise, a balanced diet, and good sleep. MCHC is creating an ICT system (i² Healthcare) to support this health PDCA cycle. We centralize the data of health condition and workstyle, link those data with exercise and sleep data measured by wearable devices distributed to employees, and visualize the data results in real time, thus helping to improve their health awareness and behavior. We are using this i² Healthcare system as the basis for health support.



Sustainability

Indicators with this icon have been assured by KPMG AZSA Sustainability Co., Ltd. for fiscal 2016.

Environmental Data

Scope of data aggregation: The data for fiscal 2014 covers the three operating companies (MCC, MTPC, and LSII) as well as their domestic Group companies. The data for fiscal 2015 covers the three major operating companies, TNSC and their domestic Group companies, and the data for fiscal 2016 covers these four operating companies and their domestic and overseas Group companies. (Group companies are directly-owned consolidated subsidiaries).

	FY 2014	FY 2015	FY 2016
Energy consumption/ Greenhouse gases (GHG) ¹			
<input checked="" type="checkbox"/> GHG emissions (1,000 t-CO ₂ e) ²	8,764	12,054 ⁴	14,269 ⁴
<input checked="" type="checkbox"/> Energy consumption (GWh) ³	30,277 ⁴	34,935 ⁴	38,950 ⁴

¹ Energy consumption and CO₂ emissions used for generating electricity and steam sold externally had been excluded until fiscal 2015 results, but in conformity with the GHG protocol, they are not excluded starting in fiscal 2016.

² The emission factor of the Act on Promotion of Global Warming Countermeasures is used for the calculation of emissions in Japan. Regarding GHG emissions that are not subject to reporting under the Act, a specific calculation rule based on the balance of chemical reactions, etc. is set separately. Regarding emissions overseas, for Scope 1 emissions, the emission factor is based on the Act on Promotion of Global Warming Countermeasures or IPCC, and for Scope 2 emissions, the emission factor specific to each supplier or the emission factor for each country (2014 value) announced by IEA is used for calculation.

³ The unit heating value of energy is based on the Act on the Rational Use of Energy and IPCC and is indicated as a higher heating value. Regarding electricity, the value converted to the amount of primary energy is used until fiscal 2015 results, but the amount of electricity purchased is used starting in fiscal 2016 results. For comparison with past data, the energy in fiscal 2014 and 2015 is recalculated using the amount of electricity purchased without being converted to primary energy.

⁴ The fiscal 2015 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 fiscal 2016 results exclude GHG emissions and energy consumption of these companies. In addition, regarding electricity, the value converted to the amount of primary energy is used until fiscal 2015 results, but the amount of electricity purchased is used starting in fiscal 2016. For comparison with past data, the energy in fiscal 2014 and 2015 is recalculated using the amount of electricity purchased without being converted to primary energy.

Environmental impact			
<input checked="" type="checkbox"/> NOx emissions (1,000 tons)	8.88	8.04	8.96
<input checked="" type="checkbox"/> SOx emissions (1,000 tons)	3.06	3.08	4.77
<input checked="" type="checkbox"/> COD emissions (1,000 tons) ⁵	1.75	1.74	2.00
<input checked="" type="checkbox"/> Total nitrogen emissions in drained water (1,000 tons) ⁵	5.68	5.53	6.06
<input checked="" type="checkbox"/> Total phosphorous emissions (1,000 tons) ⁵	0.06	0.05	0.09

⁵ Total COD emissions, total nitrogen emissions and total phosphorous emissions each show total volume of emissions discharged into rivers, lakes and oceans. Exclude emissions into sewage systems.

Water use			
<input checked="" type="checkbox"/> Water consumption (million m ³) (excluding seawater)	174	171	189

Social Data

	FY 2014	FY 2015	FY 2016
Constitution of employees (MCHC Group)			
Number of consolidated employees	68,263	68,988	69,291
Number of employees by district			
In Japan	—	44,858	44,034
Outside Japan	—	24,130	25,257

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

Scope of data aggregation: In fiscal 2014, the figures show those employed by the two operating companies (MCC and MTPC). In fiscal 2015, the figures show those employed by the three operating companies with the addition of TNSC, excluding those seconded to other companies but including those seconded from other companies. There are no employees in LSII other than those seconded from the Group.

Diversity / Work-Life Balance / Occupational Safety			
<input checked="" type="checkbox"/> Number of employees	20,886	22,508	21,736
<input checked="" type="checkbox"/> Number of employees by gender			
Male	17,742	19,194	18,459
Female	3,144	3,314	3,277
<input checked="" type="checkbox"/> Percentage of females (%)	15.1	14.7	15.1
<input checked="" type="checkbox"/> Percentage of female managers (%) ⁶	7.4	7.1	7.7
<input checked="" type="checkbox"/> Paid leave utilization rate (%)	66.9	66.8	67.6
<input checked="" type="checkbox"/> Lost-time injuries frequency rate (LTIFR) ^{7,8}	0.32	0.48	0.30

⁶ Percentage of female employees out of all employees at assistant manager level and above.

⁷ 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.

⁸ The LTIFR is the number of lost-time injuries 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  for the period from April 1, 2016 to March 31, 2017 (the “Indicators”) included in its KAITEKI REPORT 2017 (the “Report”) for the fiscal year ended March 31, 2017.

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 ‘International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information’, ‘ISAE 3410, Assurance Engagements on Greenhouse Gas Statements’, issued by the International Auditing and Assurance Standards Board, and the ‘Practical Guidelines for the Assurance of Sustainability Information’ of the Japanese Association of Assurance Organizations for Sustainability Information. 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 with the Company’s responsible personnel to obtain an understanding of its policy for the preparation of 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 reviews of 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 also recalculating the Indicators.
- Visiting to the Yokkaichi Plant of Mitsubishi Chemical Corporation and Huizhou MMA Co., Ltd. selected on the basis of a risk analysis.
- Evaluating the overall statement in which the Indicators are expressed.

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.

KPMG AZSA Sustainability Co., Ltd.

Tokyo, Japan

September 12, 2017