

WE CARE FOR THE FUTURE

HEALTHCARE & EARTHCARE



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2017



Cover

The cover of the “SK chemicals Report 2017” displays SK chemicals’ mission, which is to use eco-friendly chemistry (Eartcare) and use science to protect life (Healthcare), as the main theme and vividly illustrates visual balance and harmony.

2016



2015



2014





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Global Leading Solution Provider in Eco-friendly Materials and Total Healthcare

Launched as Sun Kyung F Co., in 1969, SK chemicals has strived to provide chemical and life science products and solutions for the human race with the vision of “becoming a global leading company providing eco-friendly materials and total healthcare solutions.”

SK chemicals divided the business entities into the Green Chemicals Biz. for protecting the Earth’s environment, and the Life Science Biz. for promoting the health of humanity according to its mission, and takes the lead in transforming and innovating the domestic chemical and life science sectors.

In December 2017, SK chemicals changed its name into SK discovery through a spin-off and aims to focus on advancing its business portfolio and developing new businesses through the Green Chemicals Biz. and Life Science Biz.

As Green Chemicals Biz oversees the chemical and energy business, SK chemicals is able to take a bold leap forward into becoming a global leading company in the eco-friendly material sector using world-class technology, know-how, and production facilities.

In the Life Science Biz., the company provides integrated solutions for the entire process of healthcare from the prevention of diseases to treatment, including pharmaceutical products and vaccines. The business not only provides treatment through innovative medicines but also prevents disease transmission through vaccines.

Basic Information

■ Company name	SK chemicals Co., Ltd.
■ Business type	Chemicals, Pharmaceuticals
■ Address	310, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do (Headquarters)
■ No. of employees	1,685
■ Sales	KRW 1 trillion and 191.4 billion
■ Operating profits	KRW 54.9 billion

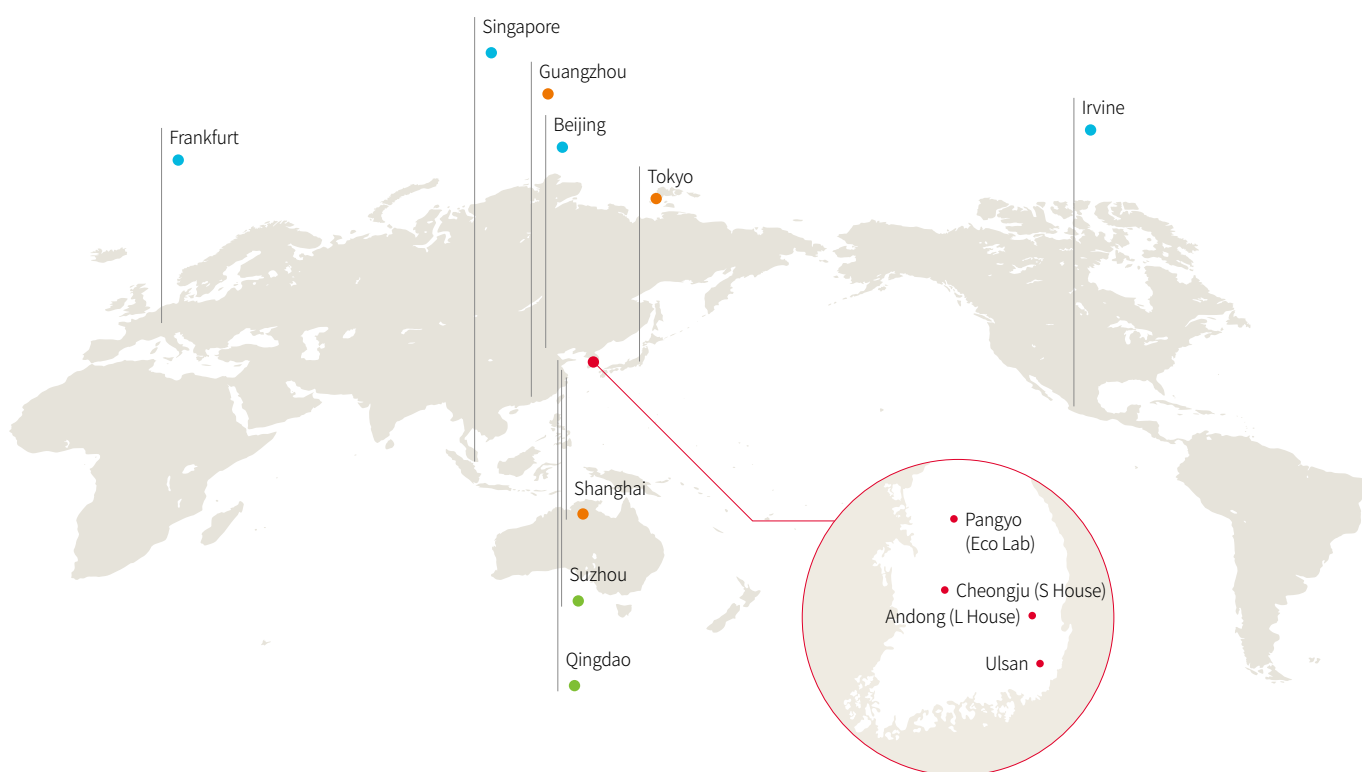
(As of December 31, 2017)



“We care for the future. Healthcare, Earthcare!”

SK chemicals is headquartered in Pangyo (Eco Lab) and operates three plants: Ulsan, Andong (L House), and Cheongju (S House). The Ulsan plant manufactures chemical products, while the other plants—Andong (L House) and Cheongju (S House)—produce preventive and therapeutic medicines. The company also has plants in two Chinese cities, Qingdao and Suzhou, and branch offices in Germany, Singapore, and the United States.

- Headquarters & Domestic Plants
- Overseas Offices
- Overseas Plants
- Overseas Subsidiaries



Major Subsidiaries				Major Affiliates
SK petrochemical Co., Ltd. Ownership ratio 100.00% Manufactures basic chemical materials in petrochemicals	Initz Co., Ltd. Ownership ratio 66.00% Manufactures PPS base resin/ compound products	JSI Co., Ltd. Ownership ratio 56.03% Epoxy resin manufacturer	ENTIS Co., Ltd. Ownership ratio 50.00% Manufacturing business	
SK chemicals Qingdao Co., Ltd. Ownership ratio 100.00% Prepreg manufacturing business	SK chemicals Suzhou Co., Ltd. Ownership ratio 100.00% Resin manufacturing business	SK chemicals America, Inc. Ownership ratio 100.00% Wholesale business	SK chemicals GmbH Ownership ratio 100.00% Wholesale business	ST Green Energy Pte, Ltd. Ownership ratio 50.00% Trading of biodiesel and biomaterials

* SK petrochemicals : Merged into SK chemicals on May 1, 2018
 * SK bioscience : The VAX business was spun off into a subsidiary on July 1, 2018

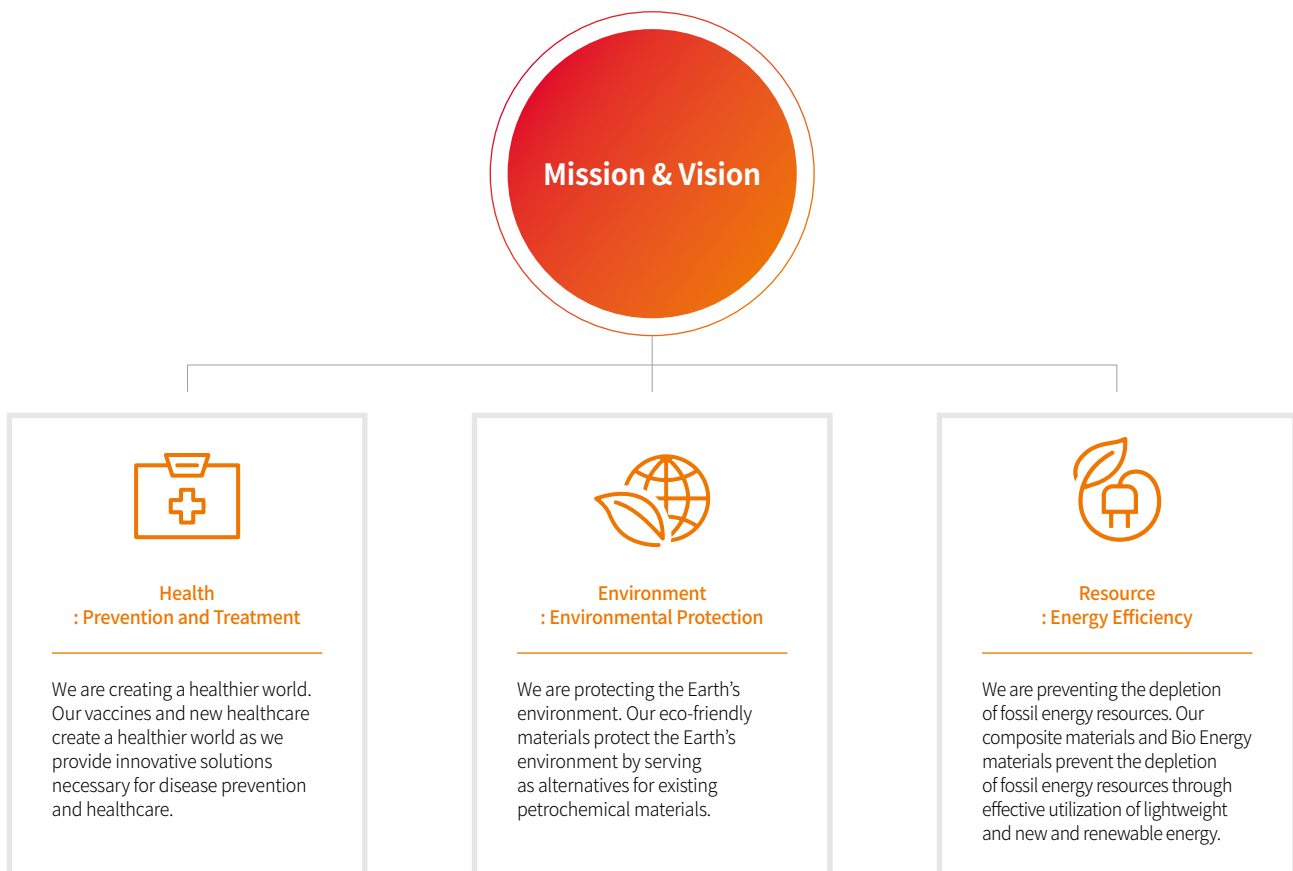
Social Value (SV) History

Change of the Era

In the era of capitalism in the 21st century, it has become increasingly important to reduce risks for intensified complexity and uncertainty and to create an “ecosystem of coexistence” for harmony between society and the company. Through the Fourth Industrial Revolution, the range of stakeholders is expanding with the connection between human beings; humanity and things; and things. Under these circumstances, it has increased the need for corporate social responsibility for various stakeholders such as governments, investors, and consumers.

History of SK chemicals’ Social Contribution Activities

In 2009, SK chemicals began environmental management. Amid modern society where the issue of polarization is intensifying, the company chose to focus on social contribution in the environmental sector with eco-friendly and human-friendly businesses to address social issues and fulfill the responsibility expected as a corporate citizen. The company completed ECO Lab, which started construction in 2008, as the best eco-friendly building (highest rating and score in the Domestic and Overseas Green Building Certification Criteria, Energy Efficiency Rating Level 1). In 2011, we established the mission of “improving human health” and “protecting the Earth’s environment.” Since 2012, SK chemicals has conducted business by expanding its scope from environmental management to sustainable management.



SK's Responsiveness to Change

In order to stay current, SK performs sustainable management activities that create value required by society (stakeholders).

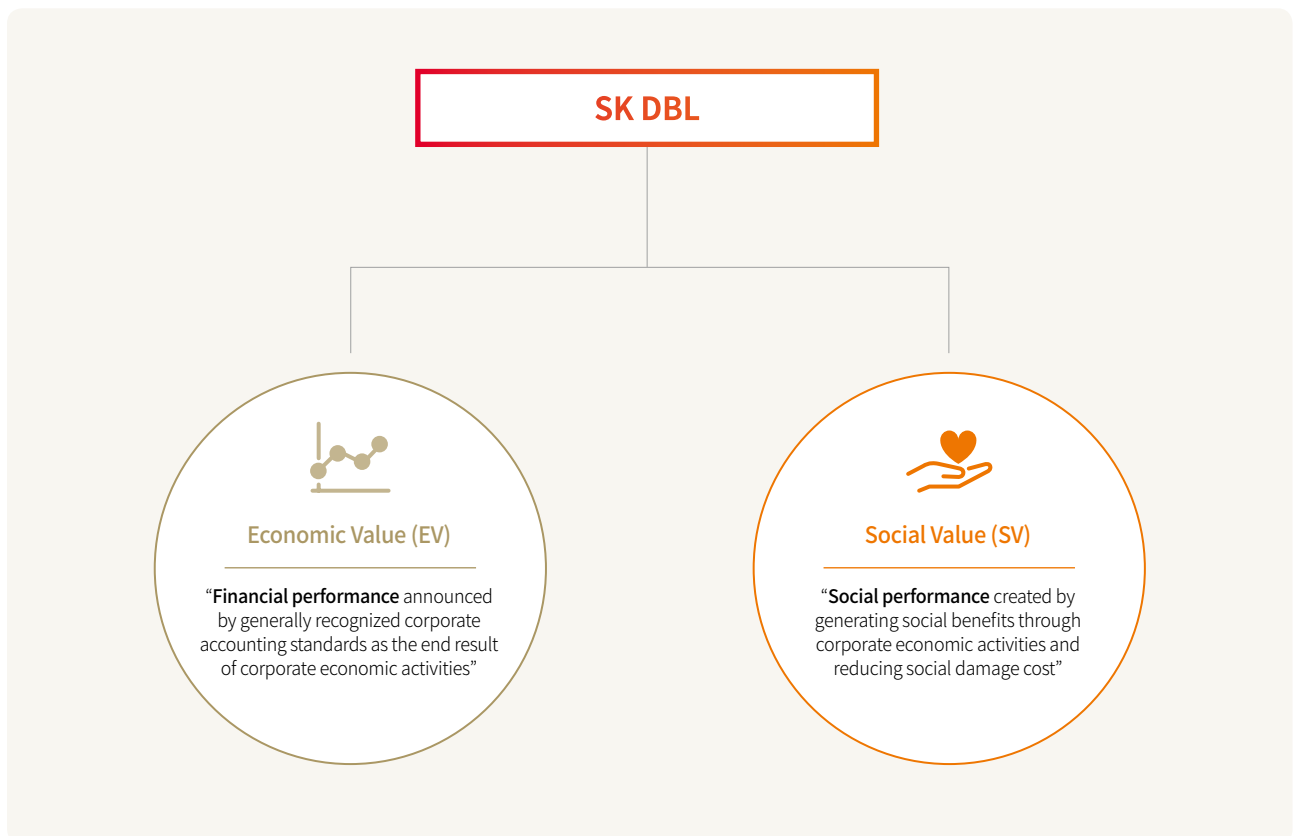
SK chemicals has pursued sustainable value through its mission and vision, which are the company's strategic direction, and adhered closely to its management policy for social value. In 2013, SK group also added the concept of "creating social value" into SKMS, the management philosophy, and the same concept was reflected in the articles of incorporation and bylaws for each affiliate.

Since 2018, the company stipulates value required by society as Social Value (SV) to measure advanced social values and divides them into directly created SV through management activities and indirectly created SV through social contribution.

SK DBL

As an abbreviation of SK Double Bottom Line, SK DBL refers to the overall direction of SK Group, which pursues both the inherent economic value (EV) and social value (SV) of the corporation through products and services.

SK measures and manages EV, which measures the size and value of business based on accounting data, and SV, which contributes to society and creates shared growth by addressing social issues.



2017 SK chemicals HIGHLIGHTS



Launch of SK discovery



On December 2017, SK chemicals changed its name to SK discovery through a spin-off and established the holding company structure. Accordingly, the investment sector, including SK gas and SK plasma, was reorganized as the subsidiary of SK discovery as the parent corporation, and the Green Chemicals Biz. and Life Science Biz. continued operations under the new business, SK chemicals.

Through this process, SK discovery aims to focus on advancing its business portfolio and realizing the innovation of corporate culture and development of new business as well as reinforcing the transparency of corporate governance as a holding company. Each business company, including SK chemicals, will execute a strategy suitable for the vision and mission of each company and achieve sustainable development based on clear business targets.

SK chemicals developed ECOZEN copolyester as the world's first high heat-resisting and bio-transparent plastic material. The best advantages of SK chemicals' copolyester include high-performance and eco-friendliness, and it is being utilized in various sectors around the world, including cosmetics, high-performance sheets and film, and food-related use, etc. In 2017, we expanded a new line and raised the capacity of producing copolyester. Through this process, we were able to respond to rapidly increasing demand for eco-friendly materials. SK chemicals is preparing for the expansion of the copolyester market by improving products continuously and developing new products reflecting customer needs.



Expansion of copolyester production capacity

SK petrochemical, dominance in the DMT Asian market



SK petrochemical, a subsidiary of SK chemicals, has developed the capacity for developing DMT, the raw material of polyester.

Until 2014, the company produced and sold 80,000 tons of DMT; however, as Teijin, a rival Japanese company, withdrew from its DMT business, SK petrochemical reinforced facilities and raised its production capacity to 140,000 tons in May 2016. As of 2017, the company achieved sales of 130,000 tons. SK petrochemical has met major customer needs by providing superior quality and secured a 100% market share in the domestic market and a 95% share in Japanese and Chinese markets. Along with these achievements, SK chemicals ensures stable production and ongoing R&D to supply DMT to customers in a timely manner.



Release of the world's second shingles vaccine



In December 2017, SK chemicals acquired the license for Qudexy XR, which was developed as an extended-release medicine (medicine releasing dosage gradually) for the first time in Korea among topiramate-based antiepileptic drugs, and subsequently launched the medicine in March 2018.



In December 2017, SK domestically sold SKYZoster, a shingles vaccine developed by SK chemicals using independent technology, and is also considering expansion to the global market. With safety verification from an overseas professional non-clinical institute, SKYZoster was developed through domestic clinical tests for approximately five years at eight clinical institutions such as Korea University Guro Hospital.



According to the Health Insurance Review & Assessment Service, the number of shingles patients in Korea has rapidly increased from 577,000 in 2012 to 691,000 in 2016. Before vaccines were sold by SK chemicals, the vaccine developed by the global pharmaceutical company MSD was the only option in the domestic market; however, as SK chemicals released the shingles vaccine, the opportunity for vaccination has greatly expanded.



As a medicine developed by U.S. USL (Upsher-Smith Laboratories) with licensing from the USFDA, Qudexy XR is an improved new medicine, which uses the technology that releases major components inside the body gradually and reduces the number of daily doses. While existing topiramate requires two doses a day, Qudexy XR uses sustained release technology and allows for just one dose a day. With the reduction in number of daily doses, the convenience for customers taking medicine has been improved.



Acquisition of license for improved new medicine for epilepsy treatment



Recipient of the Korea New Drug Award in 2017



SK chemicals received the grand prize in the new drug development sector of the Korea New Drug Award sponsored by the Ministry of Food and Drug Safety. Korea New Drug Award selects and gives awards to excellent pharmaceutical companies and medical device companies leading the advancement of the pharmaceutical industry throughout the year. SK chemicals was selected as an excellent company exhibiting outstanding R&D performance recognized in the bio sector, including the commercialization of the world's first quadrivalent cell-culture influenza vaccine and development of the next-generation hemophilia treatment, and subsequent launch in the U.S. and Europe for the first time among domestic biopharmaceuticals. In 2017, three companies were awarded in the new drug development sector, new medicine research sector, and technology innovation sector.

CEO Message



SK chemicals CEO

Kim, Cheol

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Dear stakeholders, customers, and partner companies,

I sincerely appreciate your unceasing interest and support for SK chemicals. I am extending my greetings through what is already our seventh sustainability report published to date. I firmly believe that our efforts and sincerity for “a sustainable society and future” have grown progressively.

The concept of “sustainable development,” which gained interest when the Club of Rome expressed serious concerns over the environment and development in 1972 through its first report “The Limits to Growth,” has constantly required us to provide a solution to the question of “What developments meet the needs of the current generation without compromising the ability of the future generations to meet their own needs?”

Through this report, SK chemicals intends to communicate with internal and external stakeholders about financial and non-financial performance, sustainable management activities, and other major issues of the year.

In this year’s report, we reestablished various tangible and intangible values which are created by SK chemicals, from the perspective of various stakeholders in our society (social value). Major performance results achieved by SK chemicals in 2017 and potential outcome after 2018 are as follows:

SK chemicals will bolster its profitability from current business focuses and promote sustainable development.

The company attained positive results from the existing copolyester, oil, and pharmaceutical business. Through new business pursuits, we will strive to realize the company’s vision by implementing growth strategies on an ongoing basis based on super-engineering plastic and premium vaccines such as the shingles vaccine, which was released late last year.

SK chemicals also pursues the improvement of global competitiveness by enhancing the level of corporate management activities.

We aim to diagnose our current level of operations from an external viewpoint.

In addition, the company will improve its overall operation system, including supply chain management, and elevate the system to a global standard. SK chemicals will create successful cases that lead to optimal performance by sharing our tangible and intangible assets with group affiliates and business partners.

SK chemicals aims to seek the development of the company and growth of employees simultaneously. We will evolve the company culture for heightened performance and enhancement of employee capability.

We will also strive to boost the quality of life and happiness of employees. To achieve this goal, we will drastically revamp the HR system and create an environment where employees can immerse themselves by working autonomously.

SK chemicals aims to take a step further to become a socially respected company.

As a company fulfilling its social responsibilities, SK chemicals will clearly measure social value created by the company and generate social performance in connection with business activities. Through these efforts, we will focus on seeking social value to ensure win-win relationships between society and the company.

SK chemicals will continue striving to solidify the basis for creating value as a leading company in the chemical and pharmaceutical sectors. We will secure future growth opportunities by growing into a sustainable company, which achieves sustainable development, optimizes global-level operations, accomplishes a high-performance organization with the growth of employees, and creates social value.

I sincerely wish that our small efforts contribute to making our society happier and the value and sincerity pursued by SK chemicals are properly delivered to our external stakeholders, including shareholders, customers and suppliers.

I hope that our stakeholders will be a part of the happy journey led by SK chemicals.

Thank you.



SK chemicals CEO

Park, Mahn-hoon

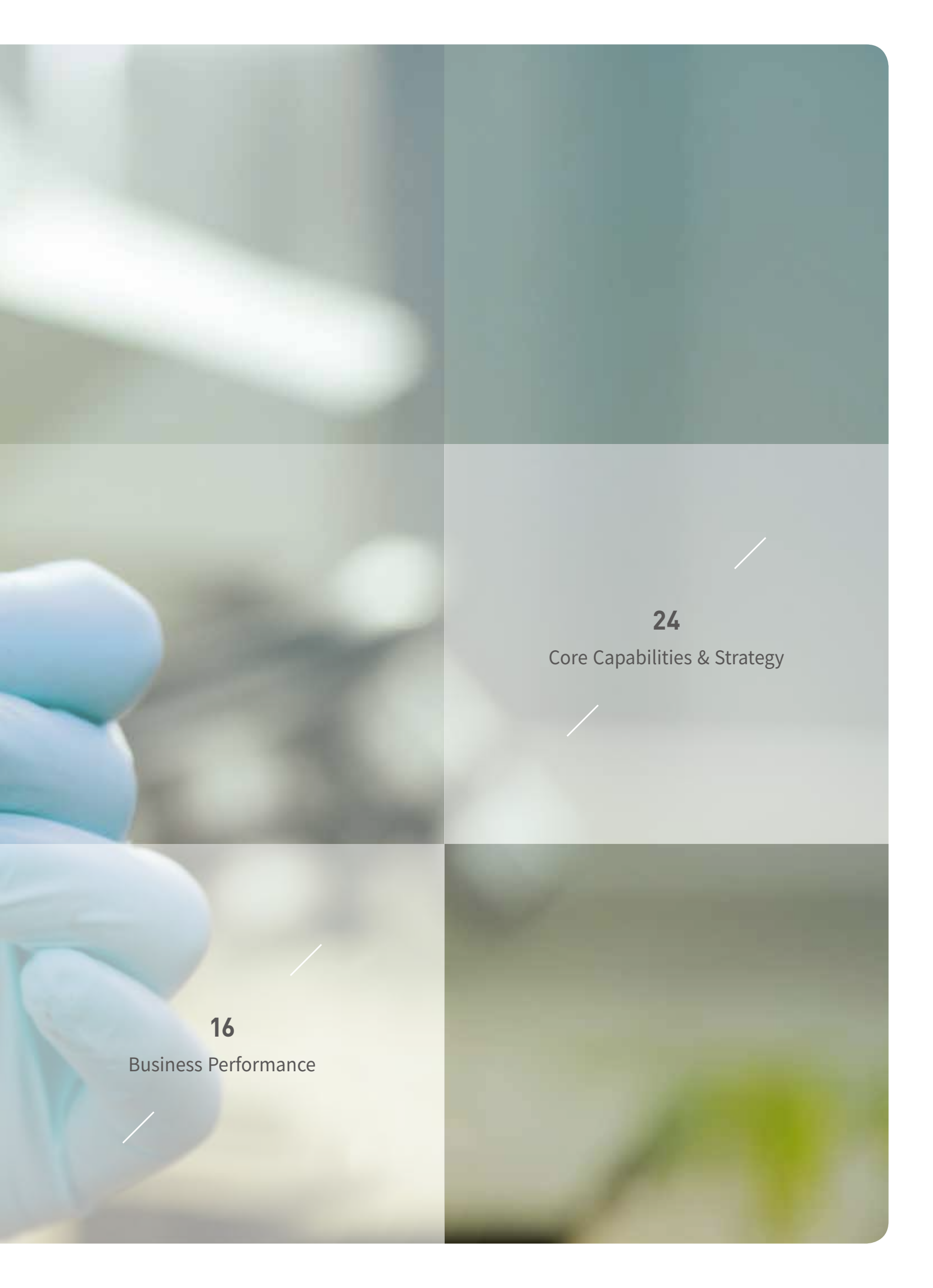
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Financial Performance

**Economic
Value**





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Core Capabilities & Strategy

Financial Performance

Earnings in 2017

SK chemicals has selected the eco-friendly and healthcare sectors as next-generation sectors to cultivate, to focus our efforts based on the existing Green Chemicals Biz. and Life Science Biz. with the goal of creating stable profits and ensuring sustainable growth. We also conduct business restructuring and search for new business opportunities to establish a supportive organizational system and secure core capabilities such as R&D.

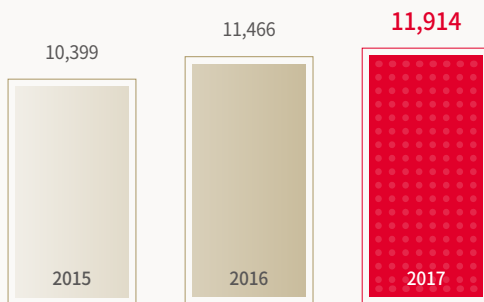
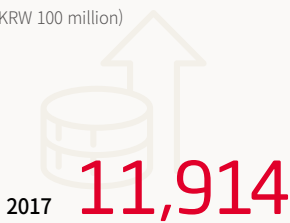
In 2017, the company achieved complete copolyester production and sale system and increased sales by securing cost competitiveness in the Bio Energy business. Through our company's efforts towards cost reduction, SK chemicals attained annual sales of KRW 1 trillion and 191.4 billion and an operating profit of KRW 54.9 billion on a non-consolidated basis.

SK chemicals has also raised its competitiveness in the vaccine business by commencing sales of shingles vaccines. We also successfully operated the super engineering plastic plant to drive core engines for growth and to further solidify our foundation for growth.

Sales and Operating Profits

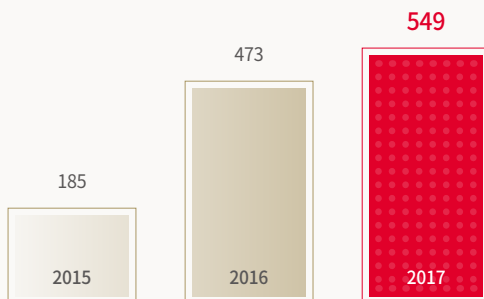
Sales

(Unit : KRW 100 million)



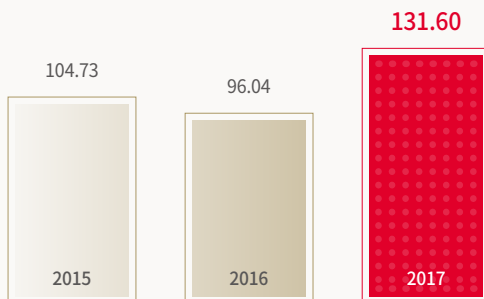
Operating Profit

(Unit : KRW 100 million)



Debt Ratio

(Unit : %)



* SK chemicals became a newly established corporation through a spin-off on December 1, 2017. For the continuity of data, SK discovery's data were utilized for data up to November 2017.

Plans and Outlook for 2018

Based on our management performance in 2017, SK chemicals endeavors to maximize and stabilize profitability in its existing core businesses by enhancing operational excellence in 2018. The company is also speeding up business activities in various sectors with the goal of quickly accomplishing performance in new investment businesses. We have improved productivity and reinforced fundamental competitiveness both in existing core businesses and new businesses by improving management and focusing on specialization. In terms of organizational culture, the company establishes a clear sense of purpose and creates an autonomous work environment where employees can tap into their full potential. Through these efforts, SK chemicals will strengthen essential competitiveness and continue to evolve and take on challenges for future growth.

Green Chemicals Biz.

The chemical industry is exposed to unstable international circumstances such as trade disputes between the U.S. and China and other various risks, including fluctuations in oil prices (raw materials prices) and foreign exchange. However, as demand for eco-friendly products and materials is steadily on the rise, we expect stable growth in existing businesses and pioneer markets through new businesses.

In particular, copolyester, one of SK chemicals' main businesses, is utilized in various sectors as an alternative to conventional plastics. The size of the Bio Energy market is likely to expand with the increased mix ratio and legislation of bio heavy oil. The new PPS market is continuously growing due to increased demand for electric vehicles and expanded application to electric/electronic materials.

We plan to enhance competitiveness in business and accelerate the realization of performance in new businesses based on stable growth and steady profits of existing businesses.

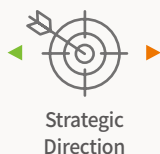
To achieve this goal, the company will continue the growth of existing business by expanding copolyester facilities and through early achievement of complete sales. We will also raise profitability in new business efforts by reinforcing investment in compound facilities and improving domestic demand ratio and cost competitiveness. In addition, we aim to secure future business capabilities by focusing on high value-added markets, including overseas markets, and utilizing R&D capabilities by expanding our high value-added portfolio through the development of new products and applications, including biomaterials.



Market Outlook

The domestic pharmaceutical business is likely to experience fierce competition in the domestic market for various issues such as medical fee management, diverse regulations by the government, and reinforced ethical and legal compliance activities. To counteract these issues, domestic pharmaceutical companies will expand their product portfolio through partnerships and proactively carry out activities to enter overseas markets. Although there was an unprecedented large-scale technology export contract recently, its cancellation also aroused controversy.

We will continuously strengthen our investment in R&D and diversify our business. In addition, internal efforts for efficiency will be enhanced to improve profitability.



Strategic Direction

SK chemicals has established an advanced organization to respond to rapid changes in the pharmaceutical market and improve professionalism and efficiency in the pharma and vaccine business. The company will also continuously strengthen the foundation of its pharmaceutical business, focus on R&D of the vaccine business, and commercialize premium vaccines. In addition, SK chemicals strives to grow into a global leading pharmaceutical company by carrying out ethical marketing, production, and R&D activities in compliance with international standards.

Life Science Biz.

ECONOMIC VALUE

Business Performance

SK chemicals' businesses are divided into the Green Chemicals Biz. and Life Science Biz. based on the mission of "Care for the future. Healthcare & Earthcare." As the Green Chemicals Biz. oversees chemical and energy businesses, the company is leaping forward to becoming a global leading company in the eco-friendly material sector using world-class technology, know-how, and production facilities.

Based on three solution sectors and five product groups, we provide high-performance and eco-friendly materials, and products suitable for customer needs.



In the Green Chemicals Biz., SK chemicals is establishing itself as one of the most distinguished domestic companies in the biochemical sector by developing the world's first eco-friendly, transparent, heat-resistant copolyester, biodiesel and bio heavy oil based on our exclusive technology in the Bio Energy industry.

ECOZEN and SKYGREEN, the most iconic eco-friendly copolyester products developed by SK chemicals, acquired the "Gold" certificate, which is the highest level, from an eco-friendly certification institution (C2CPII) in the U.S. In 2013, SK chemicals established "INITS" in collaboration with global chemical company Teijin and launched the business for PPS (Polyphenylene Sulfide), a super engineering plastic that is featured as a material for lightweight automobiles. In addition, SK chemicals succeeded in commercializing PCT (Polycyclohexylene Dimethylene Terephthalate), a highly heat-resistant super engineering plastic for the first time in Korea, and was selected as one of the top ten new technologies in the country in 2013.

Copolyester and Bio Energy

SK chemicals achieves both differentiated performance and environmental impact reduction based on high-performance, eco-friendly materials and products.

In 2001, we developed SKYGREEN, a high-performance, eco-friendly material without bisphenol A for the second time in the world. The material was followed by the commercialization of ECOZEN, the world's first high heat-resistant and transparent polyester resin in 2009. ECOZEN is a bio-copolyester and was globally and exclusively commercialized by SK chemicals. This eco-friendly product supplements the disadvantages of petroleum-based plastic and lowers dependency on petroleum-based materials.

Biomaterials are an alternative to existing petrochemical-based materials. With increasing customer demand for eco-friendly products and the implementation of government policies to encourage the adoption of new materials, the biomaterials business is quickly expanding at a high annual growth rate of 10%. It is expected to create a market worth KRW 80 trillion by 2020. SK chemicals is not only endeavoring to establish domestic infrastructure, but is also preparing for certification and registration to enter the biodiesel market in the U.S. and Europe.

Biodiesel is an eco-friendly alternative energy which is manufactured by the chemical reaction of animal and vegetable oils (fats) with methanol. In a natural state for 28 days or longer, 77% or more of biodiesel decomposes as an eco-friendly fuel; 2.6 tons of CO₂ emissions are reduced per ton of biodiesel used. SK chemicals has developed an independent production process, supplies a high-quality biodiesel, ECOPRIME, to major domestic oil companies, and broadens the range of business to bio heavy oil for power generation.

As a potential future growth engine, bioplastic and biochemical products have a high level of eco-friendliness by using biomass, which is renewable material with plant-derived resources, as a raw material.



ECOZEN
Biomass-Based Copolyester Resin



SKYGREEN
High-Performance and Eco-Friendly Material

Engineering Plastics

As Korea's first developed super engineering plastic, SKYPURA (PCT) is an excellent material with high resistance for high temperatures over 260°C, thermal stability, reflectivity, and light resistance. In 2013, with recognition of the technology, the company received the Korea Technology Award from the Ministry of Trade, Industry and Energy and was listed among the ten best new technologies.

SKYPEL is an elastic TPEE material with various functions, displaying the characteristics of both rubber and plastic. Due to its low friction coefficient, flexibility at room and low temperatures, excellent chemical resistance, and high mechanical strength, SKYPEL has various uses such as wire sheaths, automotive sector, and elastic fiber chairs, etc.

SKYTRA, our compounding brand, is an eco-friendly, high-performance and resin-based product produced by SK chemicals, providing solutions to meet customer needs through diverse functionality. The product is supplied to diverse businesses such as automotive, civil engineering, electricity and electronics, and home appliance, etc.

In addition, SK chemicals established INITS in 2013 as a joint venture company in partnership with global chemical company Teijin Limited and developed ECOTRAN. As the world's first chlorine-free material super engineering plastic (PPS), ECOTRAN is a high-performance material resistant to impact and heat. Unlike existing PPS, ECOTRAN eliminates the use of chlorine, a hazardous substance, in all the elements of raw materials, production and products, and ensures eco-friendliness.



ECOTRAN

World's First Chlorine-Free Material
Super Engineering Plastic (PPS)

Engineering Plastic



SKYPURA

PCT Material, Super Engineering Plastic



SKYTRA

Eco-Friendly, High-Performance Compound
Product

Adhesive, Coating & Composite Materials

With the establishment of SK-ucb, a joint venture in collaboration with global chemical company UCB in 1988, SK chemicals is leading the manufacture and sales of eco-friendly powder coating resin and ultraviolet (UV) curable resin for the first time in Korea. With a change in the joint venture, the current ENTIS was organized in 2013 (joint venture with allnex) after SK Cytec (2005).

SKYBON has been recently used as an adhesive and coating resin in various sectors due to its flexibility, remarkable adhesion, and eco-friendly features without any environmental hormone emissions. Since the establishment of the subsidiary SK chemicals Ltd. in China (Suzhou) in 2005, the company has been producing and selling adhesive-related products. As a powder coating resin, Crylcoat is used for metal surface painting, including automotive wheels and home appliance cases, while ultraviolet curable resin Ebecryl is used for coating and adhesion of plastics and wood.

SK chemicals produces prepreg, a composite material that combines reinforced fiber and carbon fiber. Carbon fiber, which is lighter than aluminum and stronger than steel, has been used in the construction of spacecraft and aircraft. It is also attracting attention as an alternative material that can be used to make lightweight vehicles and blades for wind power generators. In 2012, SK chemicals and Mitsubishi Rayon Co., Ltd. established a strategic collaboration for the supply of raw materials. In 2018, we aim to achieve sales of approximately KRW 50 billion in the field of composite materials such as prepreg.

High-purity solvents that are used in equipment analysis, synthesis of ultra-precision chemical products, and electronics and biotechnology industries, were developed using SK chemicals' proprietary technology in technological partnership with Honeywell International, Inc. SK chemicals is in the process of producing and developing semiconductor precursors and etchants including quantum dot, OLED pixel material, and display materials such as LCD based on organic synthesis technology.

SKYBON

Polyester Resin for Adhesives



Composite Materials



SKYFLEX

Carbon Fiber Composite Material
Prepreg

Coating and Adhesive Resin



CRYLCOAT

Powder Coating Resin

EBERCRYL

Ultraviolet (UV) Curable Resin



High-Purity Solvents, Display Pixel Materials

Precursors for Semiconductors

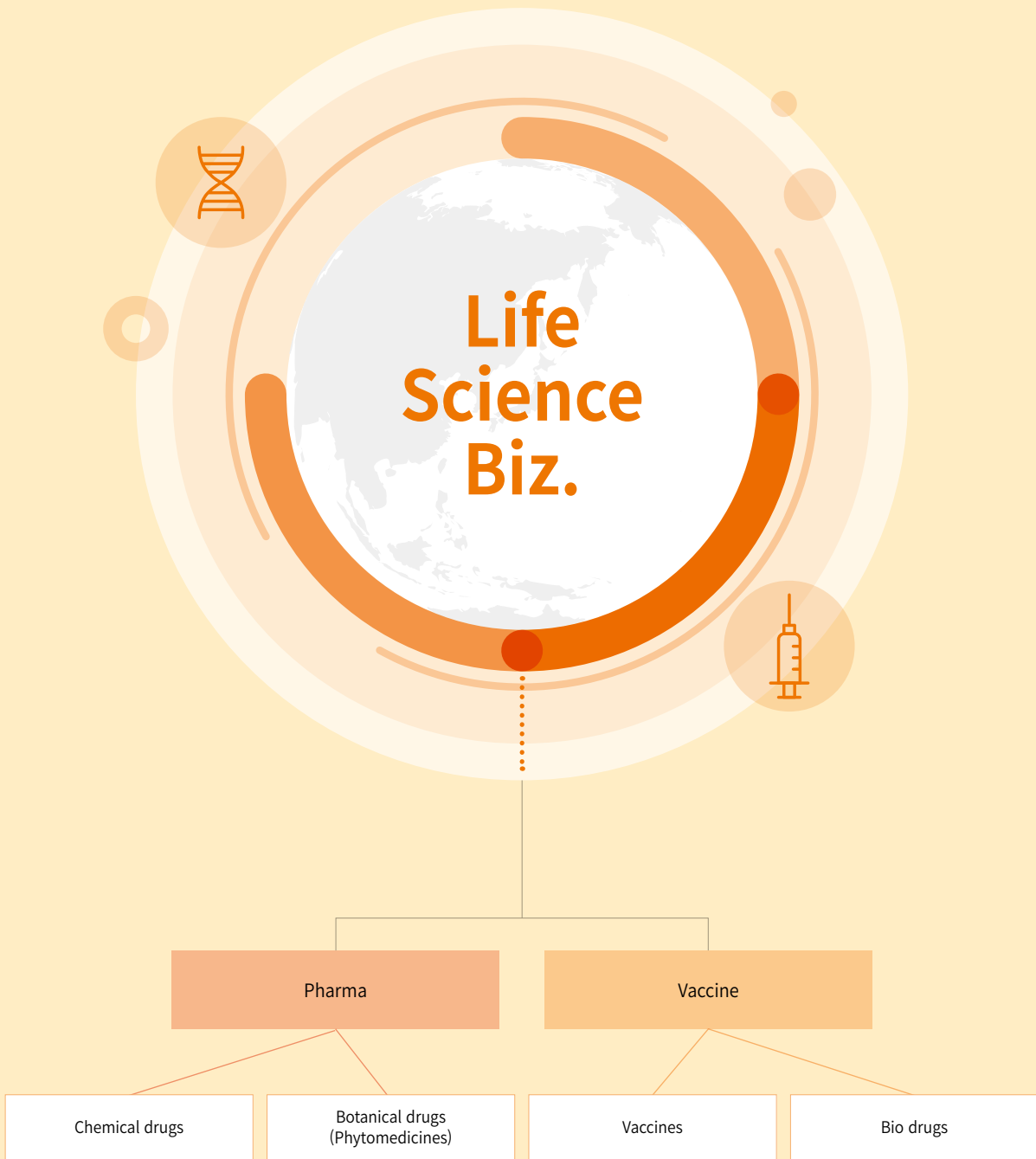
ECONOMIC VALUE

Business Performance

The Life Science Biz. provides integrated solutions for the entire process, from the prevention of diseases to treatment, in the overall healthcare business such as pharmaceuticals and vaccines.

SK chemicals contributes to effective treatment through innovative medicines, and prevents diseases through vaccines.

The Life Science Biz. is mainly divided into two business sectors.



In the Life Science Biz., SK chemicals is providing integrated solutions for disease prevention, treatment, and integrated healthcare solutions and continuously endeavors to develop medicines and pioneer the global market in the fields of pharma and vaccine. In the pharma sector, an independently developed film-type erectile dysfunction drug and the arthritis treatment agent, a botanical new drug, showed remarkable performance in market share. In addition, based on excellent R&D capabilities, the company has also exported a patch-type Alzheimer's drug. Additionally, we selected the vaccine sector as the next growth engine and fully entered the market in 2006. The company has also invested in R&D to develop proprietary premium vaccines and established a cutting-edge vaccine production plant. By focusing on R&D through these efforts, we created the world's first cell-culture influenza vaccine and developed the business with technology transfer and expanded the scope of the global market. The Life Science Biz. has created business performance by reinforcing expertise and making intensive investments to develop vaccines and bio drugs in the pharma sector.

Pharma

Since the development of Korea's first new drug, "SUNPLA," in 1999, the pharma sector by SK chemicals went on to launch "JOINS," Korea's first botanical new drug in 2002. This was followed by "Mvix," the most effective erectile dysfunction drug in the world in 2007, and "Mvix-S," the world's first film-type anti-impotence drug in 2011.

The company also launched "TRAST, a patch-type arthritis drug that uses superior DDS (Drug Delivery System) technology to deliver a necessary quantity of drug effectively, and has evolved it into a leading brand in Korea.

In 2013, "SID710," a patch-type Alzheimer's treatment, was approved for marketing in Europe. This is the first product of its kind in Europe, which demonstrates the level of advancement in SK chemicals' technology. We are extending our range in the global market, including the process of issuing a license in the North American market such as the U.S. and Canada, and the South American market such as Brazil is underway.

Using its independent R&D capabilities, the pharma sector of SK chemicals will strive to develop new improved medicines. The company will develop new innovative medicines by utilizing patents and medical technologies, as well as broaden its product portfolio through diverse partnership activities.



JOINS

First Domestically Developed Botanical New Drug



TRAST

Potent Patch-Type Knee Arthritis Treatment



MVIX(S)

World's First Film-Type No.1 Erectile Dysfunction Treatment



GINEXIN-F

No. 1 Gingko Leaf-Derived Drug for Blood circulation



SID710

Global Patch-Type Alzheimer's Drug

Vaccine

The domestic vaccine market is worth KRW 700 billion (as of 2014). With the expansion of national mandatory vaccinations and a paradigm shift in medical services, it is expected to experience an annual growth of 8% or more. However, most premium vaccines distributed in Korea are produced by multinational pharmaceutical companies. Under these circumstances, the government has announced a plan to increase the rate of vaccine self-sufficiency and is expanding support. Through global-level vaccine production facilities, the vaccine business sector led by SK chemicals strives to advance the national medical industry and expand the domestic vaccine supply.

In 2006, SK chemicals began research to develop an independent technology-based vaccine. In 2014, the company signed an agreement with Sanofi Pasteur SA for joint R&D and the sale of next-generation pneumonia vaccines. With this agreement as the beginning, we have cultivated the business by researching and developing various premium vaccines.

“SKYCellflu” is Korea’s first (for adults) and world’s first (for children) commercialized influenza vaccine using cell-culture technology. Using animal cells, the product has shortened the production period by two to three months and has the merit of allowing the country to prepare for an avian influenza outbreak due to stable supply regardless of a lack of fertile eggs.

In 2016, the company successfully launched and began commercial sales of “SKY-Cellflu Quadrivalent.” This is the world’s first quadrivalent influenza vaccine commercialized by cell-culture technology, which can prevent all four influenza viruses for people, including two type A viruses and two type B viruses, using next-generation technology. Along with this, we applied for WHO prequalification to enter the global market with SKYCellflu and made tangible performance in the global market.



SKYCellflu Trivalent
Korea’s first cell culture-derived trivalent influenza vaccine



SKYCellflu Quadrivalent
World’s first cell culture-derived quadrivalent influenza vaccine

In 2017, SK chemicals acquired marketing approval for the shingles vaccine “SKY-Zoster.” As a shingles vaccine for adults aged 50 and over, the product attenuates live shingles viruses. As of February 2018, the company supplied 700,000 doses in the domestic market. As it is expected that the size of the shingles vaccine market will reach approximately KRW 100 billion in 2018, we have a target of achieving 50% in total market share (approximately KRW 50 billion).

As a recombinant bio new drug for hemophilia, “Afstyla” is the first domestically developed new drug whose technology is being exported to CSL Limited of Australia. Followed by acquiring marketing approval in the U.S., Canada, Europe, and Australia, the product has led to a successful global business.

In addition, the company provides “Td vaccine” as a preventive vaccine for youth and adults. As a vaccine to prevent tetanus and diphtheria, it has been a steady seller since 2005.

Since 2008, SK chemicals has led the vaccine business and elevated its status in the vaccine market by consecutively developing outstanding products within a short period of ten years and by expanding the range of the global market. Accordingly, SK chemicals has spun off its vaccine business and plans to establish it as a separate subsidiary in July 2018. As this is the strategy to take a bold leap forward into becoming a premium global vaccine company by concentrating on the vaccine business, we will proactively attract more investors and undertake an IPO.

NBP601 (Afstyla)

Korea's first genetic recombinant hemophilia treatment



Td vaccine

Tetanus and diphtheria preventive vaccine



SKYZoster

Shingles vaccine

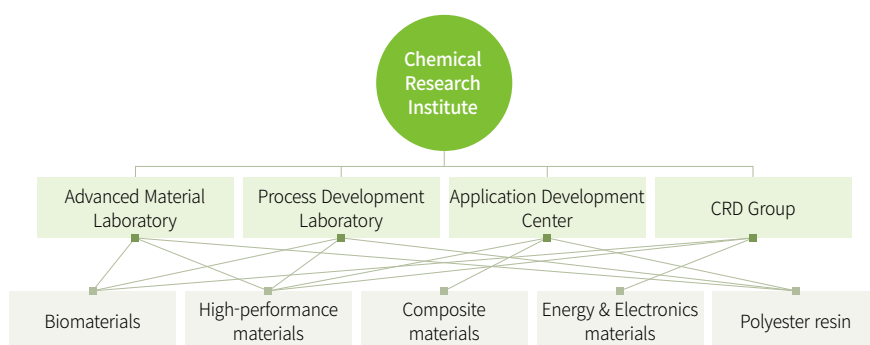
Core Capabilities & Strategy : R&D

Green Chemicals Biz. R&D

R&D Strategies

In the Green Chemicals Biz., SK chemicals has established a product portfolio based on three themes—energy reduction, replacement of hazardous substances, and non-oil use—with the aim of realizing the core value of “environment protection.”

To achieve this goal, the Chemical Research Institute is reinforcing technological competitiveness and commercialization to become one of the world’s top-class companies in the eco-friendly copolyester sector, while striving to commercialize super engineering plastics. The institute also performs research and development activities to discover new growth engines, including but not limited to Lithium ion battery electrolytes and new biomaterials, all of which are suitable for the mission of SK chemicals.



R&D Achievements

In 2017, the Chemical Research Institute commercialized eco-friendly wood plastic composite materials using copolyester for the first time in Korea and received an excellent evaluation from customers at home and abroad in the sector of developing carbon fiber composite materials for automotive lightweight technology and electrolyte additives for electric vehicles and batteries for mobile devices. Other various technologies developed and completed by the Chemical Research Institute are as follows:

<ul style="list-style-type: none"> • Development of PEN resin • Development of polyester adhesive • Development of thermoplastic polyester elastomer TPEE 	<ul style="list-style-type: none"> • Development of biodegradable aliphatic polyester resin • Development of PET (Polyethylene Terephthalate) resin for bottles 	Before 1999
<ul style="list-style-type: none"> • Development of eco-friendly, high-performance copolyester (SKYGREEN®PETG) commercial technology • Commercial development of eco-friendly transparent, heat-resistant copolyester (ECOZEN®) and acquisition of FDA FCN certificate 	<ul style="list-style-type: none"> • Development of biodiesel production technology • Establishment of CHDM commercial production technology • Development of eco-friendly non-BPA toner resin 	2000-2010
<ul style="list-style-type: none"> • Development of eco-friendly super engineering plastic (ECOTRAN® PPS) • Development of LED super engineering plastic (SKYPURA® PCT) 	<ul style="list-style-type: none"> • Development of high heat-resistant and chemical-resistant automotive internal materials • Development of secondary cell electrolyte additives • Development of eco-friendly internal can coating polyester resin 	After 2011

Key R&D Performance in 2017

Development of Eco-friendly Wood Plastic Composite (WPC) Materials

SK chemicals has developed eco-friendly materials for architecture with superior mechanical strength and durability compared to existing WPC by using copolyester resin, and the company's world-first developed biopolymer ECOZEN.

WPC was commercially developed in 2017 by utilizing outstanding adhesion between ECOZEN resin and wood flour and has successfully applied it to various uses such as bicycle roads, building terraces, decks, and housing complexes, etc. The company is preparing to expand the scope to more diverse sectors, including 3D printing with wood filaments.

Development of Lightweight Composite Materials for Automotive Parts

SK chemicals developed automotive composite materials with excellent surface quality after molding compared to existing products. As it is applicable to external parts, which puts a priority on quality, it is expected to expand its use in domestic and overseas automotive parts.

Development of Soft Elastomer Resin TPEE*

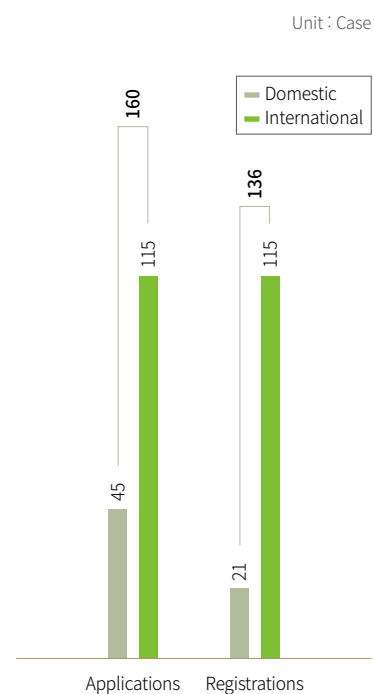
SK chemicals developed soft polyester flexible resin, which is differentiated from other resins in terms of heat-resistance and tensile property, and expects to apply the product to various uses, including smart device band materials, low-hardness cables, automotive weather strips, and sealing materials, etc.

Development of Secondary Cell Electrolyte High-Performance Additives

SK chemicals has developed secondary cell electrolyte additives with improved battery output and risks associated with gases released compared to other commercial additives. Demand is likely to be made from global battery companies for electric vehicles and mobile sectors.

* TPEE : Thermoplastic Polyester Elastomer

Current Status of Patent Application Registration by the Chemical Research Institute in 2017

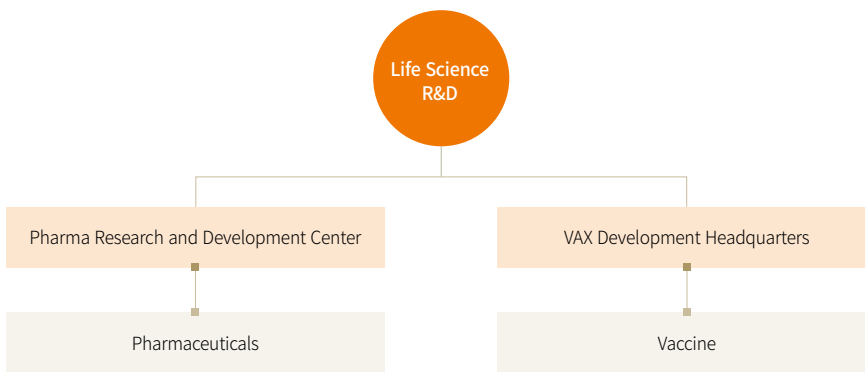


Core Capabilities & Strategy : R&D

Life Science Biz. R&D

R&D Strategies

SK chemicals' Life Science Biz has built a wide-ranging product portfolio and made continuous investments in the Pharma and Vaccine sectors, which will serve as pivotal growth engines in the future Life Science Business. With these efforts, the company continuously strives to achieve a competitive edge in the R&D sector to contribute to improving human health.



R&D Achievements

The Life Science R&D makes great efforts to launch various products and acquire overseas certification for export and obtaining marketing approval. The institute continues to achieve the best research outcome through research for developing various premium vaccines and developing and supplying low-priced vaccines in partnership with distinguished institutions such as Sanofi Pasteur and the International Vaccine Institute (IVI). The list of released products, marketing approval, and developments is as follows:

<ul style="list-style-type: none"> • Development of the first domestically developed new drug and a third-generation platinum-based chemotherapy (SUNPLA Injection®) • Development of a blood circulation improving drug derived from ginkgo leaves (Ginexin®) • Development of anti-inflammatory and analgesic drug (Trast®) 	<ul style="list-style-type: none"> • Korea's first exporter of the newly improved ulcer drug to Europe (Omed®) 	Before 1999
<ul style="list-style-type: none"> • Release of the first domestically developed botanical drug for osteoarthritis (Joins®) • Release of an erectile dysfunction drug (MVIX®) 	<ul style="list-style-type: none"> • Contract to sell NBP601 (AFSTYL®) to CSL of Australia • Release of an antithrombotic drug (Renexin tab®) 	2000-2010
<ul style="list-style-type: none"> • Release of orally dissolving film for erectile dysfunction drug (MVIX-S®) • Acquired approval for generic patch-type dementia treatment (AFSTYL®) for the first time in Europe • Contract signed with Sanofi Pasteur for development and supply of a next-generation pneumonia vaccine 	<ul style="list-style-type: none"> • Launch of Korea's first cell culture-derived trivalent influenza vaccine (SKYCellflu®) • Launch of the world's first cell culture-derived quadrivalent influenza vaccine (SKYCellflu®) and acquired approval • Acquired approval for NBP601 (Afstyla®) from the U.S. FDA, EMA of Europe, Therapeutic Goods Administration (TGA) of Australia, and Health Canada (HC) of Canada for the first time among domestically developed new bio drugs 	After 2011

Key R&D Performance in 2017

Marketing approval of NBP601 “Afstyla” in the U.S. and Europe

Bio new drug NBP601 (product name: Afstyla), whose technology was exported to the Australian company CSL in 2009, acquired marketing approval from the Therapeutic Goods Administration (TGA) of Australia and Health Canada (HC) of Canada, following the U.S. FDA and EMA of Europe.

Marketing approval and Launch of “SKYZoster”

SK chemicals successfully finished the clinical study of phase III for the shingles vaccine and launched the product after the marketing approval from the Ministry of Food and Drug Safety.

Marketing approval of Chickenpox Vaccine “SKYVaricella Inj.”

In 2018, SK chemicals acquired final approval for “SKYVaricella Inj.,” which is a chickenpox vaccine and fourth proprietary developed vaccine, and plans to pioneer the overseas market with WHO PQ certification.

Acquisition of Export Approval for SKYCellflu and Application for WHO PQ*

As approval for overseas export was acquired, including WHO PQ certification for SKY-Cellflu, SK chemicals has started the procedure for overseas release sequentially.

Conclusion of Joint Development Agreement for Next-Generation Child Gastroenteritis Vaccine with PATH**

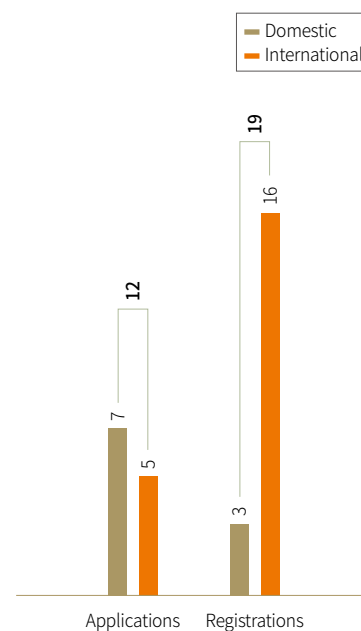
SK chemicals aims to provide children in the world’s least developed countries with a pediatric enteritis vaccines at a low price through WHO PQ’s approval with transfer of technology for vaccine production and analysis from PATH.

Korea’s First Registration of Lacosamide by VIMSK Tablet (SID151)

VIMSK Tablet is an antiepileptic drug with lacosamide, which is No.1 in global sales and the first generic drug on the list of reimbursable drugs in Korea in 2017.

Current Status of Patent Applications/ Registrations by Life Science in 2017

Unit : Case



* WHO PQ : WHO Prequalification

** PATH : Program for Appropriate Technology in Health (non-profit)



Core Capabilities & Strategy : Global Strategies

Green Chemicals Biz.

In the Green Chemicals Biz., SK chemicals continues to make investments in the cutting-edge materials sector and secure future growth engines for securing a broader range in the global market. With superior technology in “PETG,” eco-friendly copolyester material in cosmetic containers, and “PPS (Super Engineering Plastic),” which is highlighted as a core material for automobiles and electronic parts, we will become a market leader with superiority in the global market, including China.

SK chemicals’ Management Direction for Global Growth

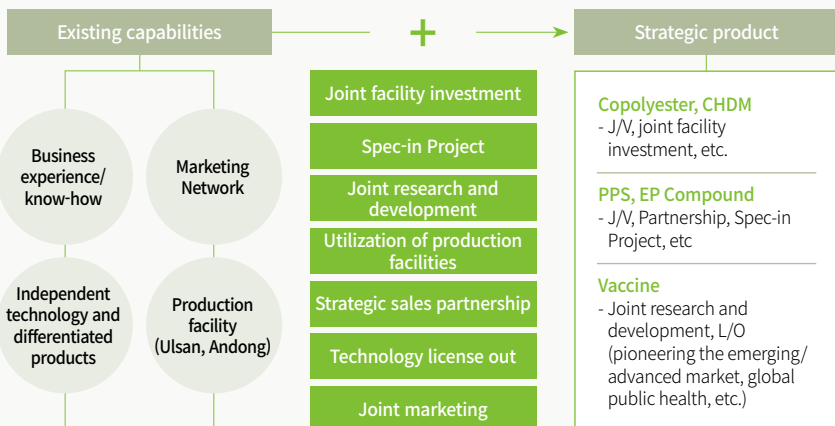
In 2017, with the aim of achieving global growth, SK chemicals has set three strategic directions and performed management activities: reinforcement of business competitiveness, growth of overseas investment corporations, and optimization of the operation of overseas sales subsidiaries.

To reinforce global competitiveness, SK chemicals endeavors to secure capabilities required to accomplish global growth based on the copolyester/compounding business in the Green Chemicals Biz. and the vaccine business in the Life Science Biz. To achieve this goal in the Green Chemicals Biz., the company is developing new usages of products, expanding the market range, and ensuring stable supply of raw materials by securing facility operating ratio and quality. In the Life Science Biz., we are preparing to pioneer the new global market with high needs for advanced biotechnology with our verified technologies and cutting-edge production facilities as core competitiveness. (Refer to the figure <SK chemicals’ Capabilities and Strategic Products> below.)

At the same time, we will aim to become a localized global corporation that not only securing investment, but also business operation and creation and distribution of management performance for more significant growth in overseas markets. Using our local operations expertise, we will broaden the business scope through business cooperation in all sectors, including the supply chain and similar companies.

To optimize the operation of international sales subsidiaries, the company seeks to localize human resources through an HR system suitable for each region and ensure operational efficiency with the headquarters by establishing an IT system. Moreover, we will enhance professionalism in global human resources through exchanges with headquarters and provide training to proactively support local personnel through locally optimized welfare benefits for employees and an evaluation and reward system.

SK chemicals’ Capabilities and Strategic Products



Global Strategy for Copolyester

SK chemicals commits itself to the business of copolyester, which is eco-friendly plastic. As SK chemicals' copolyester products do not emit any hazardous substances to the human body compared to conventional plastic, these products replace various plastic products, which discharge hazardous substances to the environment such as PC (polycarbonate), PVC (polyvinyl chloride), PMMA (polymethyl methacrylate) and PS (polystyrene).

In particular, PETG of copolyester has attained a high market share and sales in the Chinese cosmetics container market. Eco-friendly PETG is a safe material without any concern for bisphenol A and has remarkable transparency and chemical resistance. Due to these advantages, 18 out of 20 world-class cosmetics companies in the global market apply SK chemicals' copolyester to their luxurious cosmetic containers. In Europe, the company demonstrates excellence in the quality of shrink film products and sustainable development.

The copolyester business will expand to a larger global market by increasing the total volume in the existing market and developing applications.

Global Strategy for SK DMT

The global DMT market is currently being led by five major production companies (U.S., Germany, Turkey, Iran, and South Korea). These producers supply DMT to South America, Europe, the Middle East, and East Asia, forming a balance of supply and demand by each region.

SK chemicals is focusing on supplying DMT to the existing companies in East Asia while making efforts to form a downstream market.

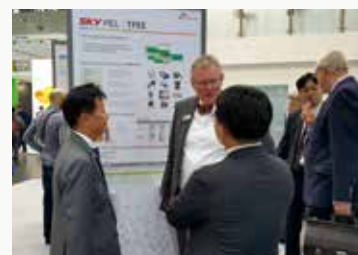
Global Strategy for PPS

As a joint company between SK chemicals and Teijin Limited and subsidiary of SK chemicals, INITS produces "PPS (Polyphenylene sulfide)," super engineering plastic. As a light, heat-resistant and high-performance material, PPS is a lightweight material that acts as a substitute for metal.

With the goal of achieving business stability by 2020, INITS is establishing strategies to pioneer the global market. The business structure is expected to have an export ratio of 65% and domestic demand of 35%. Focusing on China, which is the biggest export market, INITS will expand the business by setting Europe, India, and Southeast Asia as strategic export regions.



Cosmetics Exhibition "CBE 2018"



Europe Specialty Plastic Exhibition

Core Capabilities & Strategy : Global Strategies

Life Science Biz.

In the Life Science Biz., SK chemicals strives to take a bold leap forward into becoming a global pharmaceutical company through overseas expansion of the vaccine business. SK chemicals has successfully exported the technology of “SKYCellflu Quadrivalent,” the world’s first quadrivalent influenza vaccine developed using cell-culture technology. When influenza rapidly spread worldwide, the company supplied vaccines to areas in need and has contributed to creating a healthier world. SK chemicals will enhance global competitiveness and make continuous efforts for human health through active global expansion strategies and activities.

Agreement for Vaccine Technology Transfer

SK chemicals exported its cell culture vaccine technology to U.S.-based Sanofi Pasteur SA, which is the No. 1 company in the global influenza vaccine market. Based on the technology agreement, Sanofi Pasteur SA is expected to develop next-generation influenza vaccines by leveraging SK chemicals’ influenza vaccine production technology.

As the total scale of technology exports reaches USD 155 million (KRW 168 billion), the contract payment without the obligation to return is USD 15 million (KRW 16.3 billion), and the amount given upon the completion of technology transfer is USD 20 million (KRW 21.7 billion).

For the development of vaccine technology, SK chemicals has invested a total of KRW 400 billion for about a decade and has concentrated on R&D capabilities. In 2015, the company utilized the technology and launched a trivalent influenza vaccine using cell-culture technology and succeeded in commercializing the world’s first quadrivalent cell-culture influenza vaccine in 2016. In particular, SK chemicals’ cell-culture influenza vaccine, “SKYCellflu,” exceeded 14 million doses (one dose for one injection) in an accumulated amount of sales within three years since release. We will continuously focus on R&D for vaccine technology and lead the global market.



Cell-Culture Tanks at SK chemicals the Andong L House



SID710

Expansion of Global Export of Patch-Type Treatment

The pharma sector is preparing to expand the global market for core products and achieving tangible results. SID710, patch-type Alzheimer's treatment, exceeded KRW 110 billion in accumulated exports within five years since the launch in the European market in 2013, and remains No. 1 in the European market share among generic products with the same component. Following the European market, the product was launched in Australia and Colombia in 2016 and acquired marketing approval in Mexico and Jordan in 2017.

Furthermore, the company completed the submission for marketing approval in the U.S., Brazil, Canada, and Saudi Arabia and expanded global exports. Meanwhile, patch-type arthritis treatment TRAST exceeded total sales of KRW 48 billion within 12 years since its launch in China in 2006, and expanded sales in Saudi Arabia and the Philippines in 2012.

Acquisition of Export License for Trivalent Influenza Vaccine "SKYCellflu"

Any medicine which is domestically produced and manufactured is required to receive a separate export approval for overseas exports even when it is given marketing approval. In 2017, SK chemicals acquired approval for the export of "SKYCellflu Multi," trivalent influenza vaccine for exporting, from the Ministry of Food and Drug Safety. "SKYCellflu" is a cell-culture influenza vaccine, which was launched in Korea by SK chemicals in February 2015.

"SKYCellflu Multi," the trivalent influenza vaccine for exporting, is a large volume (multi-dosage) product to allow injections for many people; this type of product is usually medicine supplied by the World Health Organization (WHO) to less-developed countries. SK chemicals will export "SKYCellflu Multi" to Southeast Asian countries such as Myanmar and secure the qualification for bidding drugs in the Southern Hemisphere led by WHO.



SKYCellflu

Urgent Supply of Quadrivalent Cell-Culture Influenza Vaccine to Myanmar, Due to Influenza Outbreak

SK chemicals has urgently supplied "SKYCellflu Quadrivalent," the world's first quadrivalent cell-culture influenza vaccine, to Myanmar where the number of fatalities have recently increased due to the outbreak of influenza.

The supply of SKYCellflu Quadrivalent was provided as the Myanmar government, which found it difficult to supply vaccines in rapidly spreading influenza, requested emergency support to the WHO and neighboring countries. Upon the emergency support request in late July 2017, SK chemicals supplied SKYCellflu Quadrivalent to the Myanmar government through regional partner companies.

SK chemicals will carry out the mission to protect the health of humanity by supplying vaccines swiftly in any emergency with cell-culture influenza vaccine technology, which is owned only by few companies in the world.



Vaccination of SKYCellflu Quadrivalent in Myanmar



Social Value

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Local Community Value

SV Creation Model

SK chemicals aims to enhance not only its corporate economic value, but also the value of all members of society through our business.

Meaning of SK Social Value (SV)

Social Value (SV) defined by SK refers to the “sum of performance contributing to addressing social issues without relations to specific stakeholders.” SV is divided into “Biz.-based social performance” through business and “social contribution performance” via social contribution activities. We aim to create bigger social values by measuring and managing precise figures. SK also operates business by managing economic value (EV) and social value (SV) simultaneously, to grow in a desirable direction where both EV and SV increase together.

SV Measuring Methodology

SV measurement is conducted in environment (E), society (S), and governance (G). The company sets common detailed indicators for the group in three sectors. While measurement principles and standards are guaranteed by considering business characteristics of each affiliate, commitment is given through verification of the SV implementing organization.

Utilization of SV Measurement Results

SV measurement started first in 2018. For a certain period (3-5 years), we will revise measurement indicators and methodology in an objective and realistic way and utilize results internally as reference data. Furthermore, the company will internally manage and develop measurement methodology so that it can be objective and reasonable to the level of sharing with external stakeholders.

| SK DBL Social Value (SV) Indicator System Chart

Category	Social Value (SV)			
	Environment (E)	Society (S)	Governance (G)	
Product (Product/Service)	Reduction of resource consumption • Material consumption • Energy • Water	Reduction of environmental pollution • Greenhouse gas • Air pollutants • Water pollutants • Waste	Quality of life • Addressing inequalities such as poverty and discrimination • Preventing misconduct such as crime and violence • Stabilization of the social system • Enhancing public interest in education and culture	
Process (Internal)			Consumer protection • Safety/Health • Information/Security	• Quality
Value Chain (External)			Labor • Addressing inequality of earned income • HR management practices • Safety and health management	• Antitrust practices • Win-win growth activity • Purchase with social responsibility
Community (Local community)			Win-win growth • Fairness in contract implementation • Support for shared growth partnerships • Purchase of social contribution	Social contribution • Social contribution business • Voluntary work
			• Donation • Shared infrastructure	
			Protection of shareholder rights Accounting transparency Unfair and illegal acts Violation of law and order	

* This system may be adjusted through ongoing revision.

Based on the system, we identify the type of EV and SV where the process and results of SK chemicals' management activities contribute and strive to create more positive values.

Preparation of SV Creation

SK chemicals will prepare to create SV by finding items which create new SV, improving business activities and beginning new business or social contribution projects after SV measurement for existing business is completed. In this process, SK will prepare to create SV through strict regulations and processes to meet the prerequisite of "addressing social issues," which is the definition of SV, beyond mere improvement and supplementation or beginning of a new project. In addition, SK chemicals aims to generate new values with EV and SV by analyzing how much SV is reflected in the review system (e.g. investment review committee) to create EV.

Efforts to Create SV

SK chemicals creates essential SV through management activities including SV elements. To achieve this goal, the company encourages employees to recognize the reflection of SV elements in management activities and accomplish their goals, improves education to raise SV awareness in the group, and reviews any policy or system from the perspective of SV. Based on these efforts, we strive to create SV naturally by adding SV elements in products, services, and corporate management activities.

SK chemicals' Social Value (SV) Measurement Item Group

Category	SK DBL							Economic Value (EV)	
	Social Value (SV)						Economic Value (EV)		
	Environment (E)		Society (S)	Governance (G)				Financial performance (FV)	Performance of contribution to the national economy
	Reduction of resource consumption	Reduction of environmental pollution		Protection of shareholder rights	Accounting transparency	Unfair and illegal acts	Violation of law and order		
Product (Product/Service)	<ul style="list-style-type: none"> Non-water use of PPS 	<ul style="list-style-type: none"> Greenhouse gas of Bio Energy 	<ul style="list-style-type: none"> Influenza vaccine Shingles vaccine 	Compliance with the laws and regulations				Profit and loss	<ul style="list-style-type: none"> Employee wages Corporate tax Dividend Interest expense
Process (Internal)	<ul style="list-style-type: none"> Raw materials Energy Water 	<ul style="list-style-type: none"> Waste Air pollutants Water pollutants Greenhouse gas 	<ul style="list-style-type: none"> Employment of vulnerable people in labor Shortened working hours/paid leave Medical check-up for workers 						
Value Chain (External)		<ul style="list-style-type: none"> Non-waste treatment (Bio Energy) 	<ul style="list-style-type: none"> Financial support for suppliers 						
Community (Local community)			<ul style="list-style-type: none"> Various social contribution activities 						

Why SV Matters

Based on the conviction that a sustainable company is a company dedicated to increasing positive social impact, SK chemicals conducts management activities to improve the value of major stakeholders.



Customer Value

Why it is material

As consumer needs are diversified and ideas for information protection and product safety draw attention, it is necessary to proactively manage and handle customer issues which affect corporate reputation.

How we create social value

SK chemicals reflects customer options in each business sector and strives to create SV. We have also developed eco-friendly products to ease the environmental burden of customers.



Shareholder Value

Why it is material

With the introduction of stewardship codes emphasizing the duty of consignees, responsible behavior is required for both companies and investors. As interest for corporate sustainability grows higher among long-term investors, it is necessary for companies to deliberate on essential SV in business and various social issues such as labor and safety.

How we create social value

SK chemicals creates SV in business departments such as Bio Energy business and vaccine business based on our vision and mission. We enhance long-term corporate value and communicate with shareholders for sustainability through businesses and products, which reduce environmental impact and contribute to human health.



Social Value : Supplier, Environment, and Local Community

Why it is material

As social interest in various issues grows higher, including shared growth relationships with suppliers, reduction of environmental impact, and contribution to local community and disadvantaged people through social contribution, a range of corporate social responsibilities is expanding. It is necessary to identify various stakeholders who are influenced directly and indirectly from corporate activities and have a macroscopic viewpoint considering the virtuous cycle of society for the long term.

How we create social value

SK chemicals enhances the value of various stakeholders through diverse management activities such as a fund for support supplies, strategic social contribution business, establishment of a system for environment, and design of eco-friendly buildings, etc.



Employee Value

Why it is material

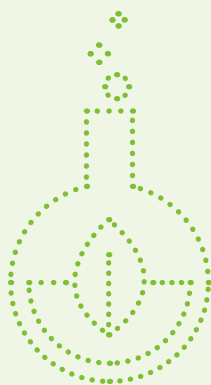
Through the emergence of the Fourth Industrial Revolution, which underscores the importance of innovation, the creativity and effectiveness of HR become the interest of all companies. It is the time when groundbreaking change is needed in a corporate human resource model and HR management system, and the voices for individual rights and work-life balance are growing louder.

How we create social value

SK chemicals operates various welfare systems to improve the quality of life of employees and strives to improve corporate culture through “innovation in the way of working,” and endeavors to attract more human resources.

SV Creation-Green Chemicals Biz.

Under the mission of “Care for the future. Healthcare & Earthcare,” SK chemicals creates essential social value through business activities and is achieving shared growth with society. In the Green Chemicals Biz., the company develops eco-friendly materials and contributes to protecting the global environment. Eco-friendly materials include energy and resource reducing materials, lightweight materials, environmental hormone free materials and biomaterials. With these materials, we replaced materials which have a negative impact on the environment and protect nature as a whole.



Bio Energy Business

SK chemicals’ Bio Energy sector, which started in 2007, operates its business with biodiesel as an alternative of vehicle diesel and bio heavy oil as a substitute for generating heavy oil. As fossil fuels (vehicle diesel, generating heavy oil) are being replaced by eco-friendly fuels, which emit few GHG emissions, we are making a positive impact on air quality.

SV of the Bio Energy Business

The Bio Energy business replaces fossil fuels with non-fossil fuels, reduces GHG emissions, and improves air quality. To measure the value, the company measured the amount of GHG emissions reduced by the use of non-fossil fuels.

When one ton of Bio Energy is consumed, GHG emissions of 2.59 tons of CO₂eq can be reduced compared to the same amount of fossil fuel being burned. As the average price of carbon credits amounts to KRW 21,460/tCO₂eq, SV of Bio Energy business is calculated by multiplying the fewer GHG emissions (sales volume × unit reduction) by KRW 21,460.

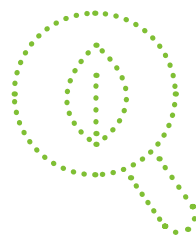
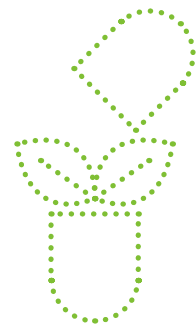
* SV of Bio Energy business
 = GHG unit reduction × Average price of carbon credits in 2017 × Sales volume in 2017
 = 2.59tCO₂eq × KRW 21,460/tCO₂eq × SK chemicals sales volume – ton

※ Considerations in value measurement
 1. 2.59tCO₂eq : Data from the Korea Bio-energy Association
 2. KRW 21,460/tCO₂eq : Average price of carbon credits in Korea in 2017

Meanwhile, we do not use edible crops, which serve as general raw materials for Bio Energy, but we recycle and use by-products, waste, or waste cooking oil produced in the process of manufacturing palm oil. As this creates another SV, the company will calculate the value through measurement and strive to create sustainable SV.

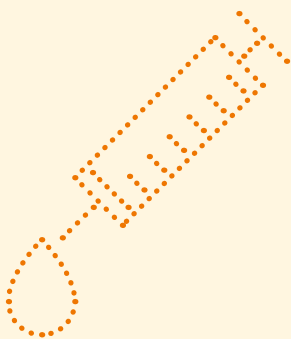
By using waste materials or by-products as raw materials, we endeavor to reduce energy and costs for treatment and adhere to eco-friendly management from the use of raw materials. As general biodiesel raw materials are edible crops, a significant amount of energy, water and fertilizer is consumed in cultivating edible crops and processing them into raw materials. However, SK chemicals uses PFAD, a by-product generated in producing palm oil, as a raw material from the early stage of production through ongoing research and development of raw materials of Bio Energy. In addition, we have also expanded a range of raw materials by utilizing waste PAO and waste cooking oil. We effectively reduced the environmental impact of biodiesel by using non-edible raw materials, rather than edible oils, which is generally used as a raw material.

In this process, SK chemicals' Bio Energy business developed various manufacturing methods for the first time at home and abroad. The company developed the esterification method for PFAD and hydrolysis process for low-class raw materials for the first time in the world and succeeded in the large-scale commercialization of waste cooking oil and sludge palm oil. We have also developed Korea's first bio heavy oil and supplied it as a fuel for power suppliers.



SV Creation-Life Science Biz.

Treatments help people to get rid of serious mental and physical damages caused by disease, while preventive agents prohibit disease, to create SV for people. SK chemicals' Life Science Biz. strives to improve human health by developing various treatments and preventive agents (vaccines). In particular, SK chemicals commits itself to the vaccine business and contributes to society by saving people suffering from diseases and reducing potential costs.



SK chemicals' Vaccine Business

Vaccines, preventive agents against disease, help our body to create antibodies by injecting relevant antigens to prevent disease. SK chemicals protects people from the potential risk of disease and creates SV for people by supplying, researching and developing vaccines continuously.

With the paradigm shift of life science to "prevention" going beyond "treatment," SK chemicals has started to expand its vaccine pipeline from 2008 to concentrate on the vaccine business, reformed the development system, and undertook new investments. Such selection and concentration led to the creation of SK Chemicals' vaccine business portfolio of the last decade. In 2015, the company succeeded in commercializing Korea's first trivalent cell-culture influenza vaccine, SKYCellflu Tri-valent, and launched the world's first SKYCellflu Quadrivalent in 2016. In September 2017, we acquired marketing approval of the shingles vaccine SKYZoster and released the product at the end of the year.

SK chemicals will make every effort to create greater SV as a global vaccine company by focusing on R&D to create expertise in the vaccine business.



SV of Vaccines

When a person catches the flu, social costs are incurred, including treatment cost and loss of wages, which cannot be earned during treatment. Thus, SV for SK chemical's vaccines is measured by social costs saved by not becoming afflicted with disease after vaccination.

By multiplying the number of vaccinations by the influenza prevalence rate, you can calculate the actual number of people who were protected from influenza, and multiplying this by the cost of treating the flu can help you get the social cost of influenza in society as a whole. Namely, we can calculate SV, which is the social cost saved through vaccination.

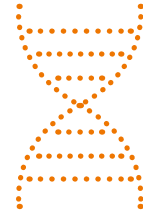
The formula is as follows:

* SV of the flu (influenza) vaccines
 = Effect of not acquiring the flu due to vaccination
 = Treatment cost in acquiring the flu + Amount of labor production loss
 = $[1 \times (2 - 3) \times 4] + [\text{Labor force population in } 1 \times \{(2 - 3)\} \times 5 \times 6]$

※ Consideration for value measurement

1. [Number of people vaccinated with SK chemicals' influenza vaccine]
2. [Prevalence rate of non-vaccinated influenza in Korea]
3. [Prevalence rate of vaccinated influenza in Korea]
4. [Total amount of per capita direct and indirect treatment costs at onset]
5. [Period of isolation]
6. [Minimum wage in Korea as of 2017]

cf. 1, 2, 3, 4, 5 : Data from Korea Centers for Disease Control & Prevention (KCDC)



Employee Value : Cultivating Talent and Establishment of a Sustainable Corporate Culture

Reinforcement of System to Secure Top Talent

“Caring Professionals,” which is SK chemicals’ goal for human resources, ultimately aims to create a high-performance organizational environment where employees work autonomously with a clear sense of goals using teamwork. SK chemicals makes extensive efforts to secure top talent who can meet our targets and grow with us. In 2017, the company strived to secure adequate human resources through a new capability verification method based on a more sophisticated job analysis. We also provide support to recruit top talent at the right time by continuously developing and supplementing the human resources verification method suitable for “Caring Professionals.”

Reinforcement of Core Human Resources Network

To go beyond the domestic market and become a global top-tier company, SK chemicals has reinforced networking with core overseas personnel. Through the SK Global Forum, the company has ongoing discussions with overseas personnel for the measures of developing global materials and securing new technologies and reinforces R&D capabilities through constant networking.

In Korea, we select recruiters specialized in each school and lab, visit schools and academies on a regular basis, and strengthen networking with core human resources by vitalizing the industry-academia scholarship system.



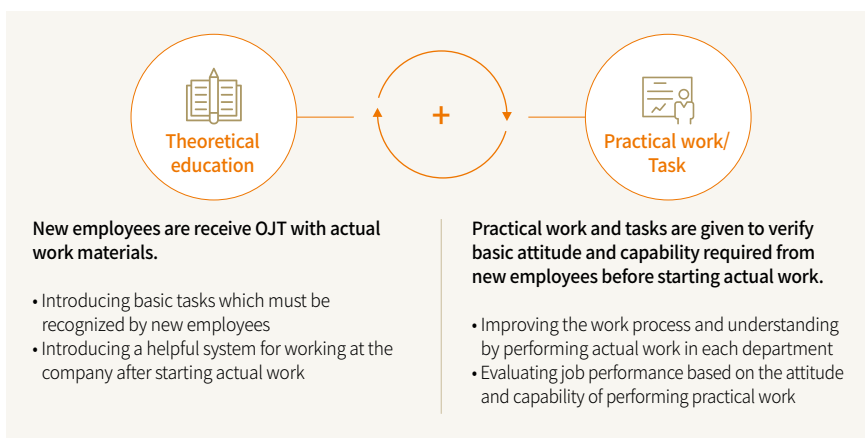
2017 SK Global Forum

Implementation of New Employee Cultivation Track

In addition to the existing company-wide introductory training that starts from the time of joining the company, SK chemicals has reviewed a new program of “New Employee Cultivation Track” since late 2017. New employees who joined the company from January 2018 have started the program. The New Employee Cultivation Track helps new employees to attain a basic understanding of business mechanisms based on various experiences, including theoretical education for each job and team-based practical work and tasks and reinforce their job capabilities. The program is highly acclaimed by new employees in helping to experience practical work before starting actual work while increasing networking opportunities with senior employees.



New Employees Training



Program for Developing Team Leader Skills

SK chemicals operates a one-on-one coaching-based leadership course instead of traditional leadership education. In 2016, the company operated its “Developing Team Leaders Skills Program” first for team leaders at the Chemical Research Institute and the Ulsan Plant and expanded the program to the entire company in 2017. Through this program, the company gave team leaders the opportunity to recognize their own mistakes in leadership and strive to improve relationships with team members. We will continuously reinforce programs to boost teamwork and ensure effective communication with various stakeholders.



Team Leaders' Leadership Training

Training for High Performers

Training programs for company-wide employees are mainly divided into selective courses and general courses. Employees in the selective course of high performers are provided with the chance to cultivate their capabilities in schools and specialized institutions at home and abroad. The company helps them to concentrate solely on their studies by giving wages as well as other expenses during the training period.

Implementation of GCTD (Global Core Talent Development) Program

With the aim of reinforcing business execution capability, SK chemicals has implemented a new intensive language course to improve biz.-based speaking skills since 2017. The course has significantly contributed to improving trainees' skills. In 2018, the company is preparing to operate more diverse and intensified courses by identifying the needs of each group.



GCTD Program

Reinforcement of Fairness and Objectivity of the Evaluation System

Since 2001, SK chemicals has introduced and implemented PECS (Performance Evaluation & Coaching System), a system for cultivating, rewarding, supporting and developing employees. Since 2017, the company conducted regular evaluations on a quarterly basis and set the direction for absolute evaluations, achievement- and capability-based evaluations and course- and cultivation-based evaluations to reinforce the function of evaluation systems as a means of target achievement and capacity building. After evaluations are confirmed, the company gives feedback in person to identify subjects' strengths and weaknesses and establishes a plan for supplementing capabilities for improved performance.

Implementation of Systemic Reward System

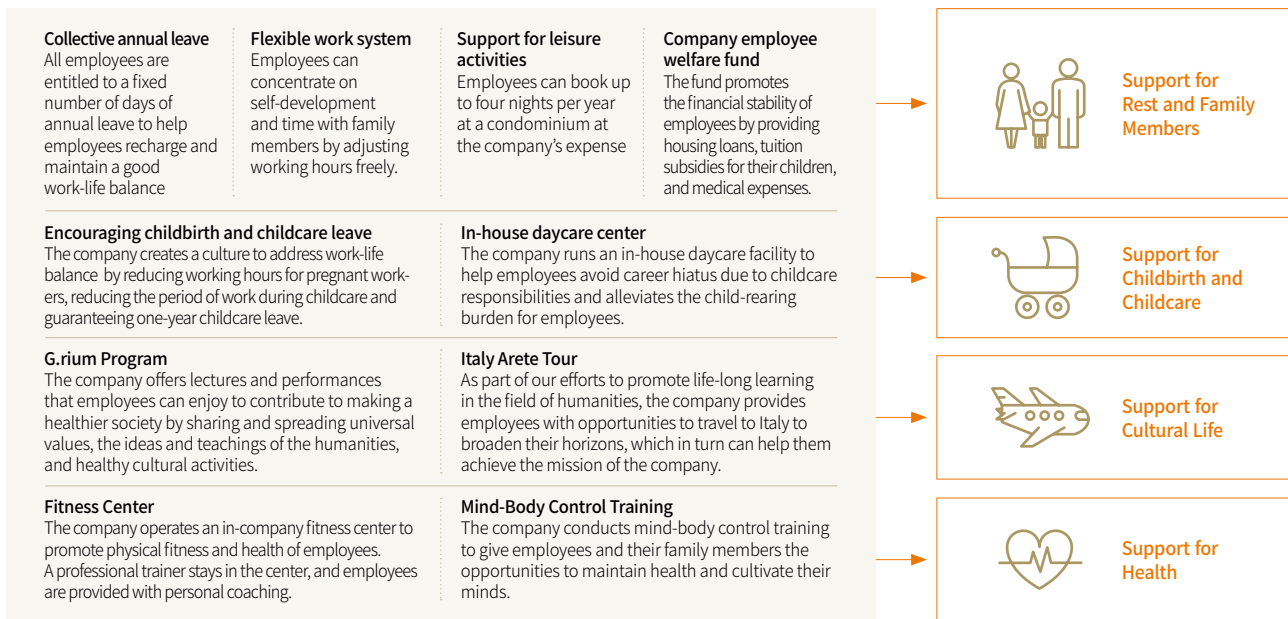
SK chemicals gives appropriate rewards based on the performance of each employee. To achieve this goal, the company provides monetary rewards (annual salary, bonuses, and incentives, etc.) as well as non-monetary rewards (sense of pride and achievement, recognition, and vision sharing, etc.). New employees are treated fairly regardless of gender; however, they are given reasonable, gradual compensation based on the system.

Employee Value : Cultivating Talent and Establishment of a Sustainable Corporate Culture

Employee Welfare System to Create a Sustainable Corporate Culture

SK chemicals creates a sustainable corporate culture through welfare policy to guarantee work-life balance and to promote health. In addition, the company aims to improve the satisfaction of employees through active communication between its labor union and management and create a corporate culture realizing social value for employees.

Employee Welfare System



Innovation in the Way of Working

SK chemicals strives to innovate the work system, institution and program operation to realize a high-performing organization.

In terms of systems, the company established management and IT system infrastructures to boost operational efficiency. We will also establish a master plan and implement the plan in stages for continuous improvement of operation methods.

The company simplified the corporate hierarchy structure and unified job titles to “manager” to establish a more equal organizational culture starting in 2018. We will also change uniform promotion and reward systems into evaluation and reward systems based on individual capability.

As for programs, the company will make efforts to adopt various programs such as a flexible working system as well as improvement in meeting- and report-based culture to boost work efficiency. As meetings and reporting are conducted only when absolutely necessary, employees can concentrate on their own work. With the flexible work system, we create an environment where employees can work more efficiently with enhanced autonomy. As these new ways of working remove any inefficient aspects in existing work practices and improves efficiency in operations, the company ultimately aims to transform the business model of SK chemicals into a customer-oriented business.

★
Case Study

□ Creation of SV with innovation in the way of working □

SK chemicals not only introduces and operates various systems such as a flexible work system, autonomous vacation approval system and liberalized dress code, but also implements various tasks under the theme of the “innovation in the way of working” to help employees to creatively and autonomously create performance. We have made it possible for employees to maintain a work-life balance through autonomous utilization of working hours and holidays to help them concentrate on their work, which allows them to fulfill their duties at home as well as at the company. In addition, we created a work environment that can create high performance through creative work methods.

With such changes in the working environment, SK chemicals strives to manage 40 hours of work a week. We create SV with a virtuous structure where employees realize happiness, which leads to high performance and ultimately boosts the happiness of all stakeholders in society, including customers.

□ Measurement of SV for Employees □

SV for working hours can be calculated by having economic value for shortened working hours at SK chemicals compared to the maximum legal working hours. SV for the year is derived by calculating the difference between employees’ actual working hours and maximum legal working hours and multiplying the result with the minimum hourly wage announced by the government and 52 (1 year = 52 weeks). In calculating the economic value of reduced working hours, the minimum hourly wage was applied to acquire the minimum effect of reduced working hours.

The formula is as follows:

SV measurement 1 for working hours

= (Maximum legal working hours – SK chemicals’ average working hours/week) × 52 weeks × Minimum hourly wage announced by government in 2017 (KRW)

In addition to reduced working hours, SK chemicals creates another SV for employees by providing paid summer leave. SV measurement for paid summer leave can be conducted by multiplying the number of days used for paid summer leave by all employees and the daily average wage of SK chemicals’ employees.

The formula is as follows:

SV measurement 2 for employees

* SV for paid summer leave = (Number of days used for summer leave by all employees) × SK chemicals’ daily average wage

cf. Days of summer leave used by employees in 2017 : 8,905 days (88%), Available days of summer leave : 10,110 days

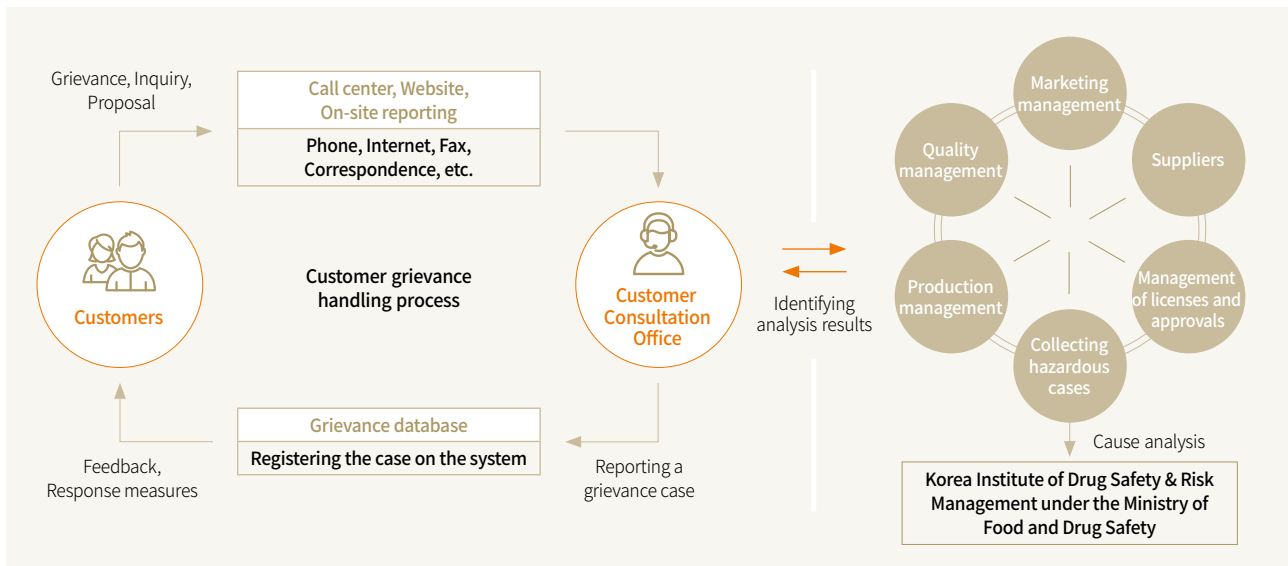
Customer Value : Handling Customer Requests and Minimizing Grievance

Customer Grievance Handling Process in the Life Science Biz.

In the Life Science Biz., SK chemicals strives to reduce customer requests and grievances and enhance customer satisfaction using the customer grievance solution process, which has subdivided grievance handling regulations and updated the work manual for the office. When any grievance cases concerning difficulty in use and problems regarding medicine posed by consumers through the customer consultation office are reported, the company reasonably addresses such cases in accordance with SK chemicals' grievance handling regulations and earns trust from customers.

All reporting and processing cases are reported and managed in the grievance database, and details of customer consultation and grievance handling cases are reported on a monthly basis to marketing, production, research institute and quality management supervisors as well as the CEO through the monthly consultation statistics reporting system. The results are also proactively reflected in quality improvement, including improvement of medicine and adjustments in packaging.

Customer Grievance Handling Process



Reinforced Protection of Personal Information

To strengthen the protection of personal information, SK chemicals has reformed policies on handling personal information by the customer consultation office and complied with relevant laws and regulations.

When a transaction agreement is concluded, the company collects and uses personal information legally with the consent of information holders in accordance with Article 15 of the Personal Information Protection Act. When any credit information is provided, individual consent is given by credit information holders pursuant to Article 32-2 of the Use and Protection of Credit Information Act. We manage collected personal and credit information to prevent leakage and delete all information upon the expiration of the storage period.

SK chemicals Customer Consultation Office Policy on Handling Personal Information

- ◆ Consent for collecting personal information is given through comments by phone from the consultation office; for inquiries in which immediate responses are given, personal information shall not be collected.
- ◆ If an additional response is required, a name and telephone number shall be collected; after response is given, personal information shall be immediately discarded.
- ◆ If a grievance case should be handled, additional customer information, which is required for the purpose of processing, shall be collected. Such information shall be stored for the period stipulated in relevant laws and discarded after the period.
- ◆ SK chemicals Customer Consultation Office shall not provide any personal information of users to the outside in principle.

Six Major Principles in Collecting Personal Information



Customer Value : Handling Customer Requests and Minimizing Grievance

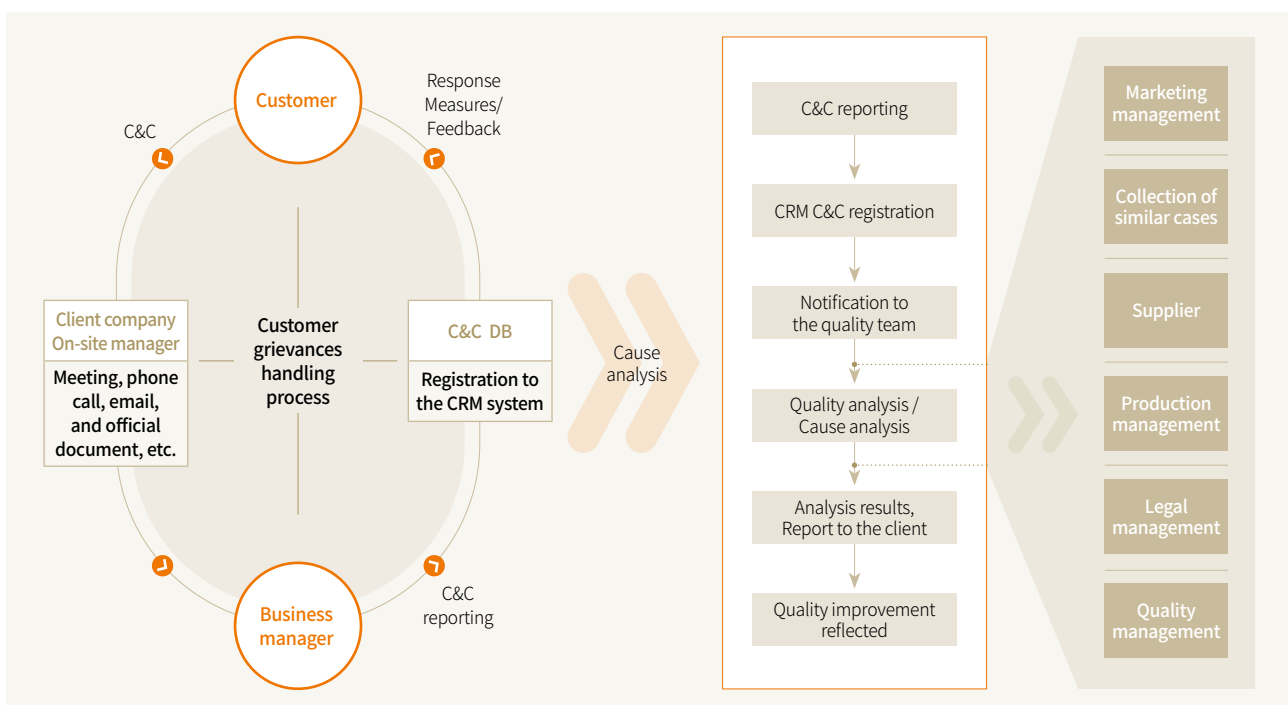
Application of Developed Customer Management System of Green Chemicals Biz.

For more effective and efficient customer management and grievance management, the Green Chemicals Biz. of SK chemicals has developed and supplemented their CRM (Customer Relationship Management) system and have been testing it in the copolyester resin business since December 2017.

The CRM system manages customer management activities by utilizing a dashboard through a manager in charge of a customer. Linked with the ERP system, the CRM system connects customer information and comprehensively manages the history of various technical support/sample production, which have been offered to customers, to provide customers with new products and services.

Through this system, the company ensures prompt responses for grievances about the problems with a product and processing issues raised by client companies. This effort not only boosts trust in SK chemicals by addressing customer grievances more reasonably, but also identifies various customer needs and induces new usage.

All customer information, customer support, grievance reporting and processing cases are reported and managed in the CRM database, while details for customer information, consultation and grievance solutions are stored in a database through the systemized reporting process. All information can be viewed in statistical data based on the desired period and will be actively reflected in the improvement of product quality by reporting cases to each supervisor of marketing, production, research institute and quality management departments and the CEO on a regular basis.




Case Study.....□ **SK chemicals' PETG Business to Enhance Customer Value** □.....

SK chemicals produces and sells SKYGREEN (PETG), a high-performance eco-friendly material without bisphenol A, and ECOZEN, the world's first high heat-resistant transparent polyester resin.

PETG substitutes PVC (polyvinyl chloride) and contributes to dealing with environmental issues. PVC emits toxic gas (chlorine gas) in the process of production, use and processing and discharges toxic substances (dioxin, furan, etc.) in the process of incineration. It also generates environmental issues by using heavy metal such as lead and cadmium to improve processability.

Under these circumstances, more companies have started to reduce plastic products with hazardous substances. In Europe, the use of PVC is regulated, while the amount of PVC used is being reduced. SK chemicals' PETG substitutes the market where PVC is applied with the merit of eradicating the harmfulness of PVC.

.....□ **SV of PETG Business** □.....

SV of the PETG business lies in the contribution to addressing environmental issues by replacing PVC. To convert such contribution to figures, the economic cost paid for using PVC can be measured. For plastic products with hazardous chemicals, users are required to make recycling payments in accordance with the Act on the Promotion of Saving and Recycling of Resources. Accordingly, SV of PETG can be calculated by multiplying the charge and the quantity of PETG sold as a substitute for PVC.

* SV for PVC alternatives

= Quantity of PETG sold as PVC alternative × Charge per 1kg of PVC

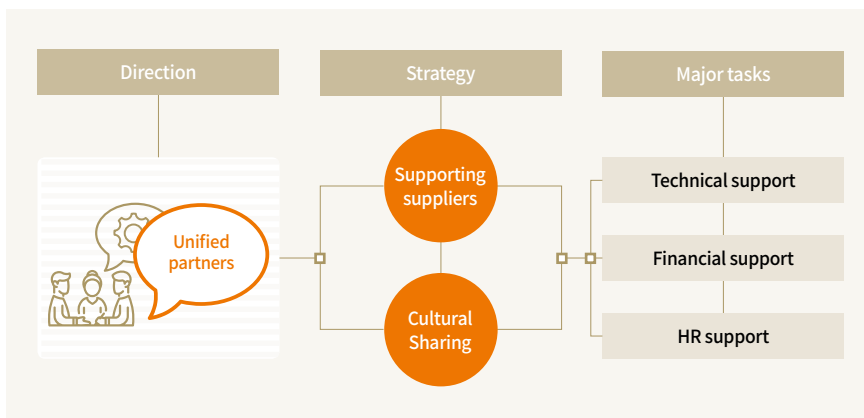
Supplier Value : Win-Win Growth through Support for Suppliers

Practical Support for Shared Growth with Suppliers

SK chemicals helps suppliers reinforce their competitiveness by providing practical benefits, including technical, financial and HR support, and strives to spread win-win growth with suppliers and a fair trade culture.

To support systemic win-win growth, the company is establishing a win-win growth system. To reflect trade performance and evaluation results for 2016 and 2017, we updated a list of excellent suppliers in 2017 and provided a differentiated supplier support program.

Win-Win Growth System



SK Shared Growth Fund for Supporting Suppliers

Since 2013, SK chemicals has constantly operated the SK Shared Growth Fund and contributed to helping suppliers perform stable management activities. As a result, a total of KRW 4.6 billion was paid to ten companies as of late 2017.

Size of SK Shared Growth Fund

Category	Unit	2015	2016	2017
Amount of the Shared Growth Fund	KRW 100 million	75	75	75
Total loan amount	KRW 100 million	43	43	46
No. of suppliers with loans	Number	9	9	10

Cultural Support for Suppliers

In 2017, SK chemicals provided an opportunity to enjoy a cultural program by inviting suppliers to humanities lectures and G.rium concert to provide various supplier support programs as well as financial support. With these efforts, the company has prepared a chance to share the corporate culture of SK chemicals and communicate with suppliers.

★
Case Study

..... □ Payment for Subcontractors by SK chemicals □

Subcontracting payments enhance the management stability of suppliers and address job instability for workers. If the subcontracting payment is made with a check, it may cause a problem of capital turnover during the maturity period in which the check can be cashed in, in addition to the legal 60 day period. This can cause issues in the subcontractor's business which may lead to the risk of restructuring or bankruptcy. SK chemicals improves employment stability for the workers of the company by preventing such cases.

SK chemicals provides various forms of support, including cash payment for subcontracting, payment for subcontracting for the minimum period and free support for financing. Using these systems, the company implemented cash payments 40 days ahead of the legal standard in 2016 and 2017 for two consecutive years. This performance has increased the satisfaction among suppliers and is creating SV for suppliers.

..... □ SV of Subcontract Payment □

Subcontract payment by SK chemicals can be measured by EV which is acquired through swift cash payment. In accordance with the current Subcontracting Act, an original business company (e.g. SK chemicals) is required to make subcontracting payments to a subcontractor (e.g. BP of SK chemicals) within 60 days. SV of the total subcontract payment can be calculated by multiplying the total of interest ratio and subcontract payment by the difference in the actual period of subcontracting payment by SK chemicals from the required days.

The formula is as follows:

* **SV of subcontracting payments**
 = Total amount of subcontract payment × (60 days – Period until payment after a tax calculation sheet is issued)
 × Interest rate

cf. Interest rate : Weighted average of corporate loan interest rate among the loan interest rates of deposit banks

Supplier Value : Win-Win Growth through Support for Suppliers

Provision of Education and HR for Reinforcing Competitiveness in Suppliers

SK chemicals provides practical support for reinforcing competitiveness of suppliers through various programs in addition to economic support for suppliers. From 2017, the company has expanded the range of win-win growth programs to secondary and tertiary suppliers and contributed to assisting the growth of a wider range of suppliers and addressing unemployment in local communities.

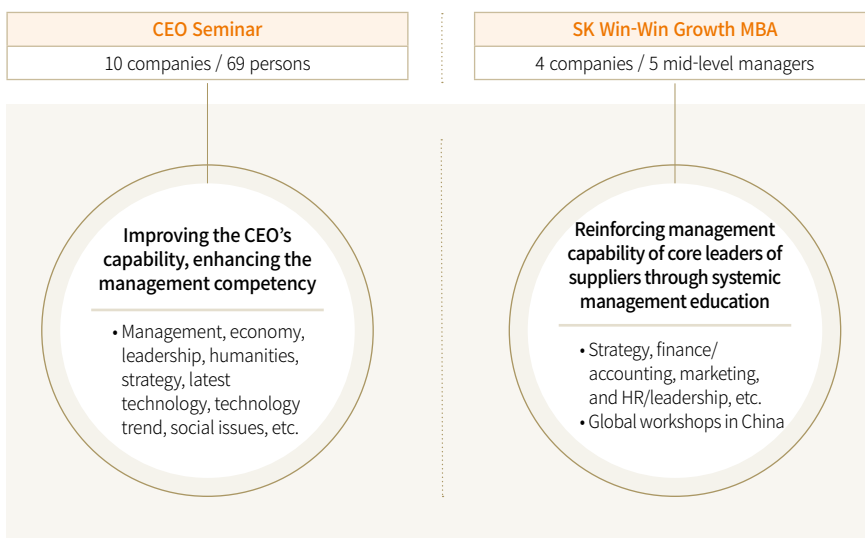
Education for Reinforcing Competitiveness in Suppliers

SK chemicals strives to reinforce competitiveness of suppliers through various training programs and seminars. With various forms of support, we make efforts to enhance the competitiveness of suppliers and create practical SV for suppliers.

The company is preparing education support programs such as online education, SK Win-Win Growth MBA and CEO Seminars. In 2017, the CEO Seminar was attended by 69 CEOs of suppliers, while five mid-level managers participated in the SK Shared Growth MBA.

In particular, the SK Group Win-Win Growth Academy, an education program to reinforce supplier’s capability-that has been in operation since 2006, Win-Win Growth MBA (for core human resources) and Win-Win Growth e-Learning (for all executives and employees) was broadened to secondary and tertiary suppliers in 2017. We also launched the “Win-Win Growth CEO Seminar” for the CEOs of suppliers.

| SK Group Win-Win Growth Academy



Support for Securing Talent in Suppliers

SK chemicals held the “SK Win-Win Growth Job Fair” to provide direct support for recruiting top talent for SME suppliers. The program helps suppliers to secure talent by helping suppliers to provide recruitment consultation services, including recruitment information, and leading on-site recruitment. Our support contributes to addressing recruiting difficulties for suppliers as well as difficulties in job searching in the local community.

In 2017, we held the “SK Win-Win Growth Job Fair” with SK affiliates in Ulsan. In particular, the company expanded the range of participants from primary suppliers to secondary suppliers in 2017. Up to 2016, the Win-Win Growth Job Fair was attended by as many as 6,000 college students and specialized high school students in the Yeongnam region such as Ulsan, and among them, 354 students were successfully employed. In 2018, the company will hold the SK Win-Win Growth Job Fair in the metropolitan area.

Win-Win Growth through Joint Development with Suppliers

SK chemicals takes the lead in shared growth with research and business development in cooperation with SMEs that have strengths in various sectors.

The company succeeded in developing the WPC (Wood Plastic Composite), an eco-friendly wood plastic composite material, in partnership with Donghwa Co., Ltd., a wood-specialized company. This product is mainly utilized in trails and bicycle roads by maintaining the texture and appearance of natural wood and having outstanding water-resistant characteristics and durability. As an eco-friendly material, it can endure 1.5 times heavier weight than conventional products and reduce contraction and expansion depending on the external temperature fluctuations, which helps to save construction and maintenance costs.

The development of this product was achieved through collaboration, including transferring new independent eco-friendly technology to a SME supplier and dispatching specialized researchers, and is deemed as a successful case for the win-win growth between large companies and SMEs.

The company aims to pioneer the global market with Dongha Co., Ltd. and expand business after giving a presentation for new technology at “ANTEC 2018,” the largest conference in the plastic industry, held in Orlando, Florida.



SK Win-Win Growth Job Fair for Suppliers

Environmental Value : Responding to Climate Change through Eco-Friendly Management

Systemic Management of Environment-Related Information

To manage all environment-related data comprehensively, SK chemicals records information on raw and subsidiary materials, air pollutants, water quality pollutants, energy, greenhouse gas, safety and health, and eco-friendly procurement in the company-wide integrated management system, “Environment Information Integrated Management System,” at the beginning of each year.

Through systemic environment-related data management, SK chemicals implemented “Green Triple 40!”, an environmental management goal by 2020, and promotes activities suitable for three strategic directions (social contribution, reduction of CO₂ and increase in eco-friendly sales). We strive to accomplish the numerical goals and targets.

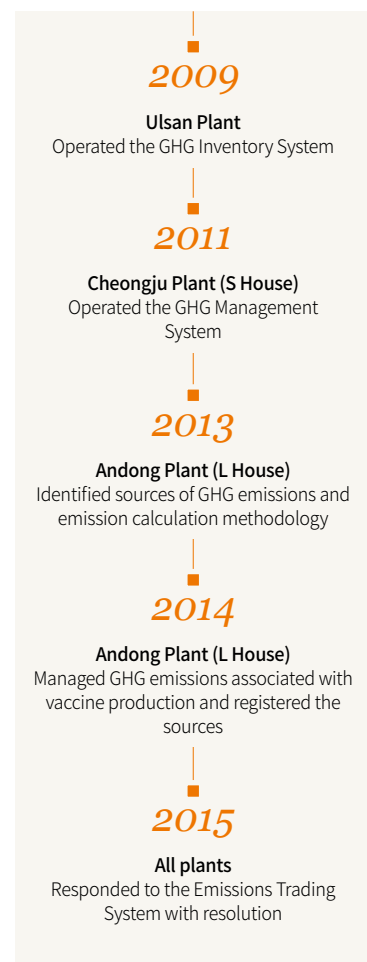
Green Triple 40!

“Green Triple 40!” refers to the sustainable management target strategy to increase the hours of social contribution activities per employee to 40 hours, reduce GHG emissions by 40% compared to BAU (Business As Usual), and raise the percentage of eco-friendly products sales to 40% by 2020. We spread the awareness of environmental management and help realize a greener corporate culture; intensively create a green plant through the improvement of the company-wide environmental management process in terms of process; and focus on reinforcing the capability of eco-friendly business by establishing an eco-friendly business strategy and developing new businesses in terms of products. With such numerical target strategies, SK chemicals enhances eco-friendliness in products, minimizes environmental load in the production process and business activities, and promotes green growth to create new value through various environmental protection activities.

Progress and Plan of Environmental Management (Green Triple 40!)

Category	Unit	2015	2016	2017
Reducing CO₂ emissions by 40%				
Estimated emissions	tCO ₂ eq	689,000	692,000	695,000
Actual emissions	tCO ₂ eq	585,402	485,851	479,138
Target reduction rate	%	36.7	39.9	39.9
Actual reduction rate	%	15.0	29.8	31.2
Strategy	-	Increased volume of biomass used, in liquid, gas, and solid forms	Adopted external process waste heat and steam	Continuously discovered biomass energy sources
Ratio of eco-friendly sales 40%				
Target	%	25.0	28.0	31.0
Performance	%	35.7	41.9	40.0
40 hours of social contribution activities per employee				
Target	Hour	25	28	30
Performance	Hour	8	7	7
Strategy	-	Establishment of team-based social contribution activities		Social contribution activities with family

Current Status of the Operation of the GHG Emission Management System



Reduction of Greenhouse Gas Emissions to Respond to Climate Change

Since 2010, SK chemicals has been designated eligible for the allocation of permits under the ETS (Emissions Trading System) and was assigned a fairly high target of a 15.4% reduction from 2015 to 2017. Accordingly, SK chemicals operates various climate change policies and programs to reflect environmental sustainability. The company reviewed expanding the use of biogas by discovering an idea utilizing eco-friendly emission facilities and developed company-specific emission factors. As ETS-related tasks are systemized, including setting GHG emission targets for each plant, emission monitoring, and decision-making for purchasing credits, we not only carry out company-wide management comprehensively, but also continuously conduct emissions reduction activities.

Reducing Emissions through the Use of Eco-Friendly Fuels

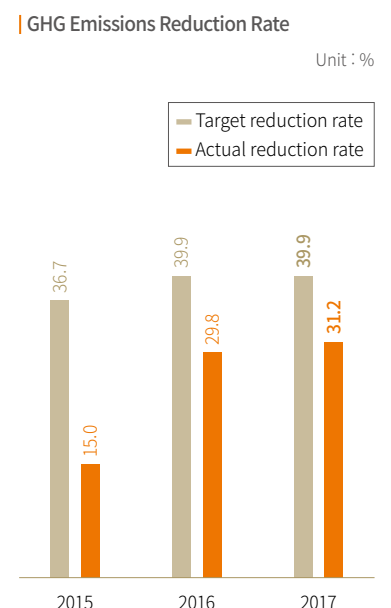
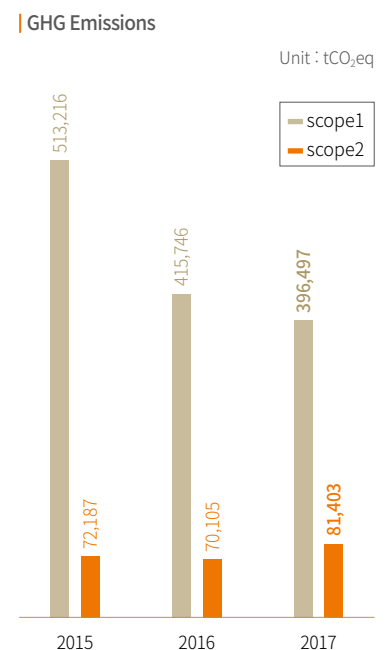
Using biogas as fuel creates the double effect of reducing GHG emissions through the substitution of fossil fuels and eliminating GHG (methane gas) generated in the waste treatment process. SK chemicals collects methane generated in the Yongyeon Sewage Treatment Plant and uses it as boiler fuel at the plant as a partial alternative to fossil fuels. In 2017, a total of 12,290 tons of biogas was used as fuel, resulting in a GHG reduction of 33,829tCO₂eq.

The company replaces a part of fossil fuels in the process of producing biodiesel, one of the major products of SK chemicals. We process NE-30, a byproduct of biomass, into decompressed refined oil and utilize it as a fuel for combustion facilities in the plant. Due to these efforts, we used 3,060 tons of bioliquified oil. In 2017, the company reduced 6,694tCO₂eq of GHG compared to when diesel was used.

For waste wood boilers which were operated since 2010, the company has reduced air pollutants and GHG emissions by not consuming coal (bituminous coal), and by using waste wood as a fuel alternative. It was initially planned to reduce 440 tons of air pollutants and 55,000 tons of GHG emissions a year; in 2017, 57,014tCO₂eq GHG emissions were reduced.

GHG Emissions Reduction by Recovering Waste Heat

SK chemicals reduced GHG emissions of 3,135tCO₂eq based on bituminous coal boilers by using and receiving 12,952 tons of waste heat (steam) from the PDH process of SK Advanced.



Environmental Value : Responding to Climate Change through Eco-Friendly Management

Saving Energy through Eco-Friendly Energy Consumption

SK chemicals has strived to contribute to reducing cost and environmental protection by dealing with the new climate regime, minimizing environmental impact and conserving energy. We have proactively endeavored to ensure reasonable energy consumption, including reducing production cost, by developing various measures for energy conservation.

Selected as an Excellent Plant for the “Energy Champion” System

With the recognition of various eco-friendly management efforts for energy conservation, SK chemicals was designated as an excellent plant in the “Energy Champion” System, which was implemented by the government for the first time. The system verifies companies which voluntarily improve energy efficiency as energy champions through objective evaluation and provides them with various incentives; only 20 domestic companies were designated. The selected companies include heavy energy users, which account for about 40% of total energy use in the industry and power generating sector. As a result of verification assessment, about 3% of energy was reduced on average compared to BAU (Business As Usual) of the previous year.



“Energy Champion” System

Cost Reduction by Optimizing Bituminous Coal Boilers

By uncovering the potential for improving steam production and power generating boilers using bituminous coal as a fuel, SK chemicals carried out self-facility optimization in partnership with an external expert consulting team twice from July 2016 to September 2017. We implemented automatic bottom ash discharge, control of optimal combustion air amount for each load, and adjustment of coal size (minimizing non-consumed bottom ash). As a result, the amount of bottom ash was decreased by 14% due to the effect of complete coal combustion, and the basic unit for steam raw materials was also reduced through the supply automation of combustion air. Through these efforts, the company reduced a fuel cost of KRW 840 million on an annual basis compared to the average of the three previous years and achieved the effect of GHG emissions reduction amounting to KRW 350 million a year.

Minimization of Environmental Impact through Eco-Friendly Plants

SK chemicals considers eco-friendly elements beginning with the construction of a plant, sets the eco-friendly targets for each plant, strives to accomplish the target, and implements company-wide eco-friendly policy.

1, 2 L HOUSE (Vaccine Plant)

3, 4 Internal and external view of ECO Lab



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Case Study

□ Creation of Environmental SV through Eco-Friendly Buildings □

SK chemicals implements eco-friendly policy throughout the entire management process, including the development of an eco-friendly building. “ECO Lab” of SK chemicals was planned and designed with the consideration of eco-friendly elements in the construction process and applied 101 types of eco-friendly materials and technologies. According to joint monitoring for the building by SK E&C and the Institute of Civil Engineering and Building in 2011, ECO Lab was able to reduce 44% of energy and 63% of water resources in comparison to existing work facilities and reduced the CO₂ amount by 33%; this outcome has the same effect as planting 94,000 pine trees.

With such performance, ECO Lab was awarded Energy Efficiency Standard grade 1 in the business building sector. In 2011, the building received the Platinum Level, the highest level of LEED, a green building rating system in the U.S., and Class 1 with the highest score in the evaluation of GBCC, a domestic green building certification.

L HOUSE, a vaccine plant in Andong, also adopted 16 types of eco-friendly technologies and saved energy by 30% compared to the existing plant. In compliance with the pharmaceutical manufacturing and quality control standard (GMP, Good Manufacturing Practice), which is the strict certification standard for manufacturing food, medicine and cosmetics related to the human body, the plant applies eco-friendly technology to conserve energy and water resources and received LEED Gold for the first time in the world among pharmaceutical plants.

The Ulsan Plant has installed a reverse osmosis system to reuse general drainage. We will recover 75% of general drainage and use the drainage for 62% of the entire net amount of use.

□ Calculation of SV by Operating Eco-Friendly Plant □

The SV of ECO Lab refers to the reduction of resource consumption such as energy and water compared to a building of the same size as well as reduction of GHG emissions. ECO Lab has led the effect of reducing energy by 44%, water resources by 63% and greenhouse gases by 33%. SV of this effect can be measured by adding reduced energy, purchase cost of water and the cost of GHG emissions reduction.

The formula is as follows:

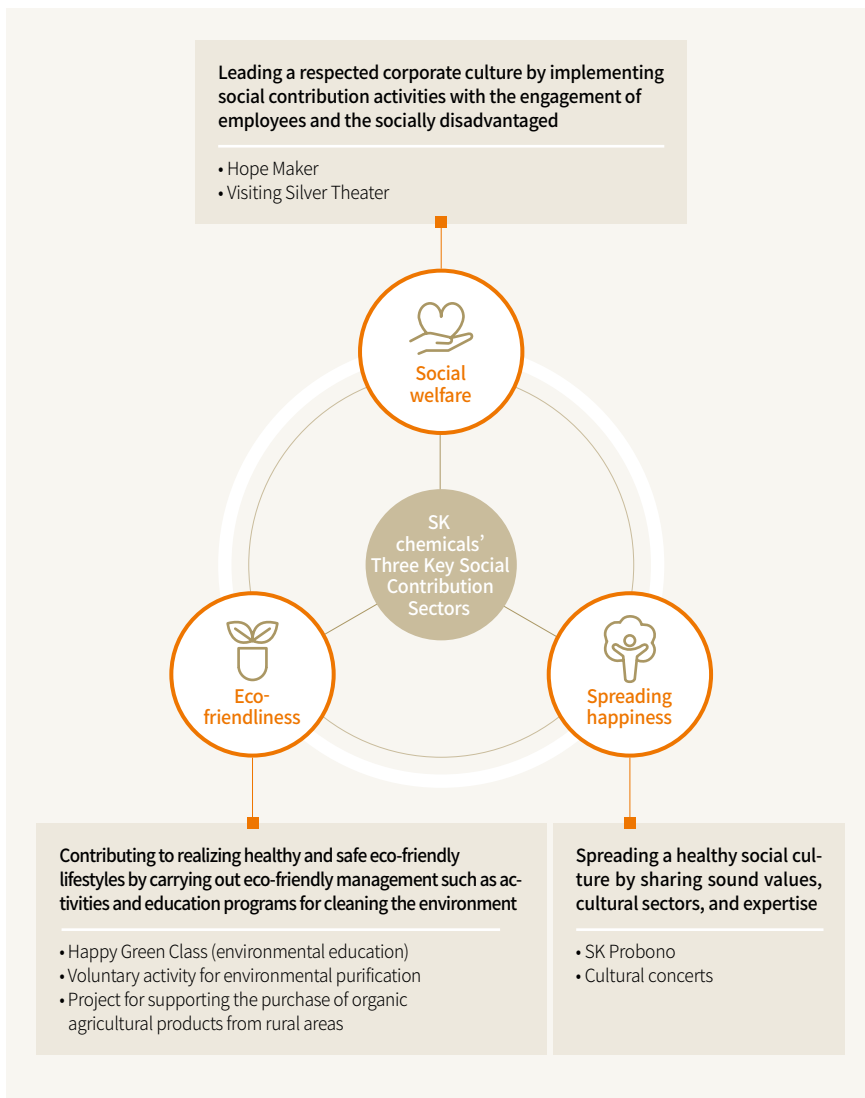
$$\begin{aligned}
 & \text{* SV of ECO Lab} \\
 & = \text{Cost of energy saving} + \text{Cost of water saving} + \text{Cost of GHG emissions reduction} \\
 & = (\text{Cost of energy purchase in 2017} \div 44\% - \text{Cost of energy purchase in 2017}) \\
 & \quad + (\text{Cost of water purchase in 2017} \div 63\% - \text{Cost of water purchase in 2017}) \\
 & \quad + (\text{Cost of GHG emissions reduction in 2017} \div 33\% - \text{Cost of GHG emissions reduction in 2017})
 \end{aligned}$$

Local Community Value : Social Contribution Activities with the Local Community

SK chemicals' Social Contribution System

Under the mission of “We care for the future. Healthcare Earthcare.”, SK chemicals carries out social contribution programs. Through various theme-based social contribution activities, the company commits itself to creating genuine social value for shared growth with the local community. With major directions in three social contribution sectors, which are “eco-friendliness,” “social welfare,” and “spreading happiness,” we are carrying out projects for a sustainable society.

Three Key Social Contribution Sectors



Eco-Friendly Social Contribution Business

SK chemicals carries out various company-wide social contribution activities to protect the Earth's environment. In addition to environmental purification activities, the company focuses on enhancing the awareness of environmental protection with eco-friendly education.

Environmental Education through the Happy Green Class

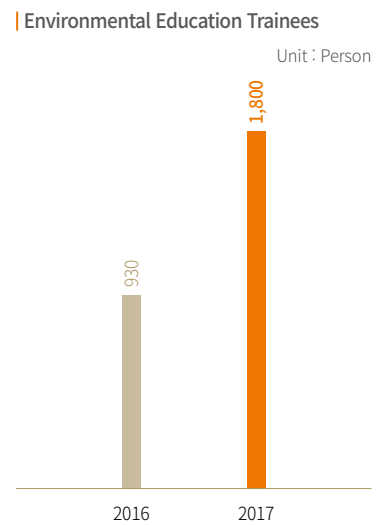
SK chemicals operates the "Happy Green Class," which is an environmental education project to inform the importance of eco-friendliness and spread the awareness of environmental protection. As Korea's only regular social contribution program among domestic companies, the "Happy Green Class" has cultivated a total of 120 executives and employees since 2012, and they served as "eco-friendly teachers" through the course of cultivating in-company teachers.

Members of SK chemicals inform third to fifth-grade elementary school students in Seongnam and Ulsan of the importance of the environment by using videos and various teaching materials in an entertaining way. Students learn the current status of environmental pollution, causes and impacts of climate change, eco-friendly science and technology, and the value and practice of environmental protection.

Through continuous and passionate environmental education, the accumulated number of students has amounted to 7,360 as of late 2017. In 2018, we will provide new environmental education by revamping textbooks and lead the movement to spread the significance of eco-friendliness by continuously developing environmental education.

Environmental Purification Activities near Plants

Employees of the Ulsan Plant visited Cheoyongam for cleaning and preservation activities and Pyeong-dong Village in Ganjeolgot for the preservation of the ecosystem, volunteered at the Yeocheon work site for the physically challenged, and cleaned the Yeocheoncheon Stream. Employees of the Cheongju (S House) Plant strive to carry out environment-cleaning activities near the plant. In particular, we are operating the "A.cure" project for protecting rivers. The project is operated for rivers near headquarters and plants, and we are striving to contribute to creating healthy rivers and ensure shared growth with the surrounding environment.



Happy Green Class

Local Community Value : Social Contribution Activities with the Local Community

Social Contribution Activities with the Disadvantaged

SK chemicals takes the lead in corporate culture to ensure harmony with the local community through social contribution activities with the socially disadvantaged. The company not only carries out voluntary work and donation activities at social welfare centers in a continuous and systemic way, but also expands special voluntary work such as talent donation and mentoring.

“Hope Maker” to Support Low-Income Children and Youth

SK chemicals operates “Hope Maker” a program for sponsoring and mentoring low-income children and young people. As a representative social contribution program run by SK chemicals for six consecutive years since 2012, Hope Maker is a program used to sponsor 220 children and youth (cumulative) at 15 social welfare institutions along with SK gas.

Internal team units have visited 14 local welfare centers and provided a total of 160 children and young students with economic and cultural activity support as well as carrying out voluntary work at the welfare center. In 2018, for the development of Hope Maker, we will hold a workshop to identify the effectiveness of and satisfaction with the Hope Maker program and develop a new program to continue more effective and genuine social contribution business.

160
Students Sponsored by
Hope Maker in 2017
(220 in total)

SK Group “Happiness Sharing Season” Voluntary Work in Winter

SK chemicals actively participates in the “Happiness Sharing Season” program, a seasonal volunteer activity in the winter organized by the SK Group every November. In 2017, the company provided poorly fed children with meal expenses in the winter by using profits from selling donated goods through the “Happiness Sharing Bazaar” held at the HQ building of SK chemicals. In addition, we delivered 3,250 heads of kimchi cabbages to local elderly people living alone and children for Hope Maker in cooperation with SK affiliated companies in Seongnam.

We also conducted special voluntary work such as talent donation and mentoring activities for young students at local welfare centers. In 2017, the percentage of special voluntary activities was 7.5%, which was an increase of 4% compared to 2016. The company strives to make every effort to carry out more diverse types of social contribution activities.



1 Volunteer Work by New Employees 2 Year-End Event by Hope Maker

3 Happiness Sharing Bazaar 4 Hope Maker Summer Camp

“Ulsan Plant” as a Plant for Sharing and Coexistence with the Local Community

The Ulsan Plant of SK chemicals carries out continuous and proactive social contribution with surrounding local communities.

Since 2012, the Ulsan Plant has operated Hope Maker, which is a long-term sponsorship program for children and young students. With the voluntary participation of employees, the Ulsan Plant has also provided sponsored children with donations amounting to a total of KRW 200 million by collecting sponsored donations from monthly wages. The plant has also supported the purchase of textbooks, workbooks and school supplies to encourage studying and acquisition of certificates.

In particular, from 2017, the plant has introduced and adopted job exploration and experience events to help Hope Maker students to have a future career. With such efforts from the Ulsan Plant, two sponsored students succeeded in going to college in 2017.

Since 2006, the Ulsan Plant has also had a one-company-one-village partnership with Geonam Village and Pyeongdong Village in Ulsan and continuously carried out activities to assist with regional work. The employees conduct voluntary work for local residents every year, including direct trade for agricultural produce, support work in rural areas, improving village convenience facilities, making kimchi with love, and donation of rice with love. Through various urban-rural exchange activities, the Ulsan Plant has contributed to improving farming villages' income for about 100 household units.

Since 2011, the Ulsan Plant has sponsored “Gwangmyeongwon,” a short-term protection facility for visually impaired people. The employees of Ulsan Plant visited the Gwangmyeongwon two or three times a year and accompanied and helped people who are visually impaired, who have difficulty going outside, to go on a picnic. To donate funds for the transfer of Gwangmyeongwon facilities, the Ulsan Plant held a daily teahouse event and provided KRW 15 million in material support, including replacement of old wardrobes and providing washing machines.

In 2017, with the performance from such proactive social contribution activities by Ulsan Plant, SK chemicals received a prize by the Minister of Health and Welfare at “National Sharing Grand Awards 2017.”



- 1 Voluntary Work for Making Kimchi
- 2 Hope Maker Rural Area Experience Activity
- 3 Voluntary Work in Ulsan (Cleaning at Gwangmyeongwon)

Local Community Value : Social Contribution Activities with the Local Community

Social Contribution Business for “Sharing Happiness” with Cultural Support

As a social contribution business for spreading happiness, SK chemicals provides professional knowledge and talents of employees to society and scouts personnel with cultural talents and provides support for them. We also make efforts to create a healthier society and culture by supporting cultural promotion in local communities, including support for Silver Theater, and sharing upright values and humanities knowledge.

SK Probono Talent Donation Activity

As a talent donation activity engaged by all SK group companies, SK Probono is a program for SK group’s employees to share professional knowledge and technology with social enterprises and groups with needs.



1 Front View of Silver Theater

2 Visiting Silver Theater

★
Case Study

.....□ Cultivation of Social Enterprises by Supporting the Silver Theater □.....

Korea is becoming “super-aged society” at the quickest rate in the world. According to the Statistics Korea, the ratio of people at the age of 65 or over exceeded 14% in 2017 from 7.22% in 2000 and will reach 40% by 2040. Despite the increasing aging population, there is a significant lack of facilities or programs for the elderly.

Under these circumstances, in 2009, the social enterprise “Le cinéma de la mémoire (Theater Selling Good Memories),” established the “Silver Theater,” Korea’s first theater only for the baby boomers. As the No. 1 social enterprise in the cultural art sector, the Silver Theater allows people ages 55 or over to enjoy an old movie at a reasonable price (KRW 2,000). CEO Kim, Eun-ju said, “Our goal is not simply to make money, but to provide happiness for many senior citizens.”

To support her goal, SK chemicals has supported and helped the operation of Silver Theater for eight years by providing a fixed amount on a monthly basis. Since 2009, the company has provided a total of KRW 950 million and strive to increase recreational activities and expand cultural spaces for the elderly.

SK chemicals also holds “Visiting Silver Theater” and provides support to help the silver generation (baby boomers) in various regions with little cultural and welfare benefits to enjoy cultural benefits by holding a concert and film screening at senior citizen welfare centers.

.....□ SV through Support for Silver Theater □.....

SK chemicals creates SV by providing films for senior citizens at a cheaper price than the current price at the Silver Theater. Accordingly, the annual SV of Silver Theater can be measured by multiplying the amount of annual provision and difference between the price of willingness to pay and actual supply price provided by SK chemicals.

Annual SV of Silver Theater

= (Price of willingness to pay at a regular theater – Price of willingness to pay at the Silver Theater)
× Annual number of visitors

A close-up photograph of a person's hand holding a silver pen, poised to write on a document. The document features a line graph with two data series, one in red and one in green, plotted against a vertical axis labeled 0 to 6 and a horizontal axis with two points. The background is a blurred office setting with a window.

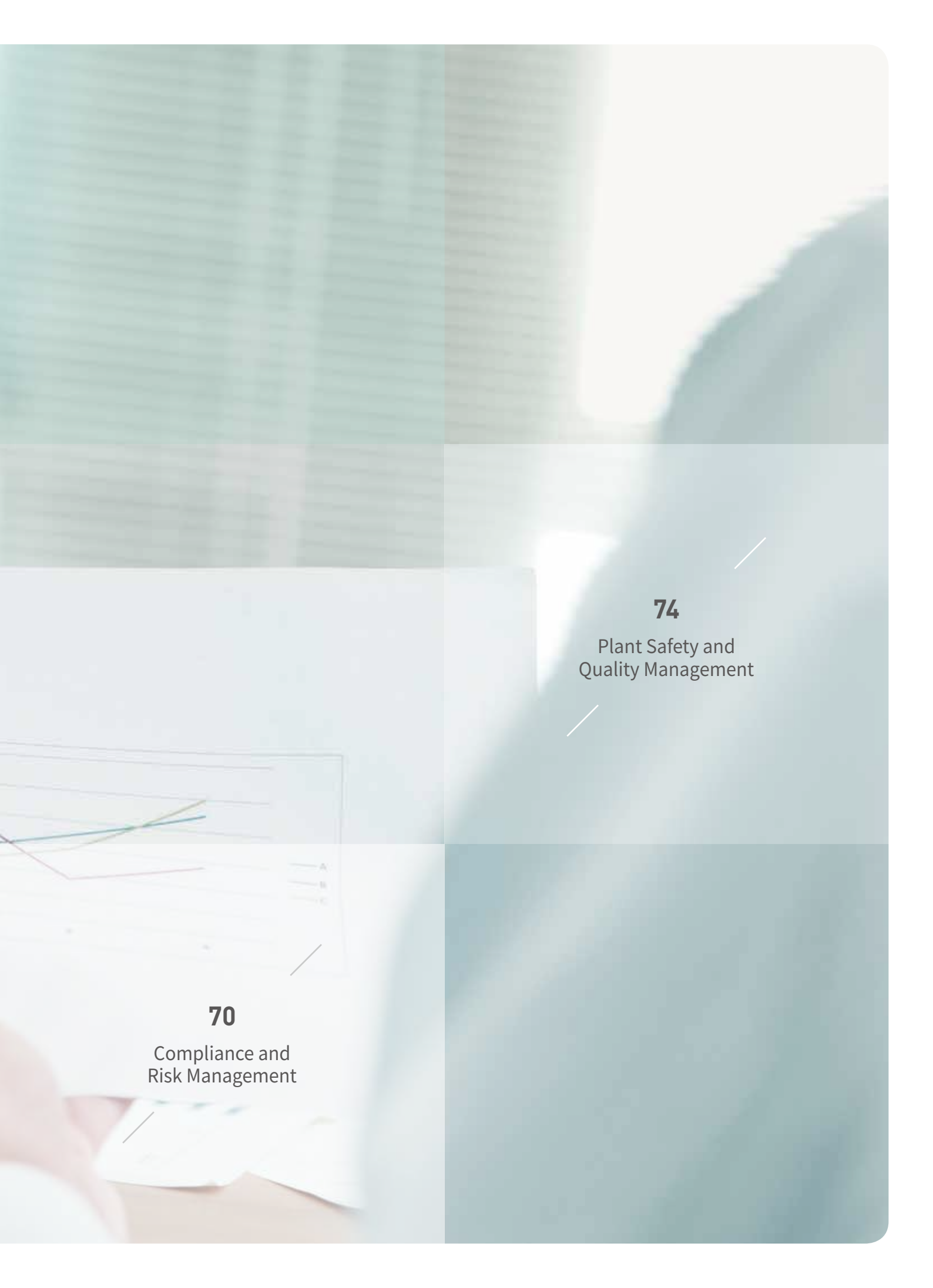
Sustainable Structure

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Enhancement of Corporate Governance

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Materiality Assessment



74

Plant Safety and
Quality Management

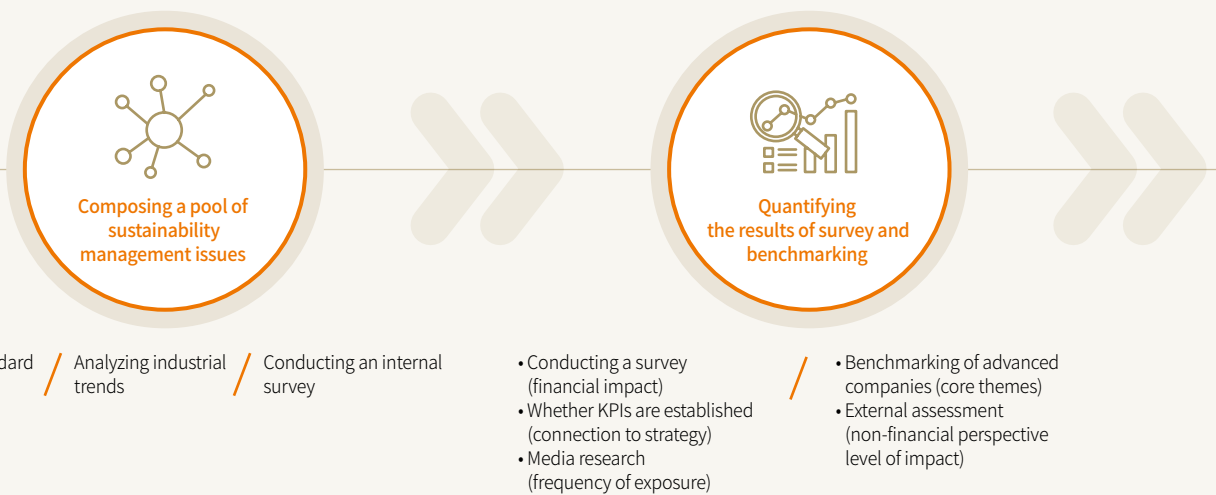
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Compliance and
Risk Management

Materiality Assessment

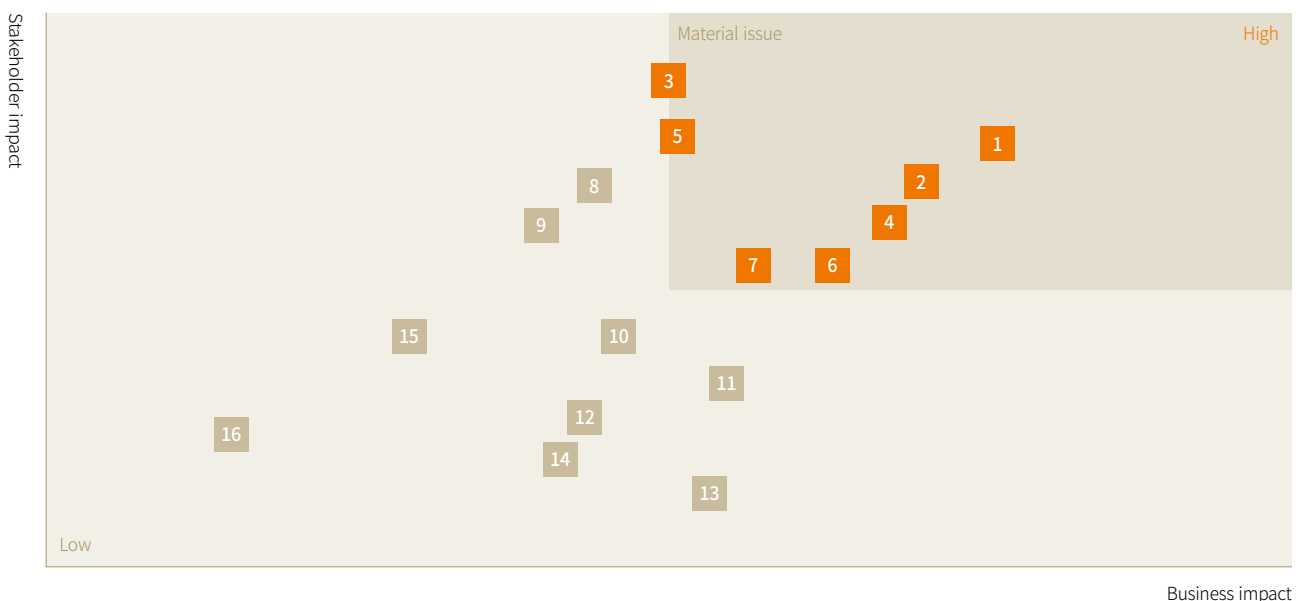
Materiality Assessment Process

SK chemicals' material issues for sustainability management were identified through a materiality assessment. A pool of sustainability management issues was organized by regarding global standards and guidelines, external environment, and current status of management. After collecting internal opinions and an evaluation by specialists, the materiality assessment was conducted while comprehensively considering business impact and stakeholder impact.



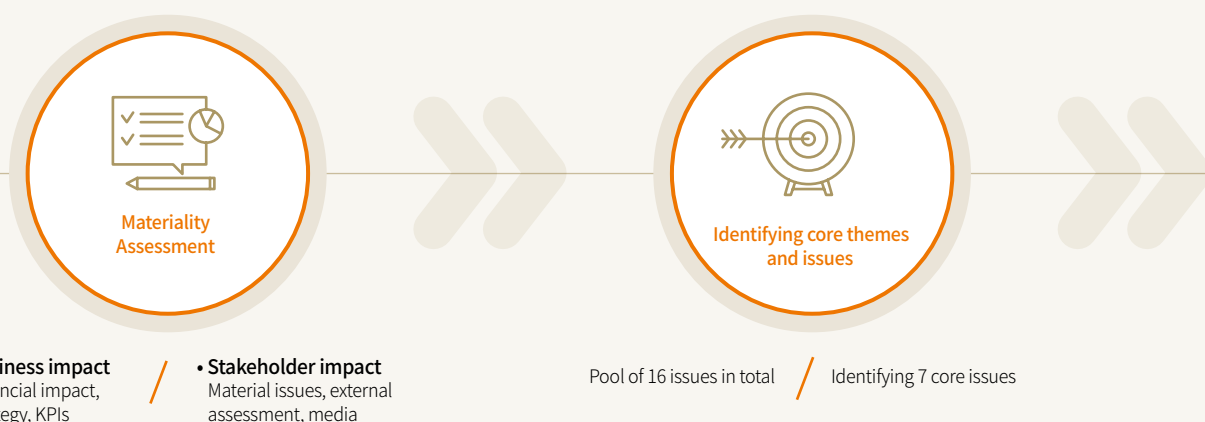
Materiality Assessment Matrix

Materiality assessment matrix is composed on the basis of business impact (x axis) and stakeholder impact (y axis). A total of seven issues were identified as "core issues" with a high level in both aspects (impact). "Mid-and long-term issues" refer to issues with a high level in one aspect, while other issuers are classified as "potential issues."



Identifying the Results of the Materiality Assessment

SK chemicals Sustainability Report 2017 has been completed based on SK chemicals' efforts to create SV. Accordingly, the company reports core issues by classifying them based on major stakeholders related to the creation of SV. In addition, any contents related to corporate governance, compliance and safety are reported in the part of "Sustainable Structure" as the foundation of SK chemicals.



Mapping of Core Issues

Category	Material issue	Reporting contents	Reporting page
1	Product quality/safety	Plant Safety and Quality Management	pp. 74-77
2	Innovation/Pioneering into global market	Core Capabilities & Strategy	pp. 24-31
3	Resource efficiency/Responding to climate change/ Renewable energy	Environmental value – responding to climate change through eco-friendly management	pp. 54-57
4	Safety/Substance management	Plant Safety and Quality Management	pp. 74-77
5	Governance	Reinforcement of Corporate Governance	pp. 68-69
6	Compliance	Compliance and Risk Management	pp. 70-73
7	Environmental management system/policy/keynote	Environmental value – responding to climate change through eco-friendly management	pp. 54-57

Other Reporting Issues

Category	Issue	Category	Issue
8	Local community	13	Reinforcement of employee capability
9	Win-win growth/Management of suppliers	14	Customer satisfaction/accessibility
10	HR management	15	Diversity/welfare/work-life balance
11	Macroscopic issues	16	Respect for human rights
12	Management strategy/performance/efficiency		

Enhancement of Corporate Governance

Overview of the Board of Directors

The Board of Directors of SK chemicals conducts the function of resolving important issues regarding those stipulated by the laws and articles of Incorporation and bylaws and consigned by a shareholders' meeting, basic policy for company management and important issues for task execution and supervising the job execution of directors on a monthly basis. To make corporate decisions based on independence and transparency, the Board of Directors is composed of the majority of independent directors. As of March 2018, the Board of Directors is composed of two executive directors and three independent directors and operates three subcommittees in total.

Composition of the Board of Directors

SK chemicals aims to make a reasonable management decision by organizing independent directors with industrial, economic and legal experts and reflecting opinions for their field of expertise in the decision-making process. With dependence and professionalism in the composition of the Board of Directors, SK chemicals aims to protect the rights of all stakeholders and accomplish the long-term growth of the company and strives to maximize the profits of shareholders and investors.

Operation of the Board of Directors

In 2017, SK chemicals held a total of 12 Board of Directors meetings and conducted the process of reviewing and resolving each agenda by verifying significant issues, with regards to the current status of the global market and domestic market. As one or more Board of Directors meetings are basically held, the company proactively collects the opinions from shareholders and employees and reviews and resolves major issues and agendas encompassing economics, society and environment. Through the Secretariat of the Board of Directors, SK chemicals notifies the date and place of meeting, discussion agendas and reporting issues to directors five days before holding a meeting.

Current Composition of the Board of Directors

Name	Kim, Cheol	Park, Mahn-hoon	Choi, Jeong-hwan	Ahn, Deok-geun	Ahn, Yangho
Position	CEO (Green Chemicals Biz.) Chairman of the Board of Directors	CEO (Life Science Biz.)	Independent director	Independent director	Independent director
Committee	• Management Committee • Independent Director Nomination Committee	• Management Committee	• Audit Committee • Independent Director Nomination Committee	• Audit Committee • Independent Director Nomination Committee	• Audit Committee • Independent Director Nomination Committee
Field of Expertise	Management	Management	Law	Economics, International relations	Planning

2017

- No. of regular meetings : 12 times
- Issues voted down : 42 cases
- Issues passed : 23 cases

- Attendance rate of executive directors : 91%
- Attendance rate of independent directors : 96%

Enhancing the Independence and Transparency of the BOD

SK chemicals recommends candidates by considering the career and field of expertise of candidates in appointing a director to ensure balanced decision-making and supervision for management at the Independent Director Nomination Committee. In particular, the company discloses conditions for independence and background for appointment and qualification for the director to enhance transparency. In recommending and appointing a director candidate, the Board of Directors checks if he or she is disqualified based on relevant regulations such as the Commercial Act and Enforcement Ordinance of Commercial Act and ultimately recommends candidates at a general shareholders' meeting.

Committees within the Board of Directors

SK chemicals aims to enhance transparency and efficiency of the Board of Directors by implementing and operating three subcommittees under the Board of Directors. The committees swiftly report on all feedback and take corrective measures to perform auditing tasks more effectively. In particular, tasks are implemented based on appropriate procedures in reviewing and contrasting relevant documents such as a ledger and financial statement and conducting inspections. Among subcommittees, all members of the Audit Committee are composed of independent directors not only to secure internal and external transparency, but also to emphasize the independence of the Board of Directors.

Current Status of Committees within the Board of Directors

Management Committee	Independent Director Nomination Committee	Audit Committee
2 executive directors	1 executive and 3 independent directors	3 independent directors
<ul style="list-style-type: none"> Reviews and makes decisions on matters concerning the company's management Formulates strategies to enhance corporate performance for long-term company growth 	<ul style="list-style-type: none"> Nominates independent director candidates to be appointed at a general shareholders' meeting Discusses matters regarding the composition and operation of the candidate nomination committee 	<ul style="list-style-type: none"> Establishes and implements audit plans, evaluates the results, takes follow-up measures, and proposes recommendations for improvement Monitors laws, articles of incorporation and bylaws, and other matters entrusted by the Board of Directors

Protection of Shareholder Rights

Through an annual general shareholders' meeting, SK chemicals reports the current status of management to shareholders and collects valuable opinions from shareholders with regard to major decision-making and management. Any management issues and changes regarding the protection of the rights of shareholders are officially announced via the SK chemicals website, the Financial Supervisory Service Dart System and Korea Exchange.

Current Status of Share Ownership

(December 31, 2017)

Unit : Share

Category	Shareholder	No. of shares owned	Share ownership
Shareholders with 5% stake or over	Chey, Chang-won	2,139,266	18.47%
	National Pension Service	1,446,507	12.49%

Current Status of Minority Shareholders

(December 31, 2017)

Unit : Person/Share

Category	Shareholder		Shares owned	
	No. of shareholders	Ratio	No. of shares	Ratio
Minority shareholders	22,473	99.92%	7,721,203	66.68%

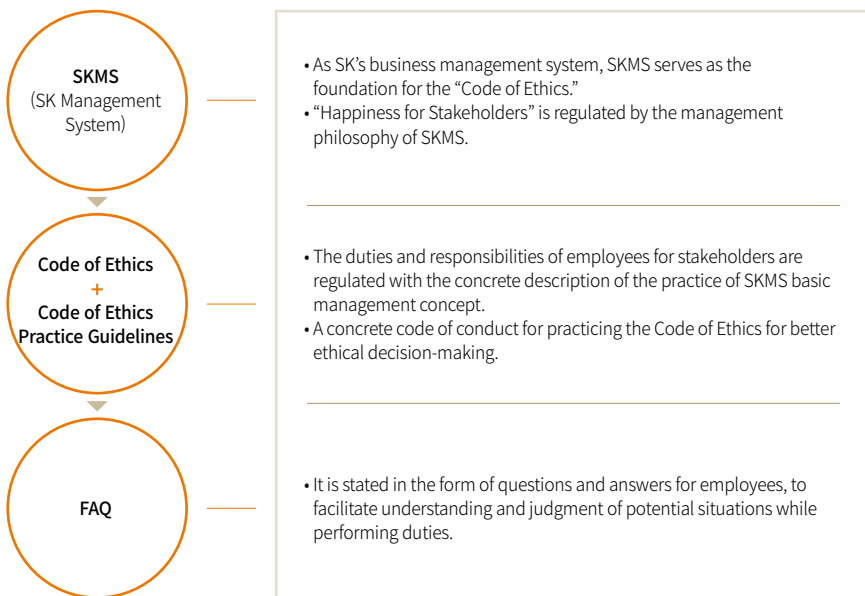
Compliance and Risk Management

Enhancement of Ethics Management through Ethics and Legal Compliance Program and System

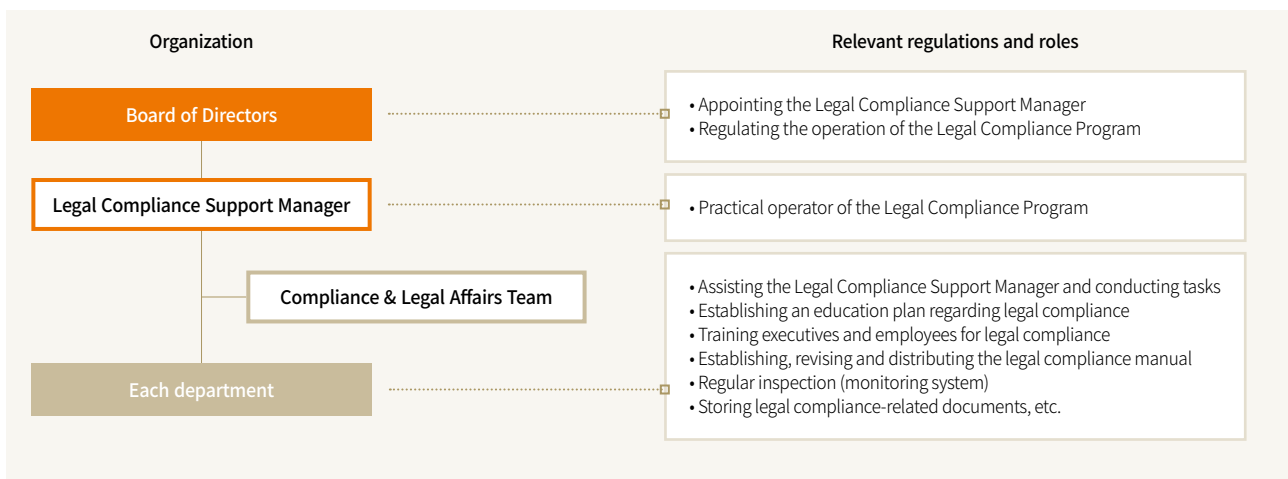
SK chemicals is implementing a variety of programs to improve compliance with a law-abiding spirit and is committed to fulfilling corporate responsibilities. The company aims to strengthen ethics and legal compliance management further by enhancing a more systemized law-abiding system and designating a competent department in addition to the provision of practice guidelines and education.

Code of Ethics System

Based on the SKMS, which serves as the SK’s management philosophy and code of conduct, the code of ethics system is composed of the code of ethics practice guidelines reflecting the basic management concept of SKMS and FAQ.



Organizational System



Ethics Management Education and Declaration of Ethical Management

In order to promote a fair and transparent ethical system and culture, SK chemicals implements a specific code of conduct for employees as the criteria for corporate ethics, including the SKMS code of practice, code of ethics, and code of conduct.

To strengthen the execution of ethics management, the company conducts a diagnostic survey and holds an ethical practice leadership workshop based on online training to boost the level of ethics management practice for all employees.

In 2018, the company held a ceremony for proclaiming ethics management to solidify the willingness for advanced ethics management. As part of these efforts, we operate a compliance organization specialized in each business. In case of some businesses, we will monitor the compliance of the program by employees and reflect the results in KPI evaluation for employees with the aim of achieving a zero level of violations.



Ethical Management Declaration Ceremony
2018

Ethics and Legal Compliance-Related Reporting and Reinforcement of Self-Inspections

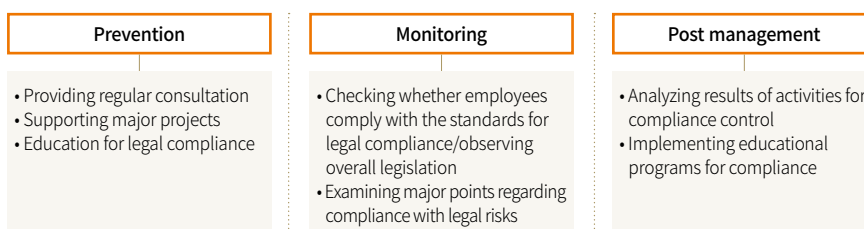
SK chemicals deals with tasks, ethics consultation and reporting work related to the Improper Solicitation and Graft Act. In 2017, the number of online report cases with regard to ethics and legal compliance was six, and proper answers and guidance were immediately provided. Among reported cases, sexual harassment at the company, abuse of authority inside and outside the organization and violation of compliance are grave concerns for punishment, and the Disciplinary Committee can make a decision for heavy punishment involving suspension of work or heavier measures. As a result of self-inspection in 2017, there were only two violation cases. SK chemicals will spread a sound corporate culture and fulfill its social responsibility through self-correction efforts of ethics management.

For a more systemic ethics management control, the company newly installed compliance-related teams both in the Green Chemicals Biz. and Life Science Biz. in January 2016. With these measures, the company has strengthened ethics management activities further and autonomously conducts self-correction inspections in terms of ethics management annually.

Systemization of Activities for Supporting Legal Compliance

The Board of Directors operates a legal compliance support management system linked with the Compliance Program and appoints the head of the Legal Affairs Department as the legal compliance support manager and fair trade compliance manager. Further, training and follow-up inspection for the Compliance Program are conducted to encourage employees to comply with laws and regulations autonomously. In addition, compliance standards are drafted and implemented as the highest-level rules governing compliance activities pursuant to the resolution by the Board of Directors. Compliance education and the results of checking whether or not compliance standards are met are reported to the Board of Directors once every year.

Process for Compliance Support Activities



Compliance and Risk Management

Sustainable Management through Risk Management

SK chemicals makes every effort to manage future environmental risks and swiftly deal with social changes. By changing management methods based on environmental regulations and social changes, the company will reinforce compliance and contribute to environmental protection.

Changes in Social Trends due to Changes in Environmental Regulations

In accordance with the "Act on Integrated Control of Environmental Pollution-generating Facilities" in 2017, an integrated environmental management system was implemented. The integrated environmental management system is a system in which the existing complicated regulations, which required licensing for each water and air discharge facility, are subject to integrated licensing in accordance with industry-specific grace periods (up to four years). With this system, administrative efficiency can be enhanced in licensing management, but it is necessary to secure the capability to manage environmental pollution facilities at a higher level to reduce pollutants and save resource and energy in overall plants.

Since January 1, 2018, the "Framework Act on Resource Circulation" has been implemented to establish the foundation for a sustainable resource circulation society. Any plant discharging more waste than a certain standard becomes the focus of the "resource circulation performance management system" and set a customized resource circulation target for each plant, and the circulation use and reduction performance is continuously evaluated. In addition, any company discharging waste in a plant should pay a "waste disposal charge" of KRW 10-30/kg. With such measures, the company should reduce waste in the entire process from production and distribution to consumption and waste and promote recycling more proactively.

Management Consulting and Regulatory Change Based on Social Change

SK chemicals conducts independent management consulting for headquarters and subsidiaries to swiftly respond to social change. Management consulting is conducted for overall management activities, including the current status of general management, current status of investments, management plan, CEO reporting materials, management performance and financial materials, and current status of operating internal management regulations. Management consulting will be conducted for each job sector such as HR, finance, legal affairs, R&D, production, sales, and IT.

With the goal of carrying out management consulting, SK chemicals has conducted self-diagnosis for sales distribution channels and processing from April to August 2017 and implemented self-inspections for five sectors, including cost management, in the second half of 2017. In 2018, we will carry out self-correction inspections for six sectors such as HR, purchase/BP, cost, sales/bonds, investment and specific RM (Risk Management).

Along with management consulting, the company is continuously developing an internal control system and regulations. Through such management consulting and reform in internal regulations, we will check the current status of future growth tasks and raise essential competitiveness in each business. The company also supports value creation through internal control and business risk assessment.

Reinforcement of Compliance through Fair Trade

SK chemicals aims to ensure fair trade to promote free and fair competition and conduct reliable trade. With these efforts, we will enhance our corporate image and fulfill our responsibility as a company rooted in ethics management by preventing any legal infringements.

Establishment and Distribution of the Fair Trade Manual

SK chemicals produces a fair trade compliance manual and distributes it for all employees so that they can better comply with domestic and overseas anti-corruption laws and regulations, including the Fair Trade Act, Subcontract Transactions Act, FCPA (Foreign Corrupt Practices Act) in the U.S., and Bribery Act in the U.K., and implement business based on the highest level of legal and ethical standards. We also appoint a fair trade compliance manager and encourage full compliance.

Education for Fair Trade

SK chemicals conducts fair trade education for our employees as a part of our efforts to promote their awareness of autonomous compliance each year. In 2017, the company conducted education programs on the U.S. regulations on anti-dumping and unfair joint actions in the Fair Trade Act. In addition, we provide all employees with education on issues regarding fair trade and information on the enactment and amendment of relevant laws and regulations.

Fair Trade Compliance Program

With the aim of promoting and maintaining fair and free competition, SK chemicals operates the “Fair Trade Compliance Program” and conducts regular inspection through the checklist by staff members at departments related to fair trade. In case of any issue with the high possibility of legal infringement, the internal monitoring system reviews the case in advance with the internal specialized department.

Plant Safety and Quality Management

Establishment of SHE (Safety and Health Management System)

SK chemicals has established the SHE (Safety, Health, Environment) management system by recognizing that SHE management is the most basic element based on human-oriented management principles. Through SHE as an emergency response system used by SK Group in preparation of any safety and environmental accidents, the company sets core performance indicators and focuses on sharing and company-wide response through response and reporting based on the manual. With these efforts, we strive to create safe, healthy and pleasant plants.

Occupational Accident Preventive Activities

SK chemicals' Andong Plant proactively implements the domestic process safety management (PSM) system to prevent any severe occupational accidents. In particular, the plant prevents any risk elements for dangerous tasks in advance by utilizing the safe work permit system. To prevent potential safety accidents during work, the Andong Plant improves the working environment by using a risk assessment system and identifies any near miss accidents and conducts safety inspections on a regular basis.

With such safety and health management, the Andong Plant acquired both KOSHA 18001 and OHSAS 18001 certificates simultaneously in 2016, which are domestic and overseas safety and health management systems.

Emergency Drills

With the aim of minimizing environmental impacts, harm to people, and property loss in case of an emergency, each plant strives to establish an emergency contact network and a response system such as an action flow chart. Employees also participate in mock drills on a regular basis deal with emergencies including fires, explosions, environmental accidents, or other natural disasters.

SHE Key Performance Index (KPI) Guidelines

Points are deducted when a safety/environmental accident occurs (based on the Ulsan Plant)

- 90 points if no safety/environmental accidents occur
- Deducted points x 100/number of team members + Material loss (10 points/KRW 10 million)

Extra points will be awarded for extraordinary efforts that have contributed to preventing safety & environmental accidents.



1 Toxic Material Leakage Drill

2 Fire Drill

3 Earthquake Evacuation Drill

4 Wounded Person Transfer Drill

Green Chemicals Biz. : Chemicals and Quality Management

In the Green Chemicals Biz., SK chemicals has operated the SHEQ (Safety Health Environment Quality) integrated information system and conducted systemic management from 2005 based on regulations for the management of hazardous chemicals. The company inspects the working environment twice a year for any plants handling hazardous chemicals, measures the level of exposure of each chemical and strives to ensure safe and healthy chemicals management.

Response to Legal Changes in Substance Management

The “Act on the Registration and Evaluation of Chemicals” and “Toxic Chemicals Control Act” have further reinforced chemicals management systems through continuous amendments since the initial implementation in 2015. In 2017, the amended version of the “Toxic Chemicals Control Act” was implemented to strengthen the standards for the sale of reagents for testing, inspection, and research and chemicals-related e-commerce. In 2018, the amended version of the “Act on the Registration and Evaluation of Chemicals,” which stipulates that information on the harmfulness of all chemicals which are imported and manufactured over one ton should be secured and registered with the national government, and the “Consumer Chemical Products and Biocides Safety Act” were proclaimed and are expected to be implemented in 2019.

Under these circumstances, SK chemicals operates departments in charge of chemicals for each type of chemical being handled (purchase, use, manufacturing, research and sale) and performs company-wide chemicals management activities to comply with regulations in each department of marketing, production and research and secure the safety of chemicals.

Implementation of Chemicals Impact Evaluation and Measures

With the aim of coping with legislations regarding hazardous chemicals and enhancing the safety in plants, SK chemicals has completed “off-site risk assessment,” which analyzes the level of impact on people and environment outside the plant caused by any chemical accident. The company also set the “risk management plan,” prepared and implemented accident prevention measures, off-site risk assessment and emergency response program, notified any relevant information to local residents and completed all tasks for five target processes. Based on these measures, SK chemicals commits itself to minimizing any damage from a chemical accident by establishing a self-preventive plan and preparing measures for giving notice to local residents near the plant.

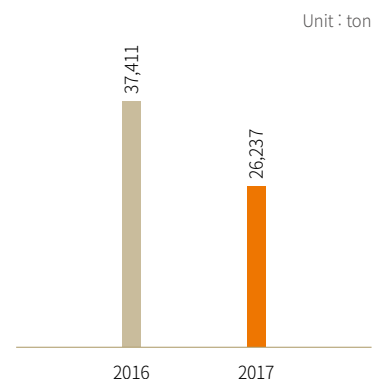
Establishment of MSDS (Material Safety Data Sheet) System

Since 2017, SK chemicals has operated the MSDS (Material Safety Data Sheet) draft and management system to more thoroughly provide customers with information on the safety of products. Through the system, the company strives to offer more accurate material safety information by utilizing a variety of material information DB at home and abroad. After the MSDS is prepared, the company conducts reviews through the department in charge of handling chemicals and manages it to be ultimately distributed to customers.

Safety and Health Management System Flow Chart



Amount of Hazardous Chemicals Handled



MSDS

A document which stipulates general information of chemicals, emergency measures, safety and health precautions for handling chemicals, health hazards, and physical risk

Plant Safety and Quality Management

Life Science Biz. : Medicine Quality Control

The pharmaceutical sector is a long-term investment industry in which it takes at least 10 years or more to finish the entire process from R&D to launch. SK chemicals provides safe and reliable medicines through responsible management activities at each stage from investment in research and clinical studies to the development and management of medicine.

Quality Management Regarding the Product Life Cycle

Since 2015, with membership in the PIC/S (Pharmaceutical Inspection Co-operation Scheme), the company has complied with the GMP (Good Manufacturing Practice) for medicine manufacturing and quality management. Accordingly, we have established a quality management system which allows for quality improvements based on risk analysis considering the product life cycle, laying the foundation to meet the GMP requirements.

R&D Stage : Technology Export and Marketing Approval

SK chemicals develops various products regarding pharmaceuticals and vaccines products through continuous investment in research. We also produce competitive products in the global market by exporting technology and acquiring marketing approval.

Pre-Clinical Stage : Minimization of Animal Tests

To minimize and alleviate distress in laboratory animal care for pre-clinical efficacy and toxicity testing of drug candidates, SK chemicals has established guidelines for research ethics in animal experiments and implemented training sessions on a regular basis based on regulations and laws. Also, the Institutional Animal Care and Use Committee (IACUC), consisting of two external and three internal members, was formed at SK chemicals. The committee members review protocols of animal experiments semi-annually to limit animal pain or distress. IACUC members at SK chemicals are required to submit the Semiannual Report related to animal experiments to the Ministry of Food and Drug Safety (MFDS) and the Animal and Plant Quarantine Agency (APQA).

Clinical Stage : Compliance with Laws and Regulations for Clinical studies and Enhancement of Value in Existing Products

SK chemicals complies with the laws and regulations at home and abroad, including the GCP (Good Clinical Practice) and IND (Investigational New Drug) standards, and develops safe products through responsible clinical studies. In order to raise the quality and safety of our pharmaceutical products, we work closely with domestic and overseas clinical trial institutions and CRO (Contract Research Organizations).

We proactively respect the rights of our stakeholders in connection with the pharmaceuticals, and pay close attention to what they have to say while closely managing any risk factors that our clinical study may entail at each phase in order to minimize any negative impact on the environment. We have raised the level of clinical trials through top-level clinical specialists, and we have monitored the safety issues of clinical trials through experience and regular training of the laws and regulations.

Production Stage : Quality Control and Assurance System

SK chemicals manages the quality of products by operating the process of QA (Quality Assurance) and QC (Quality Control) separately in each plant, including Andong (L House) and Cheongju (S House).

For all plants, we comprehensively operate the QMS (Quality Management System) and are working to unify medicine QMR (Quality Management Review). We will run the system effectively and enhance reliability required in the international guidelines by reviewing major management indicators and adopting a computerized system.

In particular, the Cheongju (S HOUSE) Plant, which produces chemical drugs, was remodeled in 2014 and obtained certification of GMP. Both solid dosage forms and patch-types have acquired the EU GMP, attesting to our excellent quality management ability that is in line with international standards. In addition, as general regulations were reviewed, the plant established policies on training, complaints, deviation, change, CAPA (Corrective Action & Prevention Action), returned goods, and recall.

Follow-Up Management Stage : Drug Safety Information Management and Disposal of Unused Drugs

After a new drug is launched, SK chemicals collects information on side effects and efficacy for 600-3,000 patients who were treated by the medicine for four to six years based on the Pharmaceutical Affairs Act and Regulation of Post Marketing Surveillance for New Drugs, as well as safety and effectiveness which can happen in the actual treatment environment. We also collect any adverse events by carrying out pharmacovigilance activities for commercial medicines and drugs. Based on such activities, we continuously collect and analyze information and strive to ensure the safe and beneficial use of drugs to fulfill a sense of responsibility for the safety of medicine.

Along with these efforts, SK chemicals entrusts the disposal work to a professional disposal company licensed by the government to minimize the environmental impact of the chemicals to follow strict rules for disposing and managing unused drugs. From the collection to the complete disposal of unused medicines, each person in charge checks the state at each phase, and government guidelines are applied to each disposal process.

| Pharmaceuticals Management System



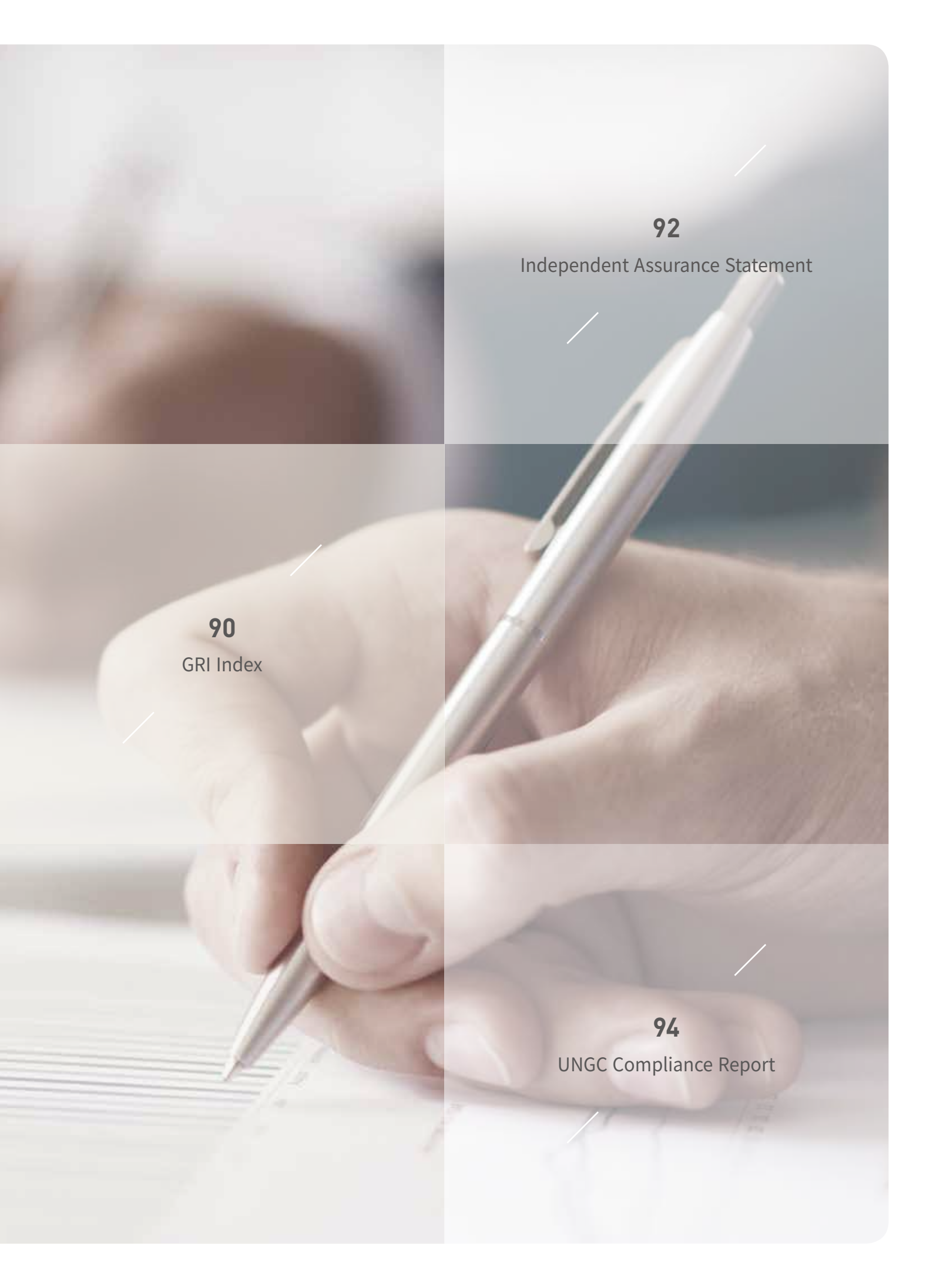
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UNGC Compliance Report

Accounting Data

Consolidated Balance Sheet

1st term as of December 31, 2017

(Unit : KRW)

Item	1 st term
Assets	
Current assets	662,574,651,356
Cash and cash equivalents	155,162,078,234
Account receivables and other bonds	204,493,252,994
Inventory	290,263,035,755
Other current assets	12,656,284,373
Non-current assets	1,249,840,296,687
Long-term financial assets	476,687,052
Deposits	4,415,164,163
Stocks invested in the joint venture	7,381,881,533
Property	1,098,042,431,284
Intangible assets	47,391,971,824
Investment in properties	61,586,325,401
Other non-current assets	673,726,473
Deferred tax assets	29,872,108,957
Total assets	1,912,414,948,043
Liabilities	
Current liabilities	660,898,997,378
Sales debt and other debts	240,236,630,563
Short-term borrowings	129,665,502,962
Long-term current borrowings	274,454,763,454
Current tax liabilities	315,627,925
Other current liabilities	15,595,688,261
Current provisions	630,784,213
Non-current liabilities	520,154,093,095
Bonds	255,145,890,869
Long-term borrowings	228,966,252,628
Defined benefit liabilities	13,371,005,913
Other non-current financial liabilities	18,809,163,529
Deferred tax liabilities	251,404,338
Allowance	3,610,375,818
Total liabilities	1,181,053,090,473
Capital	
Equity attributable to owners of the parent entity	696,582,079,332
Capital	65,192,610,000
Capital surplus	667,419,016,385
Accumulated other capital items	(25,503,653,539)
Accumulated other comprehensive income	(1,833,592,207)
Unappropriated accumulated deficit	(8,692,301,307)
Non-controlling interests	34,779,778,238
Total capital	731,361,857,570
Total liabilities and capital	1,912,414,948,043

Consolidated Statements of Comprehensive Income

1st term from January 1 to December 31, 2017

(Unit : KRW)

Account	1 st term
Sales revenue	87,836,375,138
Cost of sales	75,145,447,419
Gross profit	12,690,927,719
SG&A	21,872,183,928
Operating loss	(9,181,256,209)
Other profits	198,007,160
Other costs	1,244,926,239
Financial profits	2,214,365,229
Financial costs	4,455,052,646
Loss on equity method for stocks invested in the joint controlled entity	122,782,300
Earnings before corporate taxes (loss)	(12,591,645,005)
Corporate tax revenue	(2,707,081,047)
Current net loss	(9,884,563,958)
Other comprehensive income	
Items re-categorized as net profits and losses	
Changes in unrealized gain and loss on valuation of equity method investments	(7,398,632)
Loss on overseas operations translation	(77,754,423)
Items not reclassified subsequently to net profit or loss	
Re-measured elements for defined benefit debts	(69,787,038)
Sum of other comprehensive income	(154,940,093)
Current net comprehensive loss	(10,039,504,051)
Attribution of consolidated current net loss	
Equity attributable to owners of the parent entity	(8,535,887,391)
Non-controlling interests	(1,348,676,567)
Attribution of consolidated comprehensive net loss	
Equity attributable to owners of the parent entity	(8,777,454,362)
Non-controlling interests	(1,262,049,689)
Basic and diluted loss per share	
Loss per share for basic common share (unit : KRW)	(655)
Loss per share for basic preferred share (unit : KRW)	(655)

* SK chemicals is a newly established corporation, which was launched by splitting Green Chemicals Biz. and Life Science Biz. being operated by SK discovery, on December 1, 2017 in accordance with Article 530-2 or Article 530-11 of the Commercial Act. Accordingly, the performance mentioned above is equivalent to one month of December 2017.

ESG Data

100 Universal Standards

102-2, 102-7 Scale of the Organization_Manufactured Products

Business	Product	Unit	2015	2016	2017
Green Chemicals Biz.	Biodiesel	ton	125,909	155,996	149,918
	Vaccines	Dose	4,813,692	5,321,420	5,944,810
Life Science Biz.	Tablets	Tablet	507,564,053	517,746,471	582,524,653
	Patches	Patch	39,726,554	32,951,523	45,121,288

102-2, 102-7, 201-1 Scale of the Organization_Sales by Business Line

Business	Product	Unit	2015	2016	2017
Green Chemicals Biz.	Bio Energy		2,097	2,881	2,817
	E&A Business/EP Business		522	556	703
	Composite materials	KRW 100 million	680	628	622
	Power UT		712	662	700
	Others		25	23	20
Life Science Biz.	Pharmaceuticals		1,797	1,804	2,003
	Vaccines	KRW 100 million	1,196	1,477	1,195
	Others (except plasma)		200	38	11
Others		KRW 100 million	3	3	3
Total		KRW 100 million	10,399	11,466	11,914

102-8, 405-1 Total Number of Employees by Genders, Employment Type

Category	Scope	Unit	2015	2016	2017
No. of employees	Male	Person	1,400	1,423	1,329
	Female		364	383	366
No. of employees by employment type	Full-time	Person	1,663	1,709	1,633
	Contract-based		101	97	62
No. of employees by gender	Male	Person	37	37	30
	Female		2	2	1

102-8, 405-1 Total Number of Employees by Plants

Category	Scope	Unit	2015	2016	2017
Male	Headquarters (Eco Lab)		766	756	729
	Ulsan Plant	Person	353	358	366
	Andong Plant (L HOUSE)		120	125	132
	Cheongju Plant (S HOUSE)		98	100	102
Female	Headquarters (Eco Lab)		230	243	250
	Ulsan Plant	Person	20	23	26
	Andong Plant (L HOUSE)		31	31	33
	Cheongju Plant (S HOUSE)		59	58	57

102-8, 405-1 Total Number of Employees by Plants

Category	Scope	Unit	2015	2016	2017
Full-time employees	Headquarters (Eco Lab)	Person	966	971	954
	Ulsan Plant		372	378	387
	Andong Plant (L HOUSE)		102	125	143
	Cheongju Plant (S HOUSE)		141	146	149
Contract-basted employees	Headquarters (Eco Lab)	Person	30	28	25
	Ulsan Plant		1	3	5
	Andong Plant (L HOUSE)		49	31	22
	Cheongju Plant (S HOUSE)		16	12	10

102-9 Total Number of Business Partners Managed

Category	Scope	Unit	2015	2016	2017
No. of business partners that are registered and managed	Company-wide	Business partner	957	968	1,000
Total procurements from business partners		KRW 100 million	6,265	6,934	7,814

102-12, 102-13 Memberships of Associations

Korea Economic Research Institute	Korea Employers Federation	Seongnam Chamber of Commerce
Korean Fair Competition Federation	Korea Industrial Technology Association	Korean Association of Occupational Health Nurses
Seongnam Branch of Korea Industrial Safety Association		

102-17, 103-2 No. of Cases Reported, Found and Addressed by Official Ethics Management Reporting Channel

Category	Unit	2015	2016	2017
No. of cases reported for the reporting period	Case	2	3	6
No. of cases addressed for the reporting period	Case	2	3	6
Ratio of grievances addressed	%	100	100	100

* Ethics management reporting is one of the methods to address the grievances of members (employees), and most grievances are currently being reported through ethics management reporting.

102-18, 33 Operation of the Board of Directors

Category	Unit	2015	2016	2017
No. of regular meetings	Times	10	10	12
Issues voted down	Case	22	13	42
Issues passed	Case	22	13	42

102-18, 33 Engagement of the Board of Directors

Category	Unit	2015 (2015.01 ~2015.12)	2016 (2016.01 ~2016.12)	2017 (2017.01 ~2017.12)
Attendance rate for executive directors	%	97	90	91
Attendance rate for independent directors	%	95.0	83.0	96.0

ESG Data

200 Economic Performance

201-3 Coverage of the Organization's Defined Benefit Plan Obligations

Category	Scope	Unit	2015	2016	2017
Size of retirement pension plan (Defined benefit, DB)		KRW 100 million	799	873	835
No. of employees covered by the retirement pension plan (Defined benefit, DB)	Company-wide	Person	1,642	1,513	1,534

201-4 Financial Assistance Received from the Government

Category	Scope	Unit	2015	2016	2017
Government subsidiary			7	0	0
Tax exemption	Company-wide	KRW 100 million	46	38	78

203-2 Win-Win Growth and Shared Growth Cooperation with Suppliers

Category	Unit	2015	2016	2017
Amount of Shared Growth Fund for suppliers	KRW 100 million	75	75	75
Total amount of loans for suppliers	KRW 100 million	43	42	46
No. of suppliers with loans	Number	9	9	10

206-1 Anti-Competitive Behavior, Antitrust, and Monopoly Practices, and Non-Compliance with Laws and Regulations

Category	Unit	2015	2016	2017
No. of cases of anti-competitive behavior, antitrust, and monopoly practices, and non-compliance with laws and regulations	Case	1	0	0
No. of non-monetary sanctions of anti-competitive behavior, antitrust, and monopoly practices, and non-compliance with laws and regulations	Case	1	0	0
No. of lawsuits of anti-competitive behavior, antitrust, and monopoly practices, and non-compliance with laws and regulations (lost lawsuits determined)	Case	0	0	0

300 Environmental Performance

301-1, 2, 3 Materials Used by Weight or Volume

Category	Scope	Unit	2015	2016	2017
Volume of raw and subsidiary materials used	Ulsan Plant	ton	406,193	441,471	494,415
	Andong Plant (L HOUSE)		241	248	265
	Cheongju Plant (S HOUSE)		377	421	1,986

302-1 Power Generation Using Renewable Energy

Category	Scope	Unit	2015	2016	2017
Solar heat	Headquarters (Eco Lab)	MWh	7.8	5.5	5.5
Geothermal heat		Gcal	34.5	9.5	35.6

302-1 Energy Consumption within Company

Category	Scope	Unit	2015	2016	2017
Coals	Company-wide	ton	188,725	159,748	146,396
Waste wood		ton	66,644	52,766	60,386
Gasoline		kl	33	22	10
Diesel		kl	24	28	60
Biodiesel and synthesis gas		ton	2,834	2,507	3,060
LNG		1000m ³	17,285	12,789	10,253
LPG		ton	46	26	88
Biogas		ton	10,152	11,173	12,282
Electricity		MW	153,379	149,001	8,471
Steam		TJ	17	17	19
Propane		ton	-	4,819	7,617
Process waste heat		TJ	-	143	-
Limestone		ton	2,782	2,591	2,660
SF6		kg	900	-	-

302-2 Energy Consumption Outside Company

Category	Scope	Unit	2015	2016	2017
Electricity	Ulsan Plant	TJ	1,243	1,309	1,442
Heat		TJ	3,824	3,403	4,002

303-1, 2 Total Water Withdrawal and Consumption

Item	Scope	Unit	2015	2016	2017
Water consumption	Headquarters (Eco Lab)	ton	68,812	60,230	66,990
	Ulsan Plant	ton	6,068,847	7,782,366	8,017,246
	Andong Plant (L HOUSE)	ton	119,839	103,429	102,923
	Cheongju Plant (S HOUSE)	ton	49,467	52,181	26,388

303-3 Total Water Withdrawal and Consumption from Underground, Recycled, and Reused

Item	Scope	Unit	2015	2016	2017
Total volume of water drawn from underground, recycled, and used sources	Headquarters (Eco Lab)	ton	3,060	2,940	2,576
	Ulsan Plant	ton	3,558,774	3,452,159	3,368,667

ESG Data

300 Environmental Performance

305-1, 2 GHG Emissions

Item	Scope	Unit	2015	2016	2017
Scope1 emissions	Company-wide	tCO ₂ eq	513,216	415,746	397,749
Scope2 emissions			72,187	70,105	81,389

305-4 GHG emission Intensity

Item	Scope	Unit	2015	2016	2017
Scope1 intensity ratio	Company-wide	tCO ₂ eq/	49.4	36.3	33.3
Scope2 intensity ratio		KRW 100 million	6.9	6.1	6.8

302-4, 5, 305-5 Progress with Green Triple 40! and Plan_Reducing CO₂ emissions by 40%

Item	Unit	2015	2016	2017
BAU emissions	tCO ₂ eq	689,000	692,000	695,000
Target reduction	%	36.7	39.9	39.9
Actual emissions	tCO ₂ eq	585,402	485,851	479,138
Actual reduction	%	15.0	29.8	31.2
Strategy	-	Increased volume of biomass used, in liquid, gas, and solid forms	Adopted external process waste heat and steam	Adopted external process waste heat and steam

201-2 Progress with Green Triple 40! and Plan_Ratio of Eco-friendly Products Sales

Category	Unit	2015	2016	2017	2020 (Target)
Target of eco-friendly sales	%	25.0	28.0	31.0	40.0
Actual eco-friendly sales		35.7	41.9	40.0	

305-6, 7 Intensity of Air Pollutants Discharged

Item	Scope	Unit	2015	2016	2017
Dust	Ulsan Plant	mg/Sm ³	4	5	3
	Andong Plant (L HOUSE)		-	-	-
	Cheongju Plant (S HOUSE)		4	4	4
Sulfur oxide (SO _x)	Ulsan Plant	ppm	28	30	28
	Andong Plant (L HOUSE)		-	-	-
	Cheongju Plant (S HOUSE)		0	0	0
Nitrogen oxide (NO _x)	Ulsan Plant	ppm	57	67	37
	Andong Plant (L HOUSE)		-	-	-
	Cheongju Plant (S HOUSE)		92	81	80
Volatile organic compound (VOC)	Ulsan Plant	ppm	0	0	1
	Andong Plant (L HOUSE)		-	-	-
	Cheongju Plant (S HOUSE)		0	15	18

306-1, 2 Total Water Discharge

Item	Scope	Unit	2015	2016	2017
Water discharge	Headquarters (Eco Lab)	ton	28,579	22,144	27,029
	Ulsan Plant	ton	640,040	697,615	809,642
	Andong Plant (L HOUSE)	ton	75,152	70,446	65,193
	Cheongju Plant (S HOUSE)	ton	31,738	25,969	19,577

306-1, 2 Intensity of Water Pollutants Discharge

Item	Scope	Unit	2015	2016	2017
BOD	Ulsan Plant		3	5	3
	Andong Plant (L HOUSE)		126	147	83
	Cheongju Plant (S HOUSE)		1	2	4
COD	Ulsan Plant		12	20	14
	Andong Plant (L HOUSE)	ppm	54	51	45
	Cheongju Plant (S HOUSE)		13	16	19
SS	Ulsan Plant		2	2	2
	Andong Plant (L HOUSE)		41	38	35
	Cheongju Plant (S HOUSE)		5	10	11

306-2, 4 Total Waste by Type

Category	Scope	Unit	2015	2016	2017
Amount of generated regular waste	Ulsan Plant		27,438	26,732	27,309
	Andong Plant (L HOUSE)		79	72	100
	Cheongju Plant (S HOUSE)		162	146	187
Amount of generated designated waste	Ulsan Plant	ton	4,759	6,408	6,805
	Andong Plant (L HOUSE)		53	66	59
	Cheongju Plant (S HOUSE)		1,733	1,767	1,849

306-2, 4 Total Waste by Disposal Method

Category	Scope	Unit	2015	2016	2017
Incineration	Ulsan Plant		173	967	321
	Andong Plant (L HOUSE)		107	113	126
	Cheongju Plant (S HOUSE)		1,861	1,862	1,969
Reclamation	Ulsan Plant		8,621	7,168	7,449
	Andong Plant (L HOUSE)		0	0	0
	Cheongju Plant (S HOUSE)		18	14	27
Recycling	Ulsan Plant		18,644	23,912	26,327
	Andong Plant (L HOUSE)	ton	25	25	33
	Cheongju Plant (S HOUSE)		79	81	62
Marine emissions	Ulsan Plant		0	0	0
	Andong Plant (L HOUSE)		0	0	0
	Cheongju Plant (S HOUSE)		0	0	0
Recycling ratio	Ulsan Plant		68	72	77
	Andong Plant (L HOUSE)		19	22	20
	Cheongju Plant (S HOUSE)		4	4	4

306-4 Transfer of Hazardous Waste

Category	Scope	Unit	2015	2016	2017
Amount of Hazardous Chemicals Usage	Ulsan Plant	ton	33,355	37,411	26,237

302-2 Total Environmental Expenditures and Investments

Category	Scope	Unit	2015	2016	2017
Environmental investment and target	Headquarters (Eco Lab)		0.0	0.0	0.0
	Ulsan Plant		17.0	14.1	27.4
	Andong Plant (L HOUSE)	KRW 100 million	1.2	1.5	0.0
	Cheongju Plant (S HOUSE)		0.2	5.5	0.9

ESG Data

400 Social Performance

401-1 Total Number and Rates of New Employees and Employee Turnover_Number of Retirees and Turnover Rate

Category	Scope	Unit	2015	2016	2017
No. of new employees hired	Male	Person	129	122	124
	Female		50	58	59
No. of retirees	-	Person	127	171	183
Turnover rate	-	%	7.6	10.2	8.6

401-3 Number of Maternity Leave Use and Return to Work after Maternity Leave

Category	Scope	Unit	2015	2016	2017
Male	No. of employees who took maternity leave	Person	1	0	0
	No. of employees who returned after maternity leave		0	0	0
Female	No. of employees who took maternity leave	Person	32	33	28
	No. of employees who returned after maternity leave		15	25	23

402-1, 403-1, 4 Current Status of Labor Union and Labor-Management Consultative Body

Category	Scope	Unit	2015	2016	2017
No. of people with membership of labor union and labor-management consultative body		Person	440	474	447
Ratio of membership of labor union and labor-management consultative body	Company-wide	%	25	26	26
No. of meetings of labor union and labor-management consultative body		Times	4	4	4

403-2 Type of Injury, Occupational Diseases, Lost Days, and Absenteeism, Total Number of Work-related Fatalities

Category	Scope	Unit	2015	2016	2017
No. of accidents		Case	1	3	4
Death toll	Company-wide		0	0	0
No. of lost days			Day	41	114

* An increase in the days of loss from 2016 is attributable to change in the definition of an accident from treatment of three or more days to treatment of one or more days.

403-3 Current Status of Medical Checkup Support and Implementation

Category	Scope	Unit	2016		2017	
			Eligible employees	Employee health screening	Eligible employees	Employee health screening
Comprehensive medical checkup	Headquarters (Eco Lab)	Person	830	827	503	492
	Ulsan Plant		203	203	382	379
	Andong Plant (L HOUSE)		12	12	94	94
	Cheongju Plant (S HOUSE)		140	140	49	49
General medical checkup	Headquarters (Eco Lab)	Person	993	992	607	603
	Ulsan Plant		381	381	384	384
	Andong Plant (L HOUSE)		42	42	57	57
	Cheongju Plant (S HOUSE)		140	140	152	152
Special medical checkup	Headquarters (Eco Lab)	Person	154	154	159	159
	Ulsan Plant		271	271	268	268
	Andong Plant (L HOUSE)		94	94	98	98
	Cheongju Plant (S HOUSE)		106	106	133	133

404-1, 2 Training Hours and Investments for Employees

Category	Scope	Unit	2015	2016	2017
Annual average training hours per employee	Company-wide	Hour	297	207	271
Total amount of investments in employee training		KRW 100 million	30	29	26

404-3 Ratio of Employees Receiving Regular Performance Review

Category	Scope	Unit	2015	2016	2017
No. of employees eligible for regular performance review	Company-wide	Person	1,148	1,031	1,222
No. of employees who received regular performance review			1,108	995	1,105
Ratio of employees who received performance review		%	96.5	96.5	90.4

405-1 Composition of Employees_Diversity of Employees

Category	Scope	Unit	2015	2016	2017
No. of disabled employee hired	Company-wide	Person	27	25	23
No. of patriots and veterans hired			37	36	36
No. of foreigners hired			7	5	4

413-1 Social Contribution Investment and Support

Category	Content	Unit	2015	2016	2017
Amount of investment in social contribution	-	KRW 100 million	17	16	15
Volunteer activity participation	No. of employee volunteers	Person	1,671	1,693	1,629
	No. of volunteering hours per employee	Hour	8	7	7

413-1 Theme-Based Social Contribution Performance

Category	Unit	2015	2016	2017 (planned)	2017 (performance)
No. of employees for environmental training	Person	1,660	930	1,800	1,800
Hope Maker Membership	%	92	93	95	93
No. of audiences for Silver Theater	Person	200,000	250,000	250,000	230,000

418-1 Protection and Loss of Customer Personal Information

Category	Unit	2015	2016	2017
No. of customer data (including personal information) stolen	Case	0	0	0
No. of customer data (including personal information) lost		0	0	0

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Independent Assurance Statement

Preface

KFQ was engaged by SK Chemicals to provide limited assurance on the 'SK Chemicals Sustainability Report 2017' (further 'the Report'). Our responsibility is to perform a limited assurance engagement and to express a conclusion based on the work performed. We conducted its assurance based on completeness of the data and information provided by SK Chemicals. SK Chemicals is responsible for all contents within the Report including the reporting principles and standards.

Independence

KFQ is not involved in the preparation of any part of the Report, other than providing an assurance opinion, and there has been no interest between SK Chemicals and us. We have no biased opinion on stakeholders of SK Chemicals.

Assurance Standards

KFQ has designed and implemented assurance according to the following standards.

- AA1000 Assurance Standard (2008)
- AA1000 Accountability Principles Standard (2008)
- GRI Standards

Assurance Scope

KFQ identified the followings as its scope:

- Sustainability management activities and achievements for SK Chemicals headquarters and all domestic sites described in the Report
- Compliance with the guidelines according to GRI Standards Core Option
- GRI Standards compliance assessment regarding contents of the Report and assurance principles of reporting quality
- Application of Type 1 assurance approach according to AA 1000 APS 2008 and AA 1000 AS 2008 to assess compliance with inclusiveness, materiality and responsiveness principles and reliability of sustainability performance information. The term 'Moderate Assurance' used in AA 1000 AS is designed to be consistent with 'Limited Assurance' as articulated in ISAE 3000.

Assurance Procedures

KFQ designed procedures to have reasonable assurance of the Report's critical errors or inappropriate information. We verified the reliability of the contents, processes and systems of data generation and report preparation.

• Document Review

We reviewed the reliability of non-financial data in respect of the 'Sustainability' by cross-checking the Report with GRI Standards, quantitative data of SK Chemicals, and internet & media research information. We also confirmed that the financial information has been appropriately extracted from the internal documents and the financial statements of the business report of the following system (<http://dart.fss.or.kr>).

• On-site Verification

We visited SK Chemicals headquarter and conducted on-site verification to confirm reliability of the sustainability activities and performance data contained in the Report and to evaluate the effectiveness of the reporting process. We performed verification in the accuracy topic of the aggregated data from SK Chemicals. These procedures included the following:

- Materiality assessment process, stakeholders inclusiveness, key issues, internal response procedures, and etc.
- Assessment of data analysis and descriptions and sustainable management performance in the Report
- Consistency between the financial data contained in the Report and the audited financial statements 2017
- Interviews with relevant staff responsible for providing information in the Report

• Resolution of Findings

We confirmed that some errors, inappropriate information, and ambiguous expressions found during on-site visit were properly reflected in the final Report. We have further verified that the internal documents* provided by the accounting department are consistent with the financial information in the Report.

* SK Chemicals became a new corporation on December 1, 2017 through a personnel division. However, SK Chemicals utilized SK Discovery's financial information through November 2017 in terms of the previous report's continuity.

• Limitations

The Report has been prepared solely for SK Chemicals in accordance with the terms of our engagement. We do not accept or assume responsibility to anyone other than SK Chemicals for our conclusions that we have reached in the statement. Completeness and responsiveness of sustainability performance information presented in the Report have inherent limitation due to their nature and the methodology used for determining, calculating and estimating such data.

Opinion

Based on the verification activity stated herein, KFQ confirmed that the Report meets the GRI Standards 'Core Option'. According to the principles of AA 1000 APS 2008 and AA 1000 AS 2008, inclusiveness, materiality and responsiveness, sustainability performance information were assessed and we could secure reasonable grounds to provide Type 1 level of assurance with the following confirmation:

1. (Stakeholders Inclusiveness) SK Chemicals divides the stakeholder value into four types according to the SV Creation Model related to sustainability management issues and establishes communication and response strategies for each type of stakeholder and reflects them in sustainable management activities.
2. (Sustainability Context) In terms of sustainability, SK Chemicals developed the SV Creation Model for social value measurement and measurement methodology for quantification. We have confirmed that SK Chemicals is striving to increase the value of all members of society related to its core values. This means that the result of management activities of SK Chemicals is not only the traditional way of measuring economic value, but also emphasizing social value creation that occurs in the course of management activities.
3. (Materiality) SK Chemicals established issue pools and reviewed by internal guidelines and external assessment criteria (GRI Standards guideline, media coverage, benchmark, and issue analysis) in compliance with the materiality assessment process. As a result, SK Chemicals appropriately reflected that seven key topics derived from the process along with key performance in 2017.
4. (Completeness) SK Chemicals applied reporting scope, boundary and temporal criteria. We confirm that the Report is suitable for stakeholders to assess sustainability performance.

Recommendation for Improvement

In order to reflect the SV Creation Model and its measurement results in future sustainability management activities of SK Chemicals, it is important to enhance the measurement methodology, to maintain the consistency of measurement monitoring and data, and to consolidate internal management. We expect the report to be published in the future to report on the analysis of the impact of measurement of core value on business activities and members of society.

July 2018
Seoul, Korea



CEO Nam Dae Hyun
Korean Foundation for Quality (KFQ)



AA1000
Licensed Assurance Provider
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UNGC Compliance Report

UNGC Compliance Report(Communication on Progress)

Since 2011, SK chemicals has upheld the ten principles on human rights, labor, environment, and anti-corruption of UNGC. SK chemicals' voluntary efforts and activities that follow the ten principles in four major sectors are reported as follows:

Major themes	Principle	Report
Human Rights	1. Businesses should support and respect the protection of internationally proclaimed human rights. 2. Make sure that they are not complicit in human rights abuses.	Compliance
Labor	3. Uphold the freedom of association and the effective recognition of the right to collective bargaining. 4. Eliminate all forms of forced and compulsory labor. 5. Abolish child labor effectively. 6. Eliminate discrimination in respect of employment and occupation.	42-45
Environment	7. Support a precautionary approach to environmental challenges. 8. Undertake initiatives to promote greater environmental responsibility. 9. Encourage the development and diffusion of environmentally friendly technologies.	54-57
Anti-Corruption	10. Work against corruption in all its forms, including extortion and bribery.	70-73

About this Report

This 7th sustainability report published by SK chemicals addresses seven core aspects of Sustainability Management by examining the list of issues identified, based on analysis of internal management conditions and external business conditions and input from stakeholders. The report explains the rationale behind the selection of core aspects, risks, and opportunities associated with major issues, key policies, activities, and achievements. More details are available in the relevant sections of the report.

Reporting Period & Cycle

The reporting period is from January 1 to December 31, 2017, and data for 2015 and 2016 were also provided in some cases for time-series comparison. As SK chemicals is a newly established corporation found through the division of Green Chemicals Biz. and Life Science Biz. among businesses operated by SK discovery on December 1, 2017, part of accounting report cases is based on figures equivalent to one month for December 2017.

Reporting Scope

The scope of the report includes SK chemicals' domestic operations including head office, research institutes, and plants in Ulsan, Andong (L HOUSE), and Cheongju (S HOUSE). It is indicated when the reporting scope is different.

Reporting Principles

The report has been prepared according to the GRI Guidelines-In accordance with "Core" option, and a materiality assessment was conducted to determine the content to be included in the report. Financial data in this report were prepared in accordance with K-IRFS, and issues discussed and included in the context of the 10 principles of the UN Global Compact can be viewed on page 94.

Verification of the Report

The report has been verified by the Korean Foundation for Quality, a third-party assurance provider, in order to enhance accuracy of the content and data included in the report and to ensure that the content is presented in a balanced manner. Details including verification standards and scope and evaluator's opinions are available in the Independent Assurance Statement on pages 92-93 of this report.

Inquiries of the Report

Sustainability Report and Environmental Report

SK Chemicals website : www.skchemicals.com

Inquiries on sustainability management : 02-2008-2040



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