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Leading & Leaping

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With its pioneering spirit, dedication, and integrity, Hanwha Chemical has set many milestones as a leader in the Korean chemical industry through market-leading general-purpose plastics and a range of inorganic chemical products.

Based on the market leadership in Korea, Hanwha Chemical is emerging as a leader in the global chemical industry by securing unrivaled creativity and competitiveness, leading paradigm shifts, and fulfilling its social responsibilities.

Leaping



Leading

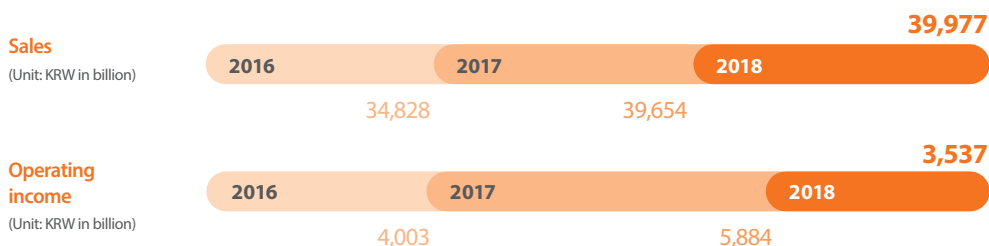
Company Overview

Since its founding in 1965, Hanwha Chemical has led the Korean petrochemical industry through market-leading general-purpose plastics and a variety of inorganic chemical products. As the first producer of PVC goods in Korea, Hanwha Chemical succeeded in producing a full array of primary petrochemical products, including LDPE (Low Density Polyethylene), LLDPE (Linear Low Density Polyethylene), and CA (caustic soda/chlorine). Based on its leadership in the petrochemical market, Hanwha Chemical is now achieving prominence in the polysilicon and Toluene Diisocyanate (TDI) fields, leaping forward as a leader in the chemical industry with its unrivaled creativity and competitiveness.

Company Information

Company Name	Hanwha Chemical Corporation
Date Founded	August 1965
No. of Employees	2,408 (As of December 2018)
CEO	Chang-Bum Kim
Major Businesses	PO, PVC, CA, TDI, and Polysilicon
Head Office	Hanwha Building, 86 Cheonggyecheon-ro, Jung-gu, Seoul, Korea

Key Economic Performance



Products at a Glance

Hanwha Chemical offer top-of-the-line products through R&D activities and market analysis.

PO

- LDPE
- EVA
- LLDPE

- HDPE
- W&C Compounds

PVC

- PVC Resin
- Copolymer
- Terpolymer
- Paste Resin
- Plasticizers
- OA
- PA/MA
- CPVC
- ECO-DEHCH

CA

- Caustic Soda (NaOH)
- Chlorine(Cl₂)
- EDC
- VCM
- ECH
- Hydrochloric Acid(HCl)
- HYPO

TDI

- TDIs
- TDI Derivatives
- TDA

Polysilicon

- Polysilicon

Statement of Continued Support

To become a leader in the chemical industry with creativity and competitiveness, Hanwha Chemical devises strategies for sustainability management that focus on value creation and social contribution with its new vision statement, "Be Creative and Competitive toward a Chemical Leader."

Hanwha Chemical became a member of the United Nations Global Compact in January 2012 for the purpose of growing together with its stakeholders including customers, shareholders, partner companies, employees, and local communities. Hanwha Chemical honors and practice the UNGC's ten principles of human rights, labor standards, the environment, and anticorruption.

This Communication On Progress includes data for the period from January 1 to December 31, 2018, related to the company's activities and performance in compliance with the ten principles of UNGC. With all of these accomplishments, however, Hanwha Chemical is not resting. Through active engagement and communication, the company will make every efforts to create sustainable values for all stakeholder groups. Thank you.

Chang-Bum Kim

President & CEO
Hanwha Chemical



UN Global Compact (UNGC)

Hanwha Chemical became a member of the United Nations Global Compact in January 2012. Hanwha Chemical honors and practice the UNGC's ten principles of human rights, labor standards, the environment, and anti-corruption as a responsible corporate citizen.



The UN Global Compact's Ten Principles

1. Human Rights

Principle 1 Businesses should support and respect the protection of internationally proclaimed human rights

Principle 2 make sure that they are not complicit in human rights abuses.

2. Labour Standards

Principle 3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

Principle 4 the elimination of all forms of forced and compulsory labour

Principle 5 the effective abolition of child labour

Principle 6 the elimination of discrimination in respect of employment and occupation.

3. Environment

Principle 7 Businesses should support a precautionary approach to environmental challenges;

Principle 8 undertake initiatives to promote greater environmental responsibility

Principle 9 encourage the development and diffusion of environmentally friendly technologies.

4. Anti-Corruption

Principle 10 Businesses should work against corruption in all its forms, including extortion and bribery.

Sustainability Management System



Declaration for Sustainable Growth

As a forward-looking, socially responsible company, Hanwha Chemical requires all employees to observe six key principles in their daily operations. These principles reflect the Company's business objectives and management philosophy:

- We conduct all business to ensure social and environmental sustainability and benefit;
- We respect regional characteristics and contribute to local development;
- We address the wishes of stakeholders and improve in areas where they raise concern;
- We meet our duty to law and ethical standards sincerely and fairly;
- We respect the importance of environmental management and comply with environmental, safety, and health guidelines;
- We share with communities and contribute through social activities with pride and responsibility.

Key Directions of Sustainability Management

Hanwha Chemical conducts sustainability management with a view toward economic, social, and environmental goals, while also reflecting the diversity of opinions from stakeholders.

Classification	Directions	Organization
Environmental Management	<ul style="list-style-type: none"> • Diversify the business portfolio through eco-friendly and future-oriented approaches • Continuously improve the stability and eco-friendliness of products • Foster competitiveness in renewable energy technologies • Provide environmental, safety, and health management systems 	<ul style="list-style-type: none"> • R&D Center • Environment Safety Team
Talent Management	<ul style="list-style-type: none"> • Implement fair, systematic HR development • Adopt systems to encourage work-life balance • Empower female employees 	<ul style="list-style-type: none"> • HR Planning Team • Recruiting Strategy Team • Employee & Labor Relations Team
Volunteer Management	<ul style="list-style-type: none"> • Set clear objectives for social outreach activities • Conduct social contribution programs to engage local communities • Promote employees' voluntary and active participation • Continue in social contribution activities customized for beneficiaries 	<ul style="list-style-type: none"> • General Affairs Team
Partnership Management	<ul style="list-style-type: none"> • Establish partnership based on trust • Grow the Company's business with customers • Enhance the competitiveness of partner companies 	<ul style="list-style-type: none"> • Partnership Development Team
Integrity Management	<ul style="list-style-type: none"> • Comply with laws and market regulations • Conduct periodical education programs and appoint fair-trade compliance officers • Develop ethical guidelines and whistle-blowing system 	<ul style="list-style-type: none"> • CR Planning Team • Legal Affairs Team

Stakeholder Communication

Hanwha Chemical develops close cooperative relationships with stakeholders, including customers, shareholders, suppliers, non-profit organizations and government agencies, and regularly provides them with relevant information through its sustainability reports, website and social media. The Company provides the communication channels listed below in order to reflect the opinions of stakeholders on sustainable development.

Key Communication Channels



Shareholders and Investors

- General shareholders' meetings
- Annual reports, disclosures
- IR meetings
- IR presentations

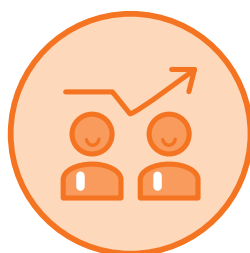
Hanwha Chemical annually convenes a general meeting of shareholders and investors to inform them of its current business status and financial performance. The Company provides time for shareholders to present their opinions on key agendas. Through periodic IR sessions and analysis, as well as telephone consultations and data updates, it discloses key management performance data.



Employees

- Square channel
- Employee meetings
- Labor-management Council

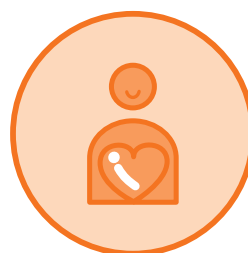
Hanwha Chemical encourages strong internal communication, collecting creative ideas from employees through Square, its own internal communication channel. The Company also maintains careful, cooperative labor-management relations through its labor-management council and employee meetings.



Partner and Customer Companies

- Suppliers' CEO meetings
- Shared Growth activities
- Seminars on energy

Chaired by the CEO, the Company conducts informal meetings with the CEOs of partner companies to address their problems and seek mutually beneficial solutions. Through cooperation with Korea Energy Agency, Hanwha Chemical assists partner companies in their competitiveness enhancement in the energy industry, along with supports for facility investment.



Local Communities and Environmental Organizations

- Volunteer activities
- Environmental preservation
- Safety Council
- Photovoltaic Business Startup School

Hanwha Chemical provides a range of socio-cultural assistance for socially marginalized groups. Working with local communities, the Company conducts periodic environmental preservation activities, thus taking the lead in maintaining a clean local environment. It also operates Photovoltaic Business Startup School to boost the solar power generation industry.

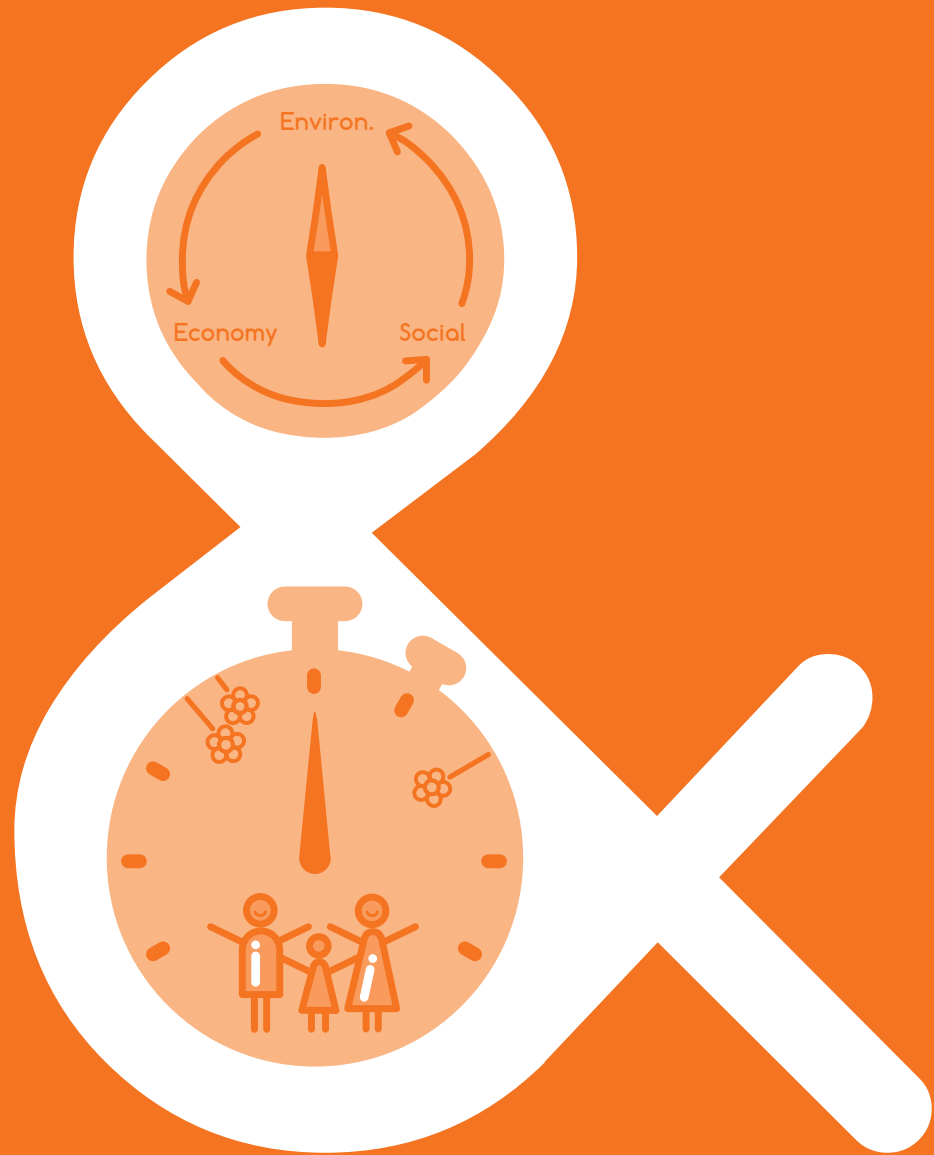


Government and NGO's

- Partnership Committee
- Fair trade agreement
- Mutually beneficial relationship index

Hanwha Chemical operates Partnership Committee to ensure fair trade and mutually beneficial solutions, and Ethical Management Committee to secure its compliance with laws and transparent management. Hanwha Chemical proactively responds to key industry issues through meetings and voluntary agreements with government and non-governmental organizations. The Company also actively fulfills its commitment to fair trade agreement and Win-Win Index, an index to measure how large corporations treat their small subcontractors.

SDGs



Chemical

Hanwha Chemical transforms itself to secure sustainable growth in all of its economic, social, and environmental performance, thus charting a path toward its utmost goal of becoming a future-oriented technology company that enhances the quality of life for everyone.

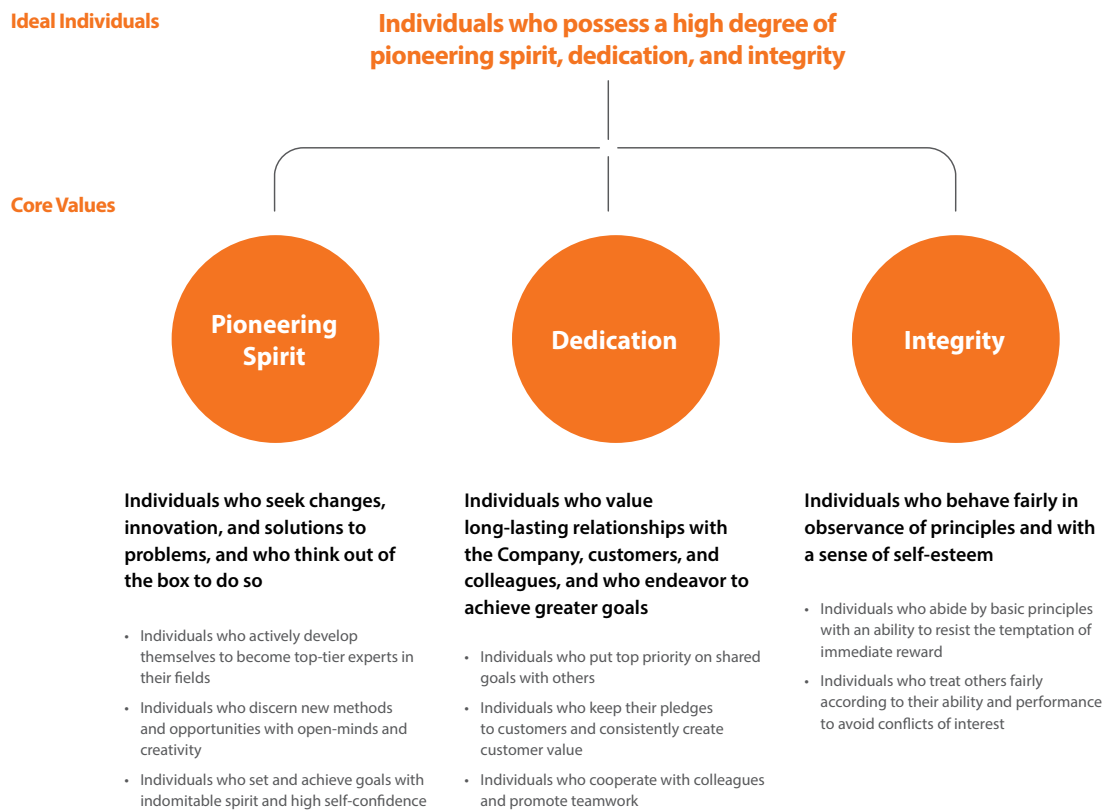
Even with its accomplishments as a leader in the Korean market, Hanwha Chemical is not resting, but restarting a new chapter as a world leader in every way, including humanitarian activities and eco-friendliness.

Human Rights

Hanwha Chemical respects for human dignity and prioritizes human rights in its workplaces. The Company guarantees benefits and welfare programs of its employees, as well as contributing to the well-being of local communities by providing various social contribution activities.

The Ideal Individual for Hanwha Chemical

Hanwha Chemical has grown based on credit and loyalty – the credit that allows it to build trustworthiness and the loyalty that enables it to make a relationship last in any situation. The Company fosters talented individuals with its core values in mind, including a pioneering spirit, dedication, and integrity.



Welfare and Benefits

Hanwha Chemical provides a variety of welfare programs that place great value on the personal lives of employees. In one example, the Company offers a personal leave program called Refresh, which provides all employees with vacations lasting ten or fewer days—time that they can use for self-development.

The Company contributes to the well-being of employees by providing medical expenses for employees and their families, stipends of congratulations and condolence, and commuter bus services. In addition, employee clubs receive support, and the company provides financial supports for personal development, welfare points, family days, invitation events for parents, and a variety of other events.



Happy Workplace

- Commuter bus services at head office, Yeosu and Ulsan Plants
- In-house cafeteria
- Employee clubs supports
- Welfare points support



Healthy Workplace

- Medical expenses for employees and their families
- Operation of medical service rooms at plants
- Periodical health exams for employees and their spouses
- Various sports facilities
- Various sports events



Housing and Children's Education

- Company housing at workplaces and dormitories for singles (Single room for a single person)
- Supports for moving costs
- Provision of interest-free housing loans
- Congratulatory money for children's admission into schools and education expenses
- Leaves and stipend for congratulation and condolence
- Operation of daycare centers



Self-development and Vacations

- Degree programs including overseas MBAs, executive MBAs, and PhD programs
- A month paid leave for a new promotion
- Support for participation in regional specialist programs and overseas conferences
- Education expenses for intensive English and other foreign language courses
- Rewards for exemplary employees
- Rewards for employees with long services (10, 20 and 30 years) and support for overseas travels
- Rewards for outstanding employees by job function each year
- Use of Hanwha Resorts across the country at member prices
- Use of a recreation center provided by each plant during summer vacation season



A Desirable Workplace for Mothers

- Adjustable office hours during pregnancy
- Maternity protection programs such as maternity leaves
- Miscarriage and stillbirth leaves
- Shared parental leaves
- Adjustable office hours during the first stages of parenting
- Childcare leaves
- Leaves and financial supports used to treat infertility



Social Contribution Activities

Social Contribution Philosophy

“Go Far Together”

Hanwha Chemical has built strong relationship with local communities based on its founding spirit that insisted the essential role of entrepreneurship in the national economic development, as well as keeping trust and loyalty in business growth. The Company is now fulfilling its corporate citizenship in line with its social contribution motto, “Go Far Together”.

Social Contribution Mission

“Hanwha Chemical creates a happy tomorrow with everyone to go far together”

Core Areas and Objectives



Social Contribution Activities That Make Everyone’s Life Worthwhile

Hanwha Chemical's social contribution strategies assist people in making their lives worth living through ongoing sustainable development. To make the world healthier, cleaner, and happier to live, its CSR activities expands into environmental preservation, culture and arts patronage, and other public charity work, especially for future generations and the less privileged.



Energy Class for Tomorrow

Since 2013, Hanwha Chemical has conducted the Energy Class for Tomorrow, an employee volunteer program that helps elementary students to understand the importance of energy in our daily lives and energy-savings. The program also offers hands-on experience for children in difficult science topic such as renewable energy sources. To provide in-depth learning opportunities, the Company develops courses through the collaboration with an outside professional educational center. As a result in 2018, Hanwha Chemical won a grand prize from the Donation for Education of the Korea Foundation for the Advancement of Science and Creativity, as well as accredited as an excellent company in education program.



Head Office: Employee Volunteer Programs in Line with Their Talent

Hanwha Chemical operates We Care Volunteer Corps, a bridging program between international adoptees and their families in Korea through the participation of employees who are affluent in foreign languages. The Company also conducts Global Village Classes for children from multicultural families. In addition, employee club members offer free photos to celebrate the first birthday of babies in low-income families. Its National Pottery Contest for the Physically Challenged encourages the disabled to participate in cultural activities.

Daejeon : Volunteer Education Programs Using Employees Expertise

Daejeon R&D Center has launched Hanwha Chemical School that allows children learn chemicals with fun and excitement through unconventional coursework. For the future career development of local high schoolers, the center also provides practical information about higher education opportunities. Furthermore, the center actively participates in joint CSR activities through the collaboration with other affiliates of Hanwha Group.

Yeosu: Supports for Marginalized Areas and Multicultural Families

Volunteers from the Yeosu Plant visit and help residents on neighboring islands in preventing fire accidents and improving their residential surroundings. The plant also continues to support families with multicultural backgrounds and holds promotional campaign to protect marine environment, as part of its social contribution activities for local residents.

Ulsan: Cooperation with Regional Professional Organizations and Other Corporations

Ulsan Plant expands local-friendly contribution activities. These activities include a local stream bank cleanup using soil balls containing effective microorganisms (EM), memorial day event for war veterans and patriots, periodical volunteer activities of production teams through cooperation with outside professional organizations, the Kimchi-making events of employees' families, and joint projects with local corporations.



Labor

Hanwha Chemical seeks cooperative labor-management relationships and mutually beneficial growth between management and employees by sharing corporate vision together. Through active feedback systems and programs, the Company also addresses employee voices for their equal opportunities and fair compensation.

A Fair and Transparent Personnel System

Hanwha Chemical promotes employee engagement and satisfaction through fair performance-based assessment and compensation.

Hanwha Chemical evaluates and compensates individuals based on their competencies and performance. In addition, the Company encourages employee participation in establishing and evaluating objectives by conducting discussion sessions, in turn ensuring clear and fair evaluation processes. One-to-one feedback sessions are also conducted with team leaders to help employees understand evaluation results. The Company conducts a special promotion program that allows selected employees to be promoted earlier than what its guideline requires, thereby encouraging young talent to develop their careers with a frontier spirit and greater confidence.

Labor-Management Partnership

Hanwha Chemical seeks cooperative labor-management relationships and mutually beneficial growth between management and employees to realize its CSR vision. The Company assists labor unions in understanding the current state of operations through informal CEO meetings and other communication channels. The Company also makes every effort to embed safety management in its business processes through education programs led by plant managers and joint labor-management inspections. Additionally, it appoints honorary safety inspectors along with an Industrial Safety and Health Committee, and through participation in international expositions of industrial equipment.

Labor-management Cooperation Activities in 2018

Dates	Activities	Region	Dates	Activities	Region
January	New-year mountain climbing event	Yeosu Ulsan	August 3	Camps for children of employees	Yeosu
January 26	Safety education led by plant managers	Yeosu	October 10	One Heart event	Yeosu
April~October	Cheering event for shift workers	Ulsan	October 12	Volunteer work at founding anniversary	Ulsan
June 8	Spouse invitation events	Yeosu	November 2	Cheering event for shift workers	Yeosu
June 22	Veterinary events	Ulsan	November 3	Employee sports events	Ulsan



Diversity and Antidiscrimination

Hanwha Chemical complies with the conventions of the International Labour Organization and all domestic labor laws. The Company prohibits child labor and forced labor, and it does not tolerate discrimination based on gender, religion, political affiliation, social status, nationality, or ethnicity, in hiring, assignments, promotions, compensation, or education. The Company also builds mutual respect and works against human rights violations in the workplace through inter-cultural training for both executives and employees.

A Desirable Workplace for Mothers

Hanwha Chemical promotes gender equality and the empowerment of women at workplaces through a variety of programs. During pregnancy, the Company guarantees periodic prenatal screenings, and allows mothers to adjust their office hours during pregnancy and the first stages of parenting. The Company provides maternity protection programs that exceed legal requirements. It provides family days to help new mothers maintain a balance between work and family. The Company recognizes employees who are giving birth with a gift set called a "Mom's Package," which includes guides offering advice on protecting mothers and their newborns as well as supplies that will assist mothers through their pregnancies. One month before new mothers return to work from their maternity leaves, the Company holds counseling sessions organized by trained personnel managers. These sessions help mothers relieve some of the psychological anxiety that may result from long-term maternity leave and address issues of resettlement at work.



Prevention of Sexual Harassment

Hanwha Chemical conducts sexual harassment prevention sessions for all employees at least twice a year and appoints at least one sexual harassment prevention counselor for each workplace, with stringent penalties for sexual misconduct.



Environment

Hanwha Chemical greatly assists the nation's greenhouse gas reduction plans through the production of Polysilicon, a basic material for photovoltaic business, and startup entrepreneurship course for photovoltaic business. It also makes concerted efforts to preserve natural resources such as air, water, and soil for regional communities. In particular, its stricter guidelines for the treatment of hazardous chemicals ensures the prevention of environmental incidents. For substances restricted domestically and overseas, Hanwha Chemical also implements thorough risk management system to minimize environmental impact.

Air Pollution Protection

* The LDAR (Leak Detection And Repair) system is designed to periodically measure chemicals generated from non-point pollutant sources, including valves, flanges, and pumps at production facilities. In the event of out-of-range emissions, the system repairs emitting facilities. The Yeosu Plant currently operates an LDAR system for 6 production teams and more than 110,000 points.

* The Telemetry System (TMS) is an automatic, around-the-clock air pollution treatment system that allows the Company to measure levels in the concentration of air pollutants and to keep related data at an air-pollution control center. Yeosu Plant operates four TMSs.

Control of Air Pollutant Dispersion

Yeosu Plant has signed a cooperation agreement with Jeollanamdo Provincial Government to reduce air pollutants at Gwangyang Bay area. The plant has also installed an equipment to remove fume generated during the tank truck distribution of PVC and CA products, and changed loading system from top to bottom. In addition, the plant upgraded chemical sampling equipments of chlorine, VCM, EDC and other hazardous air pollutants to maintain sealed. Particularly, the sealing system of compressors and pumps are replaced to double type to reduce the amount of air pollutant dispersion.

LDAR System Implementation and Odor-causing Substances Management

The Company's Yeosu Plant uses barcode tags and implements LDAR* systems to track suspicious non-point sources of pollutants that may generate volatile organic compounds (VOCs) and hazardous chemicals. During the scrubbing process in its production of hydrochloric acid, the plant also periodically employs TMS* to monitor the concentration of pollutants. To minimize odors, the plant has provided a special map that includes the location of odor sources, and it proactively eliminates odor-causing substances through patrol and inspection.

Water Conservation

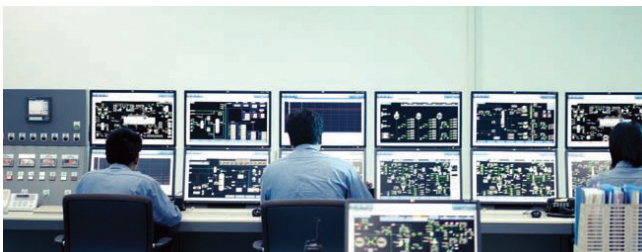
Wastewater Treatment

To reduce risk factors caused from the violation of environmental regulations, all wastewater generated at the Ulsan Plant is treated primarily at on-site contamination prevention facilities; it is then transported to sewage treatment facilities within the industrial complexes where it is located. Ulsan Plant 1 transports and reprocesses wastewater at the Yongam Wastewater Treatment Plant, which has been operated by the government since February 2011.

Wastewater Concentration Controlled by Water Analysis Laboratory

Yeosu Plant operates an on-site water analysis laboratory to check wastewater parameters such as pH, COD, and SS in a daily basis for each process. Additionally, 11 major hazardous wastewater substances are analyzed by GC-MS* equipments that allow the plant to measure and maintain concentration levels of the wastewater discharges at 30% below those required by the regulation. CCTVs was also installed at waterway to manage non-point pollutant sources inside the plant. The plant monitors water quality with pH meters, and sends detected hazardous substances to wastewater treatment facilities through sumps, preventing the leak of the hazardous substances off the plant.

* GC-MS: Gas Chromatography - Mass Spectrometer



Waste Treatment and Soil Protection

Due Diligence with Outsourced Recycling Contractors

To maximize waste recycling, Hanwha Chemical continuously improves its production processes and develops new business relationships with outsourced recycling providers. Every year, the Company conducts due diligence with its contractors to fulfill legal requirements for waste treatment.

Periodic Assessment of Soil Contamination

Hanwha Chemical prevents soil contamination through thorough periodic assessments of its manufacturing facilities. The Company identifies BTEX (benzene, toluene, ethylbenzene and xylene) and TPH (total petroleum hydrocarbons) from the soil surrounding storage tanks at designated sampling points, pursuant to Article 13 of the Soil Environment Conservation Act. These soil contamination assessments and management include neighboring regional communities and company housing facilities.

Management of Chemicals

Enhanced Response Plans for Chemical Incidents

Through thorough assessment of each process at treatment facilities, Hanwha Chemical provides plans for the mitigation of external impact from chemical incidents. The Company uses assessment results to improve scenario-based training and contingency plans, and it conducts emergency drills on a regular basis.

Stricter Chemical Management Guidelines

Managers at the Yeosu Plant conduct weekly self-assessments for each process in the treatment of hazardous chemicals. The plant also supplies protective equipment for every individual to use during treatment of hazardous chemicals, and it deploys resources for disaster prevention near high-risk equipment and facilities. In addition, the plant periodically rates facilities and continually improves its erosion control measures, thus augmenting the safety of its chemical treatment equipment. The plant also holds careful checkups through non-destructive testing, including visual inspections. In line with the Company's maintenance plans, old facilities which may be susceptible to damage and leakage are replaced as they reach the end of their expected life spans.

Streamlining New Chemicals Information Gathering System

Yeosu Plant has built database for all chemicals it uses, produces, and sells. The plant has also streamlined an integrated chemical product lifecycle management system which allows the plant easy access to information on hazardous products, manage a Material Safety Data Sheet (MSDS), and maintain information on materials in the supply chain.

To preview new materials prior to their use, the plant convenes a Reactive Chemicals Subcommittee to deliberate on new materials and to approve the use of these new materials. Only materials that are approved by the subcommittee are used in the plant. During procurement, suppliers must provide full information about chemical substances, and plant administrators must preview and verify these procedures before approving final purchase, thus strictly managing the overall purchase process.

Substances Restricted Domestically and Overseas

To comply with both domestic and overseas environmental regulations, including REACH*, RoHS*, GHS*, and K-REACH, Hanwha Chemical provides an integrated chemical product lifecycle management system to prevent health risks to employees and minimize environmental impact.

* REACH is the EU's new chemical management program. It includes the registration, evaluation, authorization, and restriction of chemicals according to amount and toxic level.

* RoHS (Restriction of Hazardous Substances) regulates six hazardous materials used in the electronics material industry, including Pb, Hg, and Cd.

* GHS (Global Harmonized System) is a globally accepted labeling system for chemicals according to toxic level.



Strategies for Climate Change Response

To proactively deal with global climate change and participate in emissions trading schemes, Hanwha Chemical has introduced a company-level organization dedicated to climate change response. This organization preemptively identifies risk and opportunity factors and devises strategies to address management issues related to climate change. It also shares information on these climate change issues throughout the Company, thereby encouraging employee participation and promoting awareness. As part of the Group's task force for emissions trading, the organization also assists in the enactment and execution of its Group-wide guidelines.

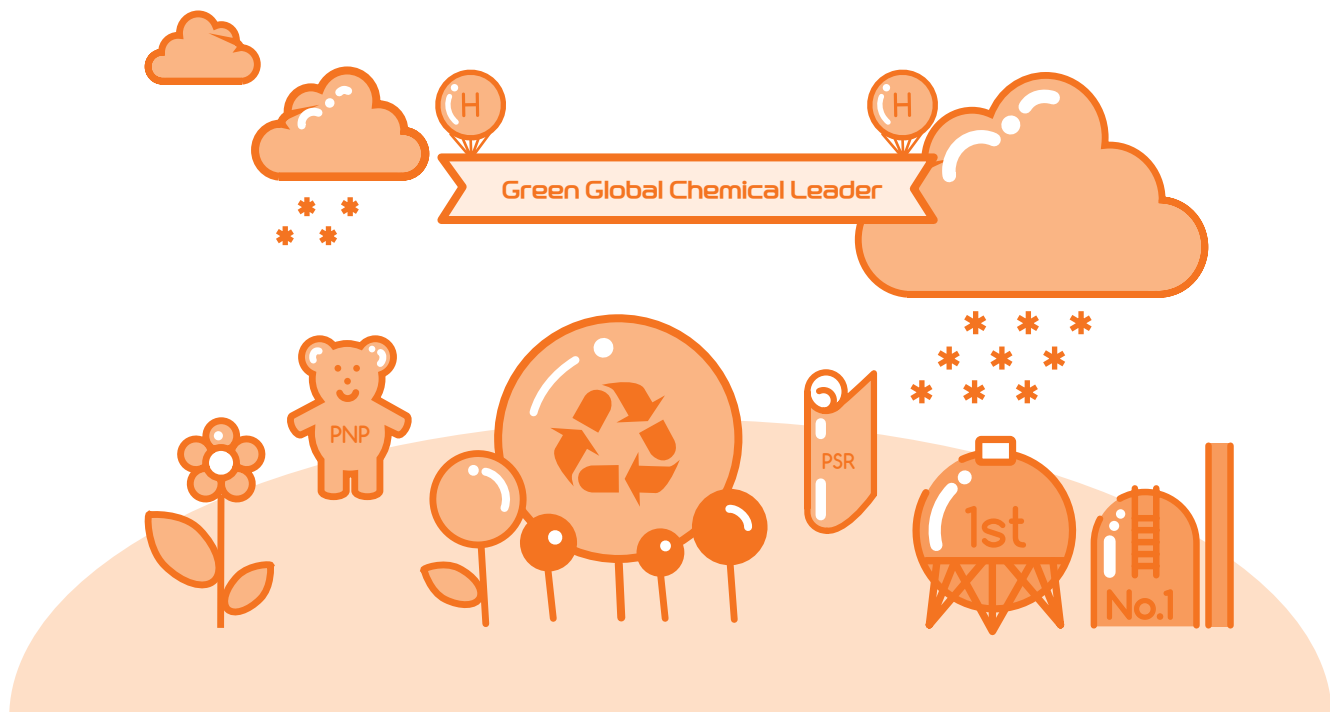
Mid-to-long-term Vision and Target

Vision To become a Green Global Chemical Leader through green, sustainable growth

Target To participate effectively in emissions trading schemes through low-carbon systems and technologies

Strategies and Major Tasks

Strategies	Major Tasks
Low-carbon infrastructure	<ul style="list-style-type: none"> • Manage greenhouse gas (GHG) reduction objectives on a long-term basis • Implement strategies for emissions trading schemes • Develop a special organization to address low-carbon issues
GHG reduction activities	<ul style="list-style-type: none"> • Implement GHG reduction tasks • Attract external funding for GHG reduction • Lay infrastructure for GHG management
External partnerships	<ul style="list-style-type: none"> • Enhance marketing activities promoting low-carbon policies • Implement external carbon offset projects • Prepare for government policies



Analysis of Eco-friendliness

* Phthalates are chemical additives used in the softening of plastics
 * TVOC stands for total volatile organic compounds
 * FA stands for failure analysis, for Aldehyde in particular
 * Volatile Organic Compounds (VOC) cause photochemical smog by generating oxidizing materials such as ozone through photochemical reaction in the air.

The eco-friendliness of products is one of the most significant issues in sustainability management. Hanwha Chemical manages product quality through analysis of restricted hazardous substances (RoHS) and total volatile organic compounds (TVOC). In addition, Hanwha Chemical R&D Center has obtained certification from the Korea Laboratory Accreditation Scheme (KOLAS) for its advanced hazardous materials analysis system. Analyses and assessments include the following:

Classification	Details
Analysis of Hazardous Substances	<ul style="list-style-type: none"> • Restricted hazardous substances (RoHS), including Pb, Cd, Cr, Hg, Brominated flame retardants (BFRs) • Nine phthalates* • Other materials restricted upon request, such as heavy metals, in addition to those designated in the RoHS
TVOC Analysis and Evaluation	<ul style="list-style-type: none"> • TVOC*, FA* and individual VOC* analysis, including 20L Small Chamber, Headspace, TD, Tedlar bags, HPLC, GC, GC, and MSD, for raw materials and finished products • TVOC discharged from and FA for raw materials and finished products for construction and materials used in automotive interiors

Sustainable Technology Development

Hanwha Chemical R&D Center is laying the foundation for sustainable growth through exploration of new, future-oriented business ventures, including eco-friendly energy and proprietary technologies and products, in turn achieving our utmost goal of becoming a creative, competitive leader in the global chemical industry.



Eco-friendly Plasticizers(ECO-DEHCH)



Current Status

As the world's awareness of environmental protection rises, the monitoring and regulation of chemical substances has become more stringent than ever. The market for PVC plasticizers* is also undergoing increased interest in eco-friendly materials. Along with this market change, the development of high-quality perfect non-phthalate plasticizers is urgently needed. In addition to general-purpose plasticizers, the development of specialty plasticizers that fulfill the needs of more segmented markets is indispensable in meeting current trends in the PVC market.

Our Solution

In response to the growth of eco-friendly markets, Hanwha Chemical is developing eco-friendly perfect non-phthalate plasticizers. Following toxicity tests, it has completed verification and registration of these products as eco-friendly materials. The Company is also preparing for the commercial production of perfect non-phthalate plasticizers. To produce high-quality general-purpose and specialty plasticizers, the Company is also developing manufacturing processes and assessments of the stability and processability of these products.

* A plasticizer is an organic substance added to plastics or paints for improving processability at high temperature.

Paste Resin for Eco-Friendly Wallpaper



Current Status

Eco-friendly additives with minimal amounts of VOCs are used in the production of eco-friendly wallpaper. However, low-VOC additives are known to cause some production problems, including lower melt speeds and higher viscosity.

Our Solution

To resolve the problems of lower melt speeds and higher viscosity, Hanwha Chemical is developing a high-performance paste resin (PSR) that features a high melt speed and lower viscosity. Recently, the Company's prototype undergoing screening through wallpaper manufacturers.

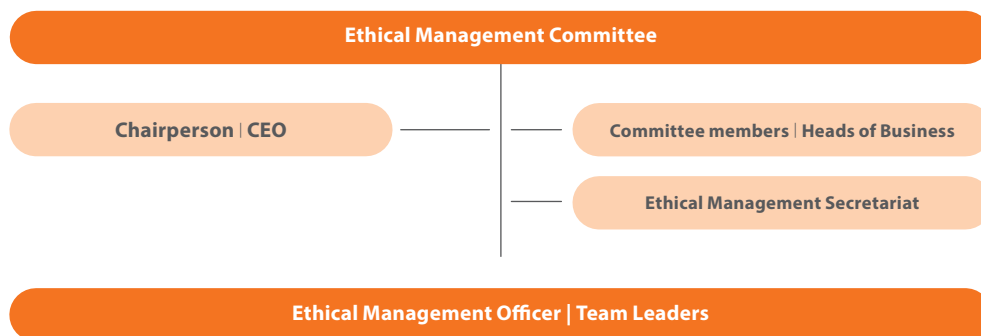
Anti-Corruption

To fulfill the Company's social responsibilities, Hanwha Chemical's employees are required identify values and act according to ethical management standards during their daily operations. The Company considers integrity to be one of the core values in its business performance. Under the Ethics Charter promulgated in April 2003, the Company prevents risk and misconduct that may arise from low ethical standards among employees and partner companies, and it reinforces its standards through a special organization dedicated to monitoring ethical management.

Ethical Management Organizations

The Ethical Management Committee is chaired by the CEO of the Company. The Ethical Management Secretariat oversees the company-wide ethical management, conducts education programs, and sends periodic reminders to inculcate ethical values and management principles among employees.

Organizations of Ethical Management



Code of Conduct for Ethical Management

- 01 We shall always respect customer opinions and strive to earn their trust through high credibility and loyalty.
- 02 We shall comply with local laws where business activities are conducted, respecting commercial practices and pursuing fair competition.
- 03 We shall maintain mutual trust and cooperative relationships with partner companies through fair, transparent transactions.
- 04 We shall not use our dominant position for misconduct against suppliers, and we shall not receive money or valuables, entertainment or conveniences from them.
- 05 We shall not provide or disclose internal or customer information outside the Company.
- 06 We shall not use Company supplies or expenses for personal purposes.
- 07 We shall prohibit loans, guarantees, and presents between employees.
- 08 We shall not discriminate based on academic background, gender, religion, family relationship, place of birth, disability, nationality, or ethnicity, and we shall respect all colleagues to make the Company a better place to work.
- 09 We shall actively participate in social contribution activities.
- 10 We shall endeavor to develop eco-friendly products and services, and we shall prevent accidents through stringent safety inspections and management.

Key Ethical Management Activities

With the aim of protecting consumer rights while adhering to market regulations, Hanwha Chemical implements practical ethical management guidelines to allow its stakeholders to identify values and act according to ethical management standards. On every local holiday, Hanwha Chemical also posts ethical management notices on digital bulletin boards reminders to employees.



Ethical Management Guidelines

Hanwha Chemical implements practical ethical management guidelines. These guidelines prohibit money and gifts from outside the Company, sexual harassment and misconduct, and undue assertion of superior position. Violators are required to submit a report to the executives in charge.



Ethical Management Notices

On every local holiday, Hanwha Chemical posts ethical management notices on digital bulletin boards reminders to employees. The Company also encourages its suppliers to practice fair, transparent trade.



Suggestion and Whistle-blowing System

All internal and external stakeholders of the Company may report corruption and unfair practices according to the code of ethics and code of conduct to the ethical management secretariat through phone calls, fax, e-mail, or the web. The ethical management secretariat guarantees protection of information on reporters and whistleblowers, promoting fair, rational work procedures.



Guidelines for Advertisement and Sponsorship

Hanwha Chemical prohibits improper marketing communication, but executes legal advertising and sponsorship under its principle-based management. The Company complies with advertisement laws and regulations and has no record of violations.

Protection of Customer Information

Data Breach Prevention

The Company's information security team supervises all security practices for information throughout the Company to the level required in all guidelines, especially for customer information. The information security secretariat and those in charge of information security at each plant conduct educational sessions to reinforce awareness of security among employees, and they encourage employees not only within the Company, but also at its suppliers to comply with regulations on information security.



Classification

Details

Technological Information Security

- Access control and firewalls to prevent hacking and data breaches
- Vaccine programs to stop malware
- Security programs to prevent leaks of personal information

Managerial Information Security

- Minimal collection of personal information
- Privacy agreements for collection and use of personal information
- Disposal of personal information after use
- Periodic employee education on information security