

创新成就卓越
innovation creates excellence

Wanhua Chemical
RESPONSIBLE CARE REPORT 2013

Abstract

Responsible Care is a voluntary action of global chemical industry in order to promote the performance in aspect of health, safety and environment, and then to improve people's awareness and supervision of chemical industry.

As a people-oriented chemical industry, with the great development of Wanhua, we insist on viewing HSE as our lasting theme and continually promoting its performance.

As a chemical industry enterprise, the physical and mental health of people is the top priority of company tasks. In the production process of Wanhua, the comprehensive health monitoring is applied, to concern about the health of the employees constantly. In the newly-built Yantai Wanhua Industrial Park, a medical center is established, with a total investment of more than 2 million RMB. It covers an area of 450 square meters, has a total of 16 rooms and 15 beds. Together with an 11 person rescue team care is taken about the employees 24 hours a day. And Wanhua also positively communicates with community people around company to let them know us better and trust us more. For example, Mother's day activity, Children's day activity, Double ninth festival activity and so on.

Safety is the cornerstone of the company's normal operations, it also is a prerequisite for the development of the company and employees. In Wanhua, "Safety never compromise" is a basic requirement for everyone. The foundation of our company is HSE administration system. The motion of the system is the combination of leadership commitment, human resource, fund and time. The management guide is "Ten Safety Concepts of Wanhua". The behavior constraint is "Ten no violation Rules of Wanhua". Above all, HSE management system can be steadily operated by full employee involvement.

"Zero injury, Zero accident, Zero emission" is Wanhua's safety and

environmental protection concept and constant pursuit of goals. Our company carries out the principle of reduction and recycling, through the use of the existing and new pollution treatment facilities to effectively reduce waste emissions per unit product. Meanwhile, the company developed new technology and introduced international advanced technology to achieve the cycle use of turning waste into treasure.

Regarding exhaust emission, the method of Klaus sulfur recovery technology and ammonia desulphurization technology is used, about 10,000 tons of SO₂ emissions are effectively reduced. Within the scope of comprehensive utilization of waste water, our company built a water-recovery equipment. This can reduce 500,000 tons of sewage each year and save 900,000 tons of fresh water consumption. Our company pioneered the application of information technology e.g. bar codes, GPS, electronic locks and surveillance platforms to solid waste generation and transfer process, for realizing the controlling of the whole transfer process of solid waste. And the solid waste rate of 10,000 tons has fallen from 34,000 tons to 29,000 tons in two years.

While caring about its staffs, for these years Wanhua, with a grateful heart, has also been making the greatest efforts to return gratitude to the society. Wanhua sets up a "Wanhua Scholarship" in major colleges and universities, which include Shandong University, China University of Petroleum (Qingdao), Zhejiang University, Tianjin University, Dalian University of Technology, Northeastern University of Finance, Nankai University, Peking University and Beijing University of Chemical Technology.

In 2013, the company invested more than 12 million RMB to pave roads and ditches. This improved the rural infrastructures and living standards of the villagers. On May 26, 2013, the company's 11 phosgene experts were invited by Tumen City government, Yanbian Autonomous Prefecture in Jilin Province, to deal with 24 phosgene cylinders. Those are a legacy of World War II, which were discovered in Tumen City.

These excellent performances of Wanhua in health, safety, environment protection and society responsibility, just because Wanhua deeply understands the concept of Responsible Care and does it. And the insistence of every Wanhua people on the target "creating a wonderful life for human" is a more important reason.

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Speech by the Chairman>>

The world chemical industry is venerable and bright, and has born many prestigious multinational companies. They keep pace with the times, and are long-lasting and innovative, making outstanding contributions in order to improve the human quality of life.

Wanhua, grasps the historical opportunity of China's reform, opening up and economic take-off, then formulates and implements the internationalization development strategy. Wanhua pursues its dream to create an international first-class chemical new materials company, in order to create better life for human beings!

Chairman of the board of directors of Wanhua Chemical Group Co., Ltd.



About us > >

Wanhua Chemical Group Co., LTD. is the largest MDI manufacturers in the Asia Pacific region. It is engaged in the research and development, production and sales of series products: cyanate ester, aromatic amine series, thermoplastic polyurethane elastomer products.

MDI is one of the most important raw material of polyurethane which has the double advantages compared with rubber and plastic, especially in heat insulation, sound insulation, wear resistance, oil resistance, elasticity, bending, etc. It has the incomparable advantages to other synthetic materials, widely used in chemical industry, light industry, textile, construction, household appliances, building materials, transportation, aerospace and other fields.

Being bathed in the spring breeze of reform and opening-up in China, Wanhua has experienced several changes and leaps, which allowed Wanhua to develop rapidly all the way. As the rise and development of the Chinese, Wanhua staff have a rich life and wider career prospects. The countless talents stand out facing the challenge of change, to support the gradually grow of the Chinese polyurethane industry. Wanhua actively achieves the change and win-win concept.

As the first national pilot innovative enterprise, Wanhua attaches great importance to the company's research and innovation to ensure its funding is sufficient. The company has developed the core technology of MDI and constructed domestic first-class research facilities. It is the only high-tech enterprise producing MDI according to National Torch Plan. Through continuous research innovation and achievements for industrialization, Wanhua chemical has made great progress in plant capacity, resource consumption, and product quality. The scientific research achievements of Wanhua are striking, Wanhua has won a number of national and provincial research awards bringing the positive impact for business and society.



Vision

To become an innovative, world-class chemical company, admired by our employees and respected by the community.

Mission

To create more career development opportunities for employees.
To create financial rewards and maximize interests for shareholders.
To offer high performance-price ratio products to customers, bringing them more benefit.
To create value for the community whilst bearing social responsibility.

Values

Pragmatism & Innovation	Commitment to Excellence
Customer Orientation	Responsible Care
Gratefulness & Dedication	Teamwork

As a responsible listed company, Wanhua will adhere to the "Zero injury, Zero accident, Zero emission" as the goal and actively implements the principles of Responsible Care and commits to the health, safety and environmental protection. Under the premise of operation, the company will continuously improve performance and bear the responsibility in health, safety and environmental aspects and is committed to be Responsible Care model of chemical company.



Build a modern green ecological chemical enterprise



Safety • Health • Environment



Zengtai Lizo / CEO of Wanhua Chemical Group Co., Ltd

To gain respect from society, first of all is to be a responsible corporate citizen. In order to do a good job in HSE, we need to create a good work and community environment, to walk the road of circular economy for saving precious natural resources, to create good social benefits for servicing employees and society.



Yifeng Chen / Senior Director of Wanhua Chemical Group Co., Ltd.

Responsible Care never ends. We will continue to perform the Responsible Care, enhance the concept of Responsible Care, do more things beneficial for employees, society and business development. We make efforts to achieve sustainable and green ecological development, gaining respect by the community and becoming a model citizen qualified to practice Responsible Care.

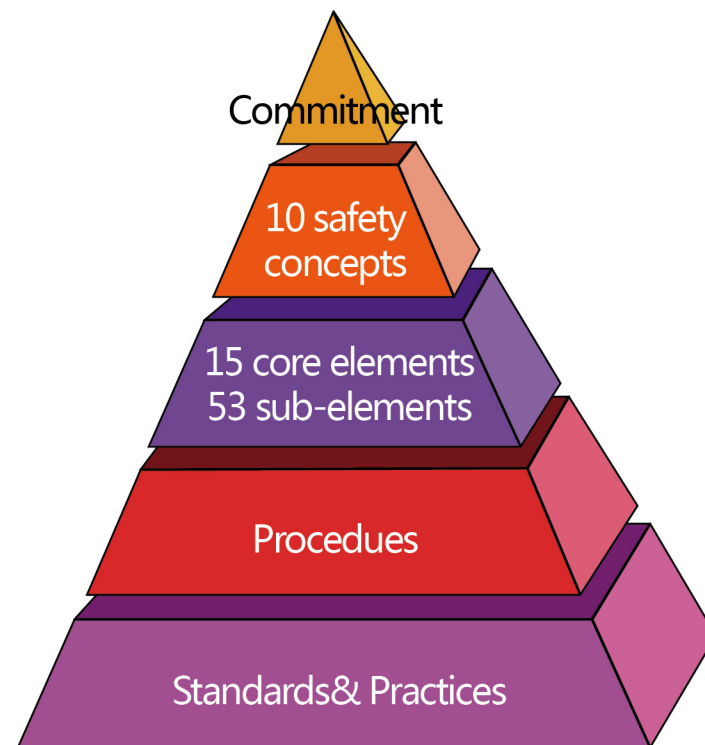
The nature of the chemical industry of Wanhua implements health, safety and environmental protection as baselines for further survival. In the pursuit of good economic benefits, Wanhua manages the enterprise according to the principle of health, safety and environmental protection, pays attention to the employees, customers, community and the public interest of health, safety and environmental protection. At the same time the production and operation of each link minimizes harm to personnel and the environment, as well as to realize the sustainable development of operational excellence.

Enhance improving HSE culture, to achieve safe operations >>

Safety is the cornerstone of the company's normal operations, it also is a prerequisite for the development of the company and employees. Therefore, not to compromise safety has become a top priority of Wanhua safety concept and is also the basic requirement for all employees. Wanhua HSE goal is "Zero injury, Zero accident, Zero emission," to build a modern green ecological chemical enterprise. Therefore, the company has been committed to continually improve our HSE management system, to make the company become the HSE management model to emulate the international advanced chemical companies



Wanhua HSE Management System>>

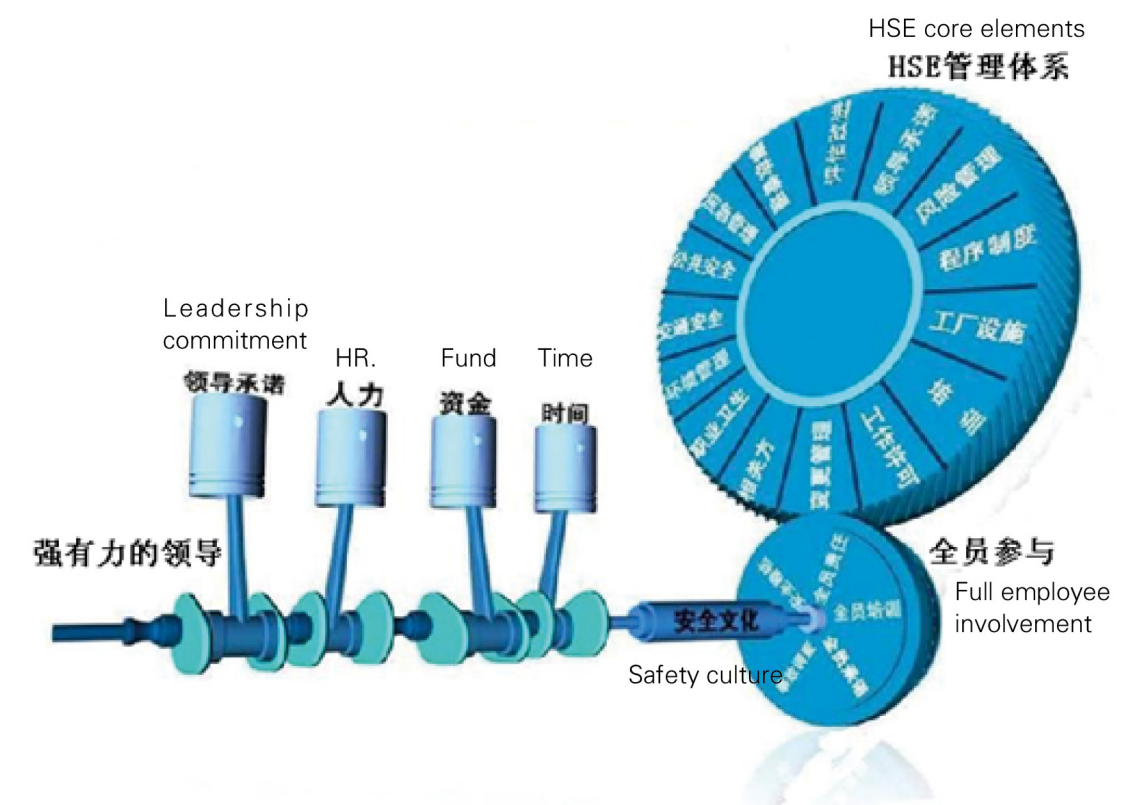


Wanhua HSE Management System

Wanhua's HSE management system is formed by constantly absorbing, integration and innovation. The company passed the quality management system, environmental management system and occupational health and safety management system certification in 2000, integrated into a comprehensive management system, and set up the management of the company. A comprehensive introduction of Dupont safety management system in 2005 expands the HSE management of the company. The company passed the state for examination and assessment of hazardous chemical materials safety standardization level of enterprises in 2006, and won the award for the standardization level of enterprise. In 2008, on the basis of comprehensive standardized management system and safety standards, the company absorbed advanced HSE management experience of numerous international companies, such as Dupont, BP and GM. Combined with our own characteristics, Wanhua obtained its ten safety concepts, and ten no violation rules, regional security responsibility systems and total participation of HSE management practice. The 15 core elements were formed, as well as 53 child elements and 243 requirements of HSE management system. We guide employees' daily behavior by concept, target, standard procedure to improve the company's HSE management level

Wanhua HSE management system operation mode>>

In order to implement the HSE management system in place, Wanhua takes an unique operation mode. First of all, to make the system work it is on the basis of documented HSE management system, and is led by the strong commitment and provides employees and property for its operation. The smooth running and perfect degree of the system, depends on the contribution of the small turntable, namely the engagement of all staff. So all staff actively participating in HSE management system to form a full participation safety culture, is the main body of Wanhua HSE management system implementation. Through this kind of power, the main body and foundation of cooperation, the stable operation of Wanhua HSE management system is realized.



Wanhua HSE management system operation mode



Ten Safety Concepts of Wanhua >>

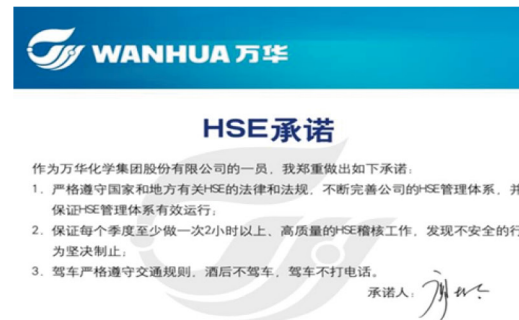
- ◆ Never compromise on safety.
- ◆ My area safety, my responsibility.
- ◆ All accidents are preventable.
- ◆ Safety is precondition of all jobs.
- ◆ Near miss means accident.
- ◆ All deficiencies must be corrected promptly.
- ◆ Good safety is good business.
- ◆ Working safely is a condition of employment.
- ◆ Every employee is responsible and accountable for safety of himself and others.
- ◆ You will achieve the level of safety excellence that you demonstrate you want.

Ten No Violation Rules of Wanhua >>

- ◆ Smoking in no-smoking area or on-the-job drinking is strictly prohibited.
- ◆ False report or conceal report of accident is strictly prohibited.
- ◆ Command against rules or force others to operate against rules is strictly prohibited.
- ◆ Work at height without using safety belt is strictly prohibited.
- ◆ Operate in confined space or proceed hot work without permission is strictly prohibited.
- ◆ Operate electric, forklift or electro-gas welding without license is strictly prohibited.
- ◆ Unlock or bypassing safety interlock without authorization is strictly prohibited.
- ◆ Authorize PTW without check on the spot is strictly prohibited.
- ◆ Emission of waste gases, waste water, solid wastes and hazardous chemicals violating laws is strictly prohibited.
- ◆ Disable the environmental protection facilities without permission is strictly prohibited.

Full employee involvement in safety culture >>

Wanhua employees are involved in the safety management through "Five Full Employee" namely: full employee safety commitment, full employee safety responsibility, full employee safety audit, full employee safety training and full employee accident investigation.



Full employee Safety Commitment

The company leader's and all staff's commitment to safety is the power of Wanhua HSE system. The company is led by President, who for example, explained the safety principles to all staff and which never should be violated. All staff's safety commitment is a solid foundation to the formation of safety culture for the company.



Full employee Safety Responsibility

The full employee safety responsibility of Wanhua is reflected in its safety concept among the Ten Safety Concepts that "My area safety, my responsibility". In Wanhua, all areas have corresponding responsibilities, while regional directors are the first persons in charge of their region. The implementation of regional security and management will be to maximize the safety of all staff involved in the management in the past, so as to improve safety awareness and skills.

Full employee Safety Observation

Full employee Safety Observation is well reflected in the Full employee Safety Cultural. Safety Observation allows managers and employees to well know the safety situation in the scene, but also is a channel for direct communication with the field workers.



Full employee Safety Training

In Wanhua, each employee has the right and obligation to attend HSE training. This improves the company's overall level of HSE training methods, and is also a platform for exchange between departments. According to the actual situation of the company's employees, Wanhua develops targeted training programs for staff training, and gradually increases employee safety awareness and skills to enhance the company's safety culture.



Full employee Accident Investigation

"All accidents are preventable" is one of the Ten Safety Concepts. To achieve this goal, all incidents within the company will be subject to investigate on and shared in the whole company.

In Wanhua, after the accident, we must report directly to the line manager. Meanwhile, the company is also very concerned about near misses, and actively encourages employees to report near misses.

Wanhua's safety culture is an important feature of full employee involvement of its corporate culture, but also to promote the company's HSE system construction powerful force. This is the cornerstone of Wanhua powerful new chemical materials to a world-class company forward.

The company's current HSE management changes daily unsafe behavior of employees, through behavioral security management, ensures safe production process through process safety management and discovers and corrects system and management deficiencies. Safety management is the foundation of all management.

In 2013, explored through various analysis and reposition, the current company safety culture is still in the stage of supervision and management. Wanhua should continue to promote safe behavior management and at the same time grasp the process safety management, audit, inspection and use other means of supervision and management, to strengthen security leadership manager force, to actively implement the HSE system, to improve HSE management and to form a good full safety culture.



Implementing civilized construction standards in the construction safety, setting up safety milestones, identifying construction safety "Ten must", and establishing project HSE assessment system, Wanhua promotes self-management supervision and contractors, and ensures construction safety by comparison and assessment to by daily informing about illegal construction and many other initiatives, too.

In the process safety management, to ensure the new devices are intrinsically safe, process safety analysis is carried out in the main units' process flow diagrams in Yantai Wanhua Industrial Park. To strengthen and promote the intrinsic safety process, Wanhua has established a process safety management program, the implementation of visual management, and the establishment of early warning indicators of process safety management process. To enhance subsidiaries and divisions safety management, they were comprehensively counseled and audited. In 2013, seven subsidiaries successfully passed the National Safety Standardization, of which Ningbo Wanhua was given the title "National Safety Standardization I of Hazardous Chemical Enterprises". Wanhua security management has been recognized by government and the community.

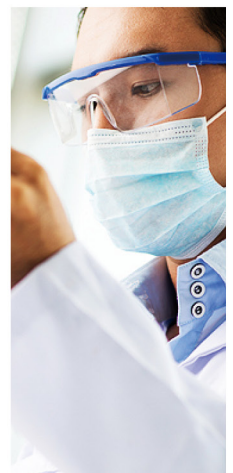
Technological innovation oriented, creating a green plant>>



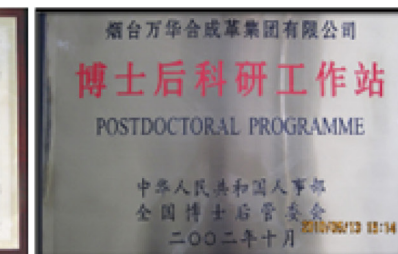
As one of the "Responsible Care" initiative companies, Wanhua's goal is "Zero injury, Zero accident, Zero emission" to build a modern green ecological chemical enterprise. Unlike traditional chemical companies to further control pollution, Wanhua selects process from the source – beginning with production technology innovation, to reduce the production's harm to the environment, and develops energy saving ideas in every aspect of the whole manufacturing process, to reduce and control the emission of pollutants. By positive development of recycling economy, a conservation-oriented enterprise was created to make our company consume less and eject less pollution, which have helped our company to acquire business benefits, environmental benefits and social win-win situation, to build a modern green ecological chemical enterprise.

Technological Innovation>>

Wanhua is the only Chinese company that owns MDI manufacturing technology and independent intellectual property rights, with a number of independent intellectual property rights in the field of polyurethane technology. In 2007 Wanhua won the "National Science and Technology Progress Award", and it is named as the "National Torch Plan Key High-tech Enterprise" and the national first batch of "Innovative Enterprise". The company owns a national polyurethane engineering technology research center, a national enterprise technology center, an enterprise postdoctoral research station and a national certification analysis laboratory. Now existing MDI manufacturing technology is about more than 85% less consuming than the originally imported technology. It is about more than 20% lower than the international comprehensive energy consumption of the similar technology, and has reached the international leading level.



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In 2011, the fifth generation of new photochemical reaction technology was successfully applied in the company, to further consolidate the Wanhua's world leading position in the field of MDI manufacturing technology. Many products have entered the pilot phase, including SAP (super absorbent resin), NPG (neopentyl glycol), IPDI (isophorone diisocyanate), water surface material, as well as a variety of research and development products, and have achieved encouraging results.



Coal gasification process in Wanhua Industrial Park is using the "four-nozzle mounted gasifier technology" that was honored with the "National Science and Technology Progress Award". The majority of other MDI infrastructure supporting technologies use leading international technology, such as formaldehyde manufacturing technology introduced by the Swedish company Perstorp, aniline manufacturing technology imported from the US company KBR and nitrobenzene manufacturing technology imported from Germany company Meissner. Low energy consumption is a common feature of these technologies. The independent research and development of waste brine reuse technology of the company is an innovation in the chemical industry. Besides, the technology of hydrogen chloride oxidation was introduced to Wanhua Industrial Park, to achieve the full use of elemental chlorine, this provides an effective solution to the problem of recycling chlorine resources in the polyurethane industry.

At the same time, the company also vigorously carries out energy-saving renovation of existing installations and equipment. By optimizing the transformation, frequency transformation, heat and pressure utilization of technology, equipment and other means of transformation of energy through the process unit, Wanhua continues to reduce energy consumption.

In the process of transformation of energy optimization device, the process energy consumption of MDI Unit is reduced by 20%, production capacity is increased by 50%, and product quality and performance are enhanced compared with existing devices. This is achieved through the use of super-gravitational and strengthened reactor technology, continuous addition of technology and access to international leading ranks. Product consumption reduces heat consumption about 10% compared to the original technology in each energy unit and process stream for energy integration, by optimization of process parameters to reduce the volume ratio of the primary product energy consumption, and increasing the reaction pressure to reduce refrigerant consumption.

In terms of frequency conversion technology reform, and regarding the high power consumption of common centrifugal pump and fan frequency conversion transformation, energy can be greatly saved by adopting motor frequency conversion technology, and adjusting the motor speed, under the condition of meeting the demand of process flow pressure.

In the technology application of waste heat and pressure, high quality and graded pressure is made full use of, to realize a cascade energy application. Waste heat is used to produce vapor as by-product, together with condensing hot water as heat source for producing chilled water by using lithium bromide units, thus making all energy sufficient and reasonable to use.

In terms of equipment technical reform, by adopting continuous heating process instead of intermittent heating process, not only the high-grade steam is saved, but also the energy is reasonably used; In the context of phosgenation core technology, by using the fifth generation of phosgenation reaction technology, the reaction efficiency is improved, the side reactions are reduced, and by reducing the inventory of phosgene and reaction solvent, the energy consumption is reduced by 40%. In separation technology, crystallization system integration process is used for the separation of the final product MDI by small differences of the curing temperature point, instead of MDI separation under repeatedly evaporation in the original rectification tower with large number of tower plates and large reflux ratio, to prevent the waste of 3 MPa steam and cooling water. Therefore the energy consumption is reduced by 30%.

On the way of scientific and technological innovation, Wanhua has never stopped. On November 11, 2013, China petroleum and chemical industry federation presided over a meeting about "high concentrated organic wastewater by catalytic wet oxidation technology" for scientific and technological achievements appraisal. This technology was completed by Wanhua and Dalian Institute of Chemical Physics Chinese Academy of Sciences. The results of the overall technology have reached international advanced levels, and its significant influence on the energy saving and emission reduction can be promoted.

In the same year, the company focused on perfecting the ADI (aliphatic isocyanate) and HCL oxidation process and production technology. Strengthening this key technology is closely related to the company's industry development and remarkable achievements in scientific research and development were gained. Successful commissioning of 5000 tons/year IPN (isophorone nitrile) pilot plant in ZiBo marks the coherence of the whole industry chain: IP (isophorone) – IPN (isophorone nitrile) – IPDA (isophorone diamine) – IPDI (isophorone diisocyanate) technological process. Wanhua became the second company in the world to entirely hold the manufacturing core technology of the whole isophorone industry chain. By optimizing the HDI monomer unit it reaches a capacity of 10000 tons/year and the product quality has improved greatly; HDI trimer industrial equipment production is also successfully going into operation, the product quality is close to peer benchmark level and has been approved through the international quality big customer quality.



High concentration organic wastewater wet catalytic oxidation technology has been developed in studies with the help of generations of R&D personnel. A 7000 tons/year plant has been built and obtained a successful commissioning, then the appraisal of achievements reached the international advanced level; Recent product research and development of new materials such as water-based coating resin and high-performance TPU (thermoplastic polyurethane) emerge the chemical business endlessly, which further enriches the product line and has been a steady rise in market share; H12MDA (4, 4 – double ZhongDing amino diphenyl methane) manufacturing technology has won the second prize in Shandong Province Scientific and Technological Progress and the gas phase phosgenation reactions of isocyanate technology also respectively won the first prize of Yantai Technological Inventions. At the same time, the world's most difficult catalyst was developed successfully and industrialization of new technology for the company is on the wings to take off.

Environmental Protection >>

Energy conservation and emissions reduction

"Zero injury, Zero accident, Zero emission" is Wanhua's safety and environmental protection concept and constant pursuit of goals. Our company carries out the principle of reduction and recycling, through the use of the existing and new pollution treatment facilities to effectively reduce waste emissions per unit product. At the same time the company developed new technology and introduced international advanced technology to achieve the cycle use of turning waste into treasure.



Waste gas disposal

Regarding exhaust emission, Wanhua spends hundred millions RMB in construction and improvement of environmental protection. The company sets up the unorganized emissions to zero, and organized emissions to a standard of 100% target. Wanhua adopted special environmental design to deal with the tank breathing gas, waste water treatment device structure of volatile gas and loading and unloading car volatile gas airtight, gathering and centralizing the process. At the same time the company compared with the United States and the European Union emissions standards, implements process optimization and constantly promotes gradually LDAR (leak detection and repair) technology and testing of all, and plays a good role model in the field of waste gas processing.

The use of advanced design principles in phosgene and hydrogen chloride gas processing, makes the phosgene and HCL absorption rate higher than 99.99% and organic matter concentration in tail gas is far lower than the standard value, this means the operation is very stable. At the same time, all the company's production equipments adopt airtight operation. Through strengthening equipment management and improving the level of automatic control, leak in the production equipment operation is reduced, which makes the unorganized emission of production system less than one per ten thousand, thus ensuring the safety of the ecological environment.

In the process of carbon dioxide, Ningbo Industrial Park is taking action on CO2 exhaust deep processing and refining process to generate food-grade CO2, in order to actively respond to climate change, greenhouse gas emissions are reduced. As a result, the annual 150,000 tons of CO2 emissions, an equivalent to annual savings of 600,000 tons of coal consumption, are reduced.



In the processing of sulfur dioxide, the method of Klaus sulfur recovery technology is used. The production process of acid gas can be converted to elemental sulfur, the exhaust gas after treatment has a SO2 concentration of 80 mg/Nm3, which is far lower than the national standard of 400 mg/Nm3. Through this measure, every year 2700 tons of sulfur are recycled, which is a reduction of an equivalent of 5400 tons of SO2 emissions into the atmosphere. The company adopts advanced ammonia desulphurization technology, using its by-product of ammonia to absorb SO2 in flue gas, which is produced from thermal power plant flue gas. Treating waste with waste can produce 11000 tons a year of good quality ammonium sulfate fertilizer, which is reduction of an equivalent of 5500 tons of SO2 emissions into the atmosphere.

In 2013, we made the exhaust gas fully burning and reduced the incidence of organic waste gases by improving the absorption tower trap effect, through adjusting the ECS reaction temperature in the process of technological emissions.

Wastewater disposal

Within the scope of comprehensive utilization of waste water, Wanhua has always been developing process waste water and sewage reuse, and wastewater reusing effectiveness rises every year. In 2010, our company built a water-recovery equipment in Ningbo Industrial Park. The early production sewage and rainwater is collected and sent to a biological wastewater treatment plant. The plant works through the MBR (biofilm) sewage treatment system and reverse osmosis systems. After the treatment, the waste water achieves the standards, then is sent to recycle water device as make-up water of circulating water. This can reduce 500000 tons of sewage each year and save 900000 tons of fresh water consumption. Our company's independent research and development of waste salt water treatment and reusing technology, implements the chlorine closed-circuit circulation in Ningbo Industrial Park. Waste like worthless effluent brine will be used in the production of raw materials, which greatly reduces the outsourcing crude salt and outside effluent brine; the reduction of emission is obvious.



超滤装置和反渗透装置

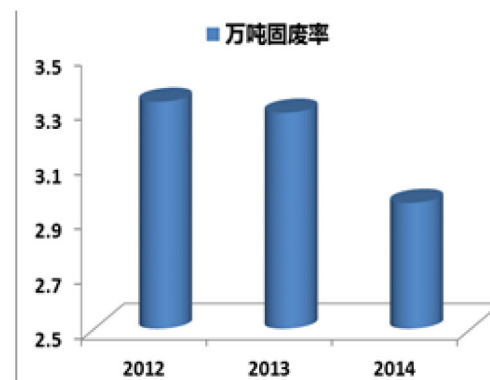
This year, Wanhua implements the source control. For example, vacuum exhaust gas in the process of aniline unloading tank storage process in the capture process will produce containing aniline wastewater and especially the high temperature wastewater quantity will increase. Regarding this problem a special improvement has been done to improve gas-liquid separator tank and aniline condensation effect. Aniline in the exhaust gas has fallen sharply, thus the aniline gas content in waste water after absorption is significantly reduced.

By the end of June, the high concentration wastewater project was formally operating. The wastewater treatment capacity is 1t / h, and COD (chemical oxygen demand) removal is reduced from about 30000 to 1000. The removal rate is over 90% and it is operating stable.

Solid waste disposal

In the aspect of comprehensive utilization of solid waste, the company acts in accordance with the "reduction, recycling, harmless" principles of solid waste disposal, and actively implements the comprehensive utilization of solid waste source reduction. After desulfurization of thermal power plant ash and gasifier slag, they are used as energy-saving building materials, to produce cement and brick. Filters containing 25% carbon are sent to the thermoelectric boiler as fuel. Fine slag is obtained from aniline tar extraction as a useful component for recycling. Waste gas and liquid by the harmless incineration process can be handled and its heat is recovered to produce vapor for production equipment at the same time. The company's rate of treating ten thousand tons of solid waste products reduces every year, truly "reusing and recycling".

Meanwhile, the company pioneered the application of information technology e.g. bar codes, GPS, electronic locks and surveillance platforms to solid waste generation and transfer process, for realizing the controlling of the whole transfer process of solid waste. By abatement and controlling of waste generation and constant reuse, the company greatly reduces the amount of waste, to minimize the impact on the environment and to achieve sustainable development.



Since 2013, Wanhua continued to vigorously implement energy conservation. By energy-saving improvements and optimizing of the photochemical dynamic injector reactor, the molar ratio of chlorobenzene and DAM decreased significantly, and average annual savings of several million dollars were made.

Regarding Wanhua's outstanding contributions in environmental protection and ecological economy, Ningbo Wanhua was awarded the "National Environmental Friendly Engineering" price in 2008. In 2009 Ningbo Wanhua was awarded the "Resource-conserving and Environment-friendly Enterprise" honorary title. In 2010, it won "The First Batch of Circular Economy Demonstration Park of Zhejiang Province" title. In January 2011, Ningbo Wanhua, was selected for "733" project of the first industrial circular economy demonstration garden in Zhejiang Province (a total of 10 companies), and was given the "Zhejiang Industrial Circular Economy Demonstration Park" award. Wanhua, as it is, truly can be seen as "no leaks, no noise and no smell" chemical industry garden.



WANHUA

Responsible Care Thankful Rewards>>



Responsible Care is a voluntary act of global chemical industry in its national chemical association, dedicated to improve the health, safety and environmental performance continually, to maintain communication with stakeholders in the product and production process, to provide security and abundant products, and to bring real benefits to society. Its basic meaning is that chemical companies in its production process are responsible to focus on the health and safety of employees, communities and the public, to protect the public environment. And not harming the employees, the public and the environment, because of their own behavior. Wanhua, focuses on business benefits, while highly concerning about society and giving gratitude back to society, aiding education, caring about the community, contributing to society, as well as making continuous efforts to become a socially respected company.

Wanhua constantly improves its production technology and management level of environment, health and safety. At the same time, it vigorously promotes Responsible Care and contributes to society with a genuine and sincere heart and tireless efforts. Wanhua is committed to build a socially respected, employee pride and world-class new chemical materials company. This is not merely a form of the slogan, but a commitment that our company has continually pursued and made efforts to actively practice in the course of business for many years.



Comprehensive health care, focusing on employee health>>

As a chemical industry enterprise, the physical and mental health of the employees is the top priority of company tasks. In the production process of Wanhua, the comprehensive health monitoring is applied, to concern about the health of the employees constantly. In the newly-built Yantai Wanhua Industrial Park, a medical center is established, with a total investment of more than 2 million RMB. It covers an area of 450 square meters, has a total of 16 rooms and 15 beds. Together with an 11 person rescue team care is taken about the employees 24 hours a day.



The Medical Center is equipped with a variety of first aid facilities, such as ECG, ventilator, cardiac defibrillators, pneumatic cardiopulmonary resuscitation and other critical emergency medical equipment, as well as water heaters, portable spray beds, showers, eyewashes and more decontamination equipment to clean the staff stained by chemicals, poisons and radioactive substances. It is also endowed with fully-equipped ambulances on standby, to provide help to people.



At the same time, in terms of employees' daily health care, a comprehensive and effective system is taken for health care of employees during pre-job, on duty and leaving the post, including emergency medical examination. Meanwhile, the employees' health record is established and ensured every person has a file for long-term preservation, and regular follow-ups.

In workplaces of existing occupational hazards, the company does regular hazards detection and minimizes the hazards concentration in the workplace, to protect the health of employees. In the daily work life, teaching, intranet, magazines, posters and other forms are used for the health education of employees. Meanwhile, the workplace will be equipped with a first aid kit and the corresponding drug equipment, several members of each team will be selected to accept first aid training. These persons will become the team's first aid responders after passing the examination, to ensure that employees suffering accidental injury are able to get help in the first time. For female employees, the company has special arrangements for health checking and health education every year, especially concerning about female workers' Five Protections.

Employees care, mental and physical>>

Wanhua embodies the spirit of Responsible Care to every employee, to make each employee work in a physical health and mental pleasure conditions. Therefore Wanhua does not only pay attention to employees' health, but also provides strong support and ensuring for the employee's self-cultivation, hobbies and improvement of life quality.

Wanhua gives the employees care and concern through health care, health education, full-time and part-time health administrators' team building, female workers protection and vacation and recuperation system for employees. Meanwhile, Wanhua believes "a pleasant working atmosphere ensures the quality of work". The company creates a free, honest and equal communication platform for employees, and strives to create a working atmosphere, which includes harmonious employee relations, mutual recognition, collective sense of identity and working together to realize the value of life.

Mass wedding of the company employees in 2013

On September 12, 2013, the company held a "2013 Wanhua Chemical group wedding" named as "Passionate Wanhua, Destined Life" for 38 couples who came from Yantai, Beijing or Ningbo Wanhua. Then a romantic ceremony was held in the presence of friends and the leadership of the company.



Dancing Wanhua , dancing positive energy

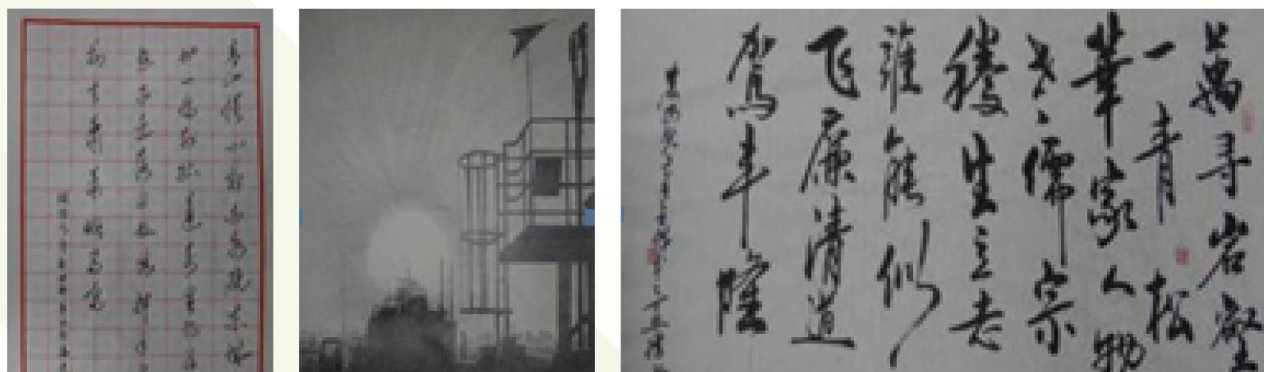
In order to enrich the staff's cultural life and to fully reflect the company's human care, the company provides a platform for dance lovers, the Wanhua Dance Team. Through professional teachers' training and guidance, their skills are enhanced and the development needs of staff are met. Furthermore, training a dancing team with professional standards enhances the company's overall level of expertise, in terms of entertainment and makes the leisure life of the staff more colorful. Wanhua Dance Team majors in learning different dances, rehearsing multiple types of learned dances, improving the team's dance skills, as well as enhancing the understanding among employees of different departments, particularly closing interdepartmental distance.





Calligraphy competition in Wanhua

In 2013, Wanhua held a competition of painting activity on the theme of "Fragrant Ink, Meaningful Wanhua". This activity attracted the majority of Wanhua staff and was appreciated by the staff, which improved the overall cultural quality and moral sentiment.



Series of activities on International Women's Day

On the evening of March 7, 2013, a series of activities of the International Women's Day, named "Glamour Dress Art Salon", was wonderfully held by the company Women Committee together with New Materials Division in Zhujiang Apartment. This activity fully exploited the Wanhua female occupations charm, improved self-image management of female employees, and enriched the form of International Women's Day activities. Nearly 50 female employees from various departments participated in the event.

Event planners invited the national intermediate beautician who is the 2012 "Pick Cup" National Youth Trainer Competition Top 50 Instructor winner, to share with everyone the three themes which are "sense of water woman" skin conservation key, professional women makeup tips and four seasons color diagnosis and dress style collocation.

"Love life, Love baking", a baking dishes training, as one of the series of activities of 2013 International Women's Day in Wanhua, was successfully held in Wanhua Hotel on March 15. It created an opportunity for the smart housewives, who usually don't have the time to learn baking due to busy work, to be creative by themselves.

Thanksgiving Positive Energy

Before the Thanksgiving Day, Quality Inspection Center employees actively participate in the activities of Thanksgiving Positive Energy. By writing down what they want to say to their masters, colleagues and parents, and collecting and displaying the Thanksgiving cards, they create an atmosphere of Thanksgiving, and spread Wanhua culture.

In Wanhua, employees can provide a maximum personal value and constantly create a remarkable achievement in their positions.

Positive Energy



Caring Society, Thanksgiving Back >>

While caring about its staffs, for these years Wanhua, with a grateful heart, has also been making the greatest efforts to return gratitude to the society. This year, Wanhua still implements the tradition of dedication without the slightest hesitation.

Responsible Care Conference

In May 2013, Wanhua assisted as co-organizer in the work of Responsible Care Community Awareness Yantai forum meeting. In the meeting, each company conducted the exchange of experiences and enhanced the understanding of the specific implementation of Responsible Care work.



On November 5, 2013, Wanhua was invited to attend the ICCA RCLG (International Council of Chemical Associations Responsible Care Committee) annual meeting and made a keynote speech. In the lecture, Wanhua shared the company's president, Mr. Liao Zengtai's clear objectives for Responsible Care with other countries in the world, and stated Wanhua Chemical Group's Responsible Care culture and achievement in this field in recent years. The company's Responsible Care has been unanimously approved by the present representatives. Furthermore, Wanhua will try to lead other Chinese chemical companies to join the family of Responsible Care, and help them to practice and improve through our own experience.



Winning ways at Wanhua

Yifeng Chen from China's Wanhua Chemical Group Co Ltd gave a comprehensive overview of his company's commitment to Responsible Care® which began in 2007. The ethic is applied to operations and 6,500 employees worldwide including activities in the US and Europe, where Wanhua recently acquired its first overseas production site in Hungarian firm BorsodChem. A key player in the global polyurethanes business, the company operates the world's largest MDI site at Ningbo Industrial Park and produces a range of petrochemicals and specialties. Ranked top of the chemical sector in the Chinese Securities market, Wanhua's leadership culture is strongly supportive of the financial investment underway in areas like Responsible Care, corporate social responsibility (CSR) and sustainable development, notes Chen. Cost is 'not an issue' he adds. That leadership commitment also provides the driving force that enables every employee to be involved in implementation of the RC program which follows a codes-based approach addressing product stewardship, process safety, occupational health and safety, community awareness and emergency response, distribution and pollution prevention. Wanhua's CSR program embraces a range of activities from providing scholarships and essential materials for students in deprived areas to support for the elderly; from clean-up projects and the promotion of safety awareness in local communities, to earthquake disaster relief. The company has earned itself external recognition as a leading employer from both the authorities and customers.

A policy of 'no injuries, no accidents and no emissions' with signs posted around its chemical sites reinforces the goal zero approach. In 2003, when the new MDI plant was built in Ningbo, the company addressed local residents' concerns about phosgene hazards by inviting community representatives to visit the main plant. They were shown, for example, how wastewater is totally cleaned after the treatment process, and were reassured to see thriving plants, birds and insect life on site. More recently in 2010, over 100 representatives of Yantai residents were invited to visit Ningbo to see for themselves the emphasis on the environment, health and safety (see photo). In 2013, the company's expertise in

dealing with PU raw materials led to it working on the safe disposal of abandoned phosgene cylinders in Yantai, probably left from WWII. In May, 120 delegates from state owned enterprises and the State Administration of Work Safety visited Wanhua to experience and learn more about Wanhua RC practices. Wanhua is also taking RC to distribution activities, implementing radical changes to how this crucial link in the supply chain is usually addressed and involving the development of a communication platform between carriers, the authorities and Wanhua. The provision of training and consulting to carriers covers basic road safety and aspects such as fatigue management, emergency drills and road risk assessment. In the case of liquid chlorine, for example, the company has established rest rooms and free meals for drivers along transport routes and visits carriers to discuss HSE and recognize good performance. Wanhua also enforces the simple measure of no overloading (a relatively common practice among carriers to save money) in its product transportations; this commitment alone is estimated to have added around US\$3.3 million to logistics costs. Areas such as process safety involve a holistic approach from the first stage of process selection through basic plant design, operation, modification and eventual dismantling. Yifeng Chen noted that the checklist Wanhua uses involves over 360 points covering all aspects from the process itself, to equipment, pipelines, instruments, electrical, raw materials, HSE and operating procedures. All in all, an impressive snapshot of how one leading Chinese company has taken the Responsible Care ethic and made it an integral part of global operations.



Caring Society>>

Wanhua Scholarships

From 2002, Wanhua set up a "Wanhua Scholarship" in major colleges and universities, to provide financial incentive for chemical related professional and outstanding students each year. These colleges and universities include Shandong University, China University of Petroleum (Qingdao), Zhejiang University, Tianjin University, Dalian University of Technology, Northeastern University of Finance, Nankai University, Peking University and Beijing University of Chemical Technology.



Arbor Day activities

On March 16, 2013, Yantai factory organized an afforestation activity called "Heart with Arbor Day, Pioneering in Environmental Protection". More than 40 people from plant organs and departments took part in the tree planting activities. This activity increased employee's awareness of environmental protection, and enhanced the staff's sense of responsibility of caring and treasuring for flowers and green plants and contributed our modest means to the green and healthy environment we live in.



Processing of phosgene cylinders in Yanbian City

On May 26, 2013, the company's 11 phosgene experts were invited by Tumen City government, Yanbian Autonomous Prefecture in Jilin Province, to deal with 24 phosgene cylinders. Those are a legacy of World War II, which were discovered in Tumen City.



Cohering drips of love, to moist the future dreams of unattended children

On March 31, 2013, Wanhua Chemical Finance Department launched a donation activity on the theme "Cohering drips of love , to moist future dreams of unattended children". Within only three days, 27,760 RMB as well as a large number of computers, harmonicas and other teaching supplies were donated by Wanhua's Finance Department employees from Yantai, Ningbo, Beijing, Shanghai and Guangdong. Those days, the Finance Department staff went to Dade Children School to visit the children with beautiful blessings. Meanwhile, Wanhua employees carefully prepared a series of distinctive "sunshine lessons" for the kids and spent a pleasant afternoon together with them.



Mother's Day Activity

On May 12, 2013, Mother's Day, the company organized an activity to express our sincere solicitude to the local elderly on Daxie Island, and celebrated birthday to six old men above 95 years old.



Give love wings, we are in action

In June 2013, Marketing Department of Wanhua together with China EMS Postal-delivery Logistics organized the donation activities with the title of "Give love wings, we are in action". The company employees were called upon to donate clothes and books to the children in remote areas. Totally, we raised 456 pieces of clothes, 241 books, more than 50 pairs of new shoes and many toys and stationeries, including schoolbags, footballs and building blocks etc. Wanhua's most warm blessings had been sent.



Children wish

On May 27, 2013, 20 representatives of workshops in Yantai Factory and their families went to SOS Children Village, donating 8700 RMB in cash and 20 sets of stationery. This activity expressed their love and blessings to children there.



Supporting poor students with love

In June 2013, Wanhua performed a public service of "Supporting poor students with love", and a public-service fund was established for poor students and families in poor areas. On October 26, Volunteers were organized by the Purchasing Department of Wanhua to visit Child Welfare Home in Yantai City. They got to know their living conditions. After interacting with kids, they sent raised clothing and toys to the children.

Activities in Yangping Gerocomium

On October 19, 2013, Wanhua HSE Department and Presidents Office brought cotton clothes and money to Yangping Gerocomium, located in Yanghu Township, Yangping County, Binzhou City. Formerly, the company has invested more than 12 million RMB to pave roads and ditches. This improved the rural infrastructures and living standards of the villagers. The Party committee secretary of the Yanghu Township expressed his heartfelt thanks to Wanhua, for its donation activities. He said they must make good use of every penny to improve the life quality of villagers. The old people appreciated Wanhua's kindness, and wish Wanhua's development is being better and better.



Our Honors

Wanhua Chemical has been following the principles of pragmatism, innovation and excellence. Our mission is to create more career development opportunities for employees, financial rewards and maximize interests for shareholders, to offer high performance-price ratio products to customers and bring them more benefit, to create value for the community whilst bearing social responsibility. Through continuous efforts, Wanhua Chemical has obtained the social recognition and affirmation in the profession.

As a member of the International Isocyanate Institute, Wanhua Chemical demands on himself according to the highest standards and specification in the profession, practices principles and guidelines of Responsible Care. Furthermore, the company pays high attention to the safety and health of employees, customers, the community and the public, and makes use of its technology, management, brand and other resources to positively shoulder social responsibility. Its aim is to develop a green chemical industry and committed to become a good role model of Responsible Care.



In 2007



CCTV Annual Best Employers in China.

In 2007



"Annual output of 200,000 tons of large-scale MDI production technology development and industrialization" won the National Science and Technology Progress Award.

In 2008



"Ningbo Wanhua 160,000 tons / year MDI Project" was honored as "National Environment-friendly Project"


In 2009




Ningbo Wanhua annual output of 160,000 tons MDI project won the "National Quality Engineering Gold Medal" award.

In 2010

"Yantai Wanhua technology innovation system engineering" project won the national scientific and technological progress second prize.




In 2011



Ningbo Wanhua MDI industrialization project" won the "China Industry Award Honor Award".

In 2012

The top three of hundred innovative companies "Strengthening rotating packed-bed reactor technology" won the second prize of National Technology Invention.

In 2013

Won the "Hewitt Best Employers in China"

In 2014

Won the "Best Practice Unit for Responsible Care"



务实 创新
Pragmatism & Innovation

追求 卓越
Commitment to Excellence

