



2007

# Environmental Report



# ALTANA Environmental Report 2007



### At a Glance

Number of employees:	4,484
Sales:	Euro 1,294 billion
Research and development expenditures:	Euro 68 million
Investments:	Euro 75 million
Total production:	242,000 metric tons
Final products:	154,000 metric tons
Accident-free sites ( $\geq 1$ lost day of work per 1 million working hours):	6
Accident-free sites ( $> 3$ lost days of work per 1 million working hours):	9
CO <sub>2</sub> from energy and other sources, external:	88,968 metric tons
CO <sub>2</sub> from energy and other sources, internal:	29,338 metric tons
Wastewater – indirect discharge:	4,35 metric tons (COD)
Wastewater – direct discharge:	4,7 metric tons (COD)
Disposal of non-hazardous waste:	1,612 metric tons
Disposal of hazardous waste:	2,664 metric tons

Data: December 31, 2006

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Glossary

## Dear Readers,

I am pleased to present you with the first environmental report of ALTANA AG. For the first time, our company is sharing information about our commitment to environmental protection. We document our current situation and show perspectives for further development. This is a first step that will be followed by many more.

The divestment of our pharmaceutical business marks the beginning of a new era for ALTANA. Under the umbrella of the former ALTANA AG, we have grown into a powerful global specialty chemicals company with outstanding perspectives and a bright future. The new ALTANA is characterized by its openness and transparency and pursues the clear entrepreneurial goal of establishing leadership in its markets. Our commitment to achieve this goal with sustainable development is equally firm.

Our business activities focus on specialty chemicals. It is the nature of our business to supply our customers with intelligent substances that have significant effects even though they only represent a small percentage share of the final product. Perhaps our ability to use resources efficiently comes from the same outlook.

The name ALTANA will be associated with a new company in the future, but ALTANA will always be seen as a responsible company that is consistently aligned with the demands of the future. This report details how the new corporation will meet its obligations toward society and the environment. All Divisions of our company have their own traditions and values, as well as national perceptions, regarding the implementation and documentation of social responsibility. We will use these approaches to create a shared self-definition of the company, in which the obligation of sustainability will play a central role.

Our report structure primarily follows the guidelines of the Global Reporting Initiative (GRI) for creating sustainability reports. However, the first report focuses less on the complete discussion of all criteria than on the consistent determination of our current developmental position. The report supplements our annual business report. This environmental report addresses our employees in all segments of the corporation, but also our customers, business partners, investors, authorities, analysts, and other multipliers. Please take it as an invitation to further dialog. We look forward to your responses and constructive criticism. Many thanks to everyone who contributed ideas and actions as well as data and facts to this starting-line summary.



Dr. Matthias L. Wolfgruber  
President and CEO

## Dear readers,

ALTANA has been in a change process for many years. On the outside, this point is underscored by the fact that the company that is the subject of this report used to be a part of the former ALTANA AG under the name of ALTANA Chemie AG. It is now known as ALTANA AG in its new structure. When this report refers to ALTANA, the statements always mean the company that was known as ALTANA Chemie AG in 2006.

Additionally, a very different type of change has occurred over the past years. While ALTANA used to be a decentralized group, in which the individual subsidiaries hardly used any synergies, the exchange and utilization of synergies within the various Divisions has increased over the past years and also began to occur across the Divisions. ALTANA will consistently make use of the advantages of knowledge, synergies and Best Practices across these boundaries. The logical consequence of this development was the creation of the new "Corporate Environment, Health & Safety" office. It will promote the use of synergies, including for example, the measurement of our environmental and safety performance in terms of standardized parameters, the consistent improvement of this performance, and the introduction of certified environmental management systems at all sites.



This first-ever environmental report is consistent with this development and represents a baseline. The performance indicators reflect the status of 2006 and cannot recount a development over several years. Past improvements can only be documented for individual companies at this point.

My visits to the individual sites have convinced me that we have outstanding experts on the issue of "Responsible Care," who can point to very good performance and remarkable improvements. It will be the principal task of Corporate EH&S to compile the knowledge of these experts and make it available to all companies, to recognize the best, and to learn from them in order to advance environmental protection and safety at ALTANA. This effort is intended to increase the company value and to support the sustainability of our actions. This also includes quick and superior responses with new, innovative products to the challenges of our markets that result from environmental aspects to sustainably secure and develop our business.

It is a motivating challenge for all employees of EH&S to contribute to sustainable action, meaning that we meet the needs of today's generation without endangering the possibilities of future generations to meet their needs. To establish this awareness and outlook in the minds of our employees is a major step toward improvement.

Dr. Andreas Diez  
Vice President Environment, Health & Safety



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## Company profile

“Innovations traditionally contribute to the sustained success of ALTANA. 15 percent of our employees are active in research and development.”

During the past year, the Management Board and the shareholders of ALTANA AG resolved to separate the business activities associated with pharmaceuticals and chemistry. Following the divestment of the pharma business to the Danish company Nycomed, the former ALTANA Chemie with business seat in Wesel will continue to operate exclusively as a specialty chemicals manufacturer under the name of ALTANA AG. ALTANA currently comprises some 40 operative companies with 31 production sites and 45 service and research laboratories. Our approximately 4,500 employees posted sales of approx. 1.3 billion in 2006. This means that every employee contributed to earning an average of 289,000 Euro.

The global sales share of 83 percent underscores the international business character of ALTANA. Our business success is primarily due to our philosophy that focuses on offering optimal solutions and services to meet the needs and product requirements of our customers. Closeness to our customers, including in geographic terms, is a high priority for us. We therefore conduct research and development directly within our sales markets all over the world. Approximately 15 percent of all ALTANA employees are active in R&D as well as in application technology. In 2006, our company invested 68 million in research, which exceeds five percent of sales.

The four Divisions of ALTANA, BYK Additives & Instruments, ECKART Effect Pigments, ELANTAS Electrical Insulation, and ACTEGA Coatings & Sealants, develop and produce high-quality, innovative specialty chemical products. All of our subsidiaries hold leading positions in their markets in terms of quality, problem-solving skills, innovation, and service. ALTANA offers environmentally compatible specialty products for coatings manufacturers, coatings and plastics processors, for the printing and cosmetics industry, as well as for the electrical industry. Our product portfolio includes additives, specialty coatings and adhesives, effect pigments, sealing and casting compounds, impregnating agents, and testing and measuring instruments.

The subsidiaries of ALTANA are located all over the globe. For our customers in any region, this means that our products and services are within immediate reach. However, we define closeness to our customers as more than simple accessibility. Thanks to the assignment of local people to key positions, we speak the language of our customers and are better and more quickly able to respond to their individual requests. Additionally, our regional knowledge of markets and conditions allows us to react flexibly to changes. Consequently, we can grow locally with our customers and are ready for future challenges.


**BYK-Chemie GmbH**

BYK Asia Pacific  
 BYK-Cera  
 BYK-Chemie de Mexico  
 BYK-Gardner  
 BYK Gardner USA  
 BYK Japan  
 BYK Solutions  
 BYK Tongling  
 BYK USA


**ECKART GmbH & Co. KG**

ECKART America  
 ECKART Asia  
 ECKART Benelux  
 ECKART Cosmetics  
 ECKART France  
 ECKART Italia  
 ECKART Mexico  
 ECKART Pigments  
 ECKART Suisse  
 ECKART Switzerland  
 ECKART UK  
 ECKART Zhuhai


**ELANTAS GmbH**

ELANTAS Beck  
 ELANTAS Beck India  
 ELANTAS Camattini  
 ELANTAS Deatech  
 ELANTAS Isolantes  
 Eletricos do Brasil  
 ELANTAS PDG  
 ELANTAS Tongling  
 ELANTAS UK  
 ELANTAS Zhuhai


**ACTEGA GmbH**

ACTEGA Artistica  
 ACTEGA DS  
 ACTEGA Foshan  
 ACTEGA Kelstar  
 ACTEGA Radcure  
 ACTEGA Rhenania  
 ACTEGA Rhenacoat  
 ACTEGA Terra

## Principles

The corporate culture of ALTANA is characterized by a positive attitude. For us, values such as mutual respect, openness and honesty as well as acceptance of criticism and tolerance are indispensable prerequisites for collaboration and success.

Until recently, ALTANA shared the principles and goals of the former ALTANA AG. With the restructuring of the company, we are also facing the challenge to develop our own corporate vision. This is likely to require some time. Nevertheless, we can assure you that the development will be more of an evolution than a revolution. Our principles and goals will be based on proven principles of success. For further information, please refer to the ALTANA brochure "Corporate Policy Guidelines" ([www.altana.com/order](http://www.altana.com/order)).

The needs of our customers are as essential to us as the development of our markets. The future success of ALTANA will depend on appropriate market innovations. For this purpose, we will continue to advance our technologies and services. We recognize that the quality of cooperation is equally important. Our qualified and highly motivated employees are the guarantee for these goals. They undoubtedly are the most essential assets for the long-term success of our company. We do everything to challenge and advance every employee at all global locations. We want our employees to have attractive workplaces with perspectives and good working conditions. All of our work must be based on a long-term, fair partnership.



In our efforts to strive for economic success, we expect a high level of social responsibility from our executives in dealing with employees and society as a whole. This means not just compliance with statutory requirements, but actions based on social values. ALTANA promotes independent thinking to ensure that our products or our work methods harm neither humans nor the environment.

ALTANA supports the 1999 "Global Compact" initiative of former U.N. Secretary General Kofi Annan. The companies participating in this initiative commit to jointly held values of human rights, work standards, and environmental protection. Based on this commitment, we have created a Code of Conduct that guides the behavior and actions of all ALTANA employees.

We know that the chemical industry is extremely relevant to the environment and is under continuous public scrutiny. As a consequence, we carefully enforce compliance with defined environmental and safety standards. All companies and subsidiaries around the world are committed to full compliance with these standards, which essentially are based on the chemical industry's worldwide Responsible Care initiative. We have set demanding goals to further improve the status quo on the basis of our accomplishments. Thus, we are planning to have the environmental management systems of all ALTANA locations certified according to EMAS or ISO 14001 by the end of 2009.

## Code of Conduct

Responsibility is a special value, since the responsible and lawful behavior of employees is crucial for the reputation and the success of a company. As a consequence, it is only logical that values such as responsibility for humans and the environment as well as fairness and tolerance hold a prominent place in the corporate policy guidelines of ALTANA. We value openness and a work atmosphere of mutual appreciation. Safety and occupational health matter more to us than economic concerns.

Every ALTANA employee must take responsibility for safety in his or her working environment. Compliance with safety regulations must be the highest priority in a chemical company. We therefore expect our employees to consistently apply these regulations in their own interests and for the benefit of their coworkers and the company. Additionally, we expect a high level of social and ethical competence from our executives.

We not only consider environmental consideration an entrepreneurial duty toward society, but also an important prerequisite for our economic success and our competitiveness. For this reason, we consistently promote environmental awareness among our employees in all locations. We reject discrimination in any form and support equal opportunity. All employees of ALTANA are entitled to fair, courteous and respectful treatment by their supervisors and coworkers.

The value of a company not only depends on its economic success, but also requires credibility and a good reputation. Naturally, we are always willing to enter into public dialog, and consider it a given to inform the public about all important company decisions in the same manner as our employees. ALTANA believes in fair market competition. We respect the laws, customs, and cultural conventions of the countries in which we are active. Our employees are not allowed to demand, accept, offer, or grant personal benefits in return for preferential treatment in acquiring, assigning or processing orders.



## Strategy

We offer our customers unique product benefits, creating value for them as well as for our employees, shareholders, and society as a whole. Sustainability is one of the superior corporate goals of ALTANA. This means that we consider the protection of the environment and of society as well as operational safety as similarly important as economic success. To us, operational safety consists of occupational safety and occupational health for our employees and also includes the safety of our products, ranging from production and storage to transport and the final customer application. We want to reduce our environmental impact by consuming few resources and producing minimal emissions. For this purpose, we already have made some far-reaching decisions.

The 2006 establishment of our corporate office "ALTANA Chemie Corporate Environment, Health & Safety," which reports directly to the Management Board, is a central tool in this effort. This decision and the associated activities underscore the significance of occupational health, environmental protection, and occupational and operational safety at ALTANA. Following the definition and continuous measurement of mandatory environmental performance indicators for all companies, the next step will be to support the companies with their continuous improvement process. We have established a network of employees who are responsible for Environment, Health & Safety (EH&S) to allow for learning and exchange in close cooperation. The implementation of the ALTANA strategy in terms of the environment and safety means knowledge management to share Best Practices and existing experience throughout the organization.

Safety is at the core of ALTANA's corporate policy, which is guided by the principle that all accidents are avoidable. The better the safety system, the



fewer missed workdays. This makes a significant contribution to the profitability of an enterprise.

When it comes to questions of occupational health, environmental protection, and safety, ALTANA complies with international treaties and has mandated specific implementation guidelines for all companies. These guidelines are based on the "Global Compact" initiative of the United Nations (UN). ALTANA AG joined this initiative as early as 2003 and is committed to complying with the 10 principles for human rights, work standards, environmental protection, and fighting corruption. These principles are reflected in our Code of Conduct, which is mandatory for all executives and employees of ALTANA: "... Responsibility for humans and nature... are especially emphasized as a corporate value in the corporate vision... Appropriate consideration for the interests of customers, business partners, authorities and the public as well as the environment..." (see also page 10).

The specific implementation of environmental requirements in the Global Compact has been incorporated into the global "Responsible Care" initiative of the chemical industry. Thus, former UN Secretary General Kofi Annan wrote a letter to the



International Chemical Company Association (ICCA), in which he expressed his pleasure“... that we have aligned the Responsible Care Global Charter... with environmental principles of the United Nations Global Compact... I congratulate you on the launch of these initiatives... [They are] inspiring models of voluntary self-regulation for other industries to follow.”

Increased efficiency in the use of resources, reduced waste volume, and efficient energy use are core issues for the implementation of our environmental policy and Responsible Care. Profitability and environmental protection are not mutually exclusive. To the contrary, this sector has enormous development potential. If we recognize the requirements of environmental protection for our markets and the participants of the entire supply chain at the right time and provide our customers with innovative and environmentally friendly products and solutions before our competitors, we can make a contribution to environmental protection while strengthening our market position and creating sustainable growth.

### Responsible Care

Responsible Care is the basic principle underlying the worldwide, voluntary Responsible Care initiative of the chemical industry. With this initiative, the industry introduced strict self-imposed controls for improving the conditions of health and environmental protection and occupational safety. The concept of Responsible Care originated in Canada and dates back some 20 years. After a few years, the European Chemical Industry Association (CEFIC) adopted it with the objective to introduce the program as a mandatory concept in all European chemical industry associations. Chemical companies that

meet the standard requirements earn a “Responsible Care” certificate for three years. Every national chemical association individually determines the set of requirements that must be fulfilled.

ALTANA made the commitment to Responsible Care in 2002. All subsidiaries have signed an “Agreement for environmental protection, occupational safety, and facility safety.” This agreement mandates a continuous improvement process in the areas of occupational safety and health, environmental protection and facility and transport safety. The focus is particularly on occupational and facility safety, efficient use of resources and waste, emissions, energy and CO<sub>2</sub> output. The concept is modeled after Corporate Responsibility, according to which the responsibilities for the company, the environment and society as a whole are equally important. In specific terms, this means that our company will not weigh competitive concerns against environmental protection. Rather, we will strive to become increasingly more competitive by using our environmental resources wisely. Thus, resource efficiency not only saves cost, but also eases the burden on the environment. For example, some of our processes reuse water or solvents that are required for cleaning vessels to dissolve the same product in another vessel. Another example pertains to reducing compressed air and nitrogen losses, which prevents the release of many tons of CO<sub>2</sub> into the atmosphere, and helps stabilize our climate.



## Principles of Responsible Care at ALTANA

The ALTANA Group, including all of its worldwide sites, is committed to the following principles of the chemical industry's Responsible Care initiative:

ALTANA considers safety and the protection of human health and the environment of fundamental significance. As a consequence, the corporate management has defined environmental policy guidelines, which are regularly reviewed for new requirements. Site-specific guidelines define procedures for the effective implementation of these requirements in practical operational situations.

ALTANA strengthens the personal sense of responsibility for the environment among all employees and sensitizes them to potential environmental problems in their products and the operation of plants.

We take questions and concerns of the public about our products and corporate activities seriously and respond to them in a constructive manner.

We make continuous efforts to reduce hazards and risks in production, storage, transport, distribution, use, consumption, and disposal of our products for the protection of our employees, neighbors, customers and consumers, as well as of the environment. We take health, safety and environmental concerns into account when developing new products and production processes.

We appropriately inform our customers and partners about safe transport, storage, application, consumption, and disposal of our products.

ALTANA continuously works to expand its knowledge about the possible effects of products, production processes and waste on humans and the environment.

Regardless of our economic interests, we undertake to restrict the marketing of products or discontinue their production if required by risk assessments for preventing hazards to health and the environment. In such a case, we pledge to provide comprehensive information to the public.

In the case of operational health or environmental hazards, we will initiate the corresponding actions, work closely with the responsible authorities, and immediately inform the public.

We will actively contribute our knowledge and experience to the development of practical and effective laws, regulations and standards for the protection of humans and environment.

ALTANA will advance the principles of the "Responsible Care" initiative. For this purpose, the company will maintain an open exchange of insights and experiences with affected and interested groups.

## REACH und GHS

REACH, the new European chemical law, will take effect on June 1, 2007. REACH stands for Registration, Evaluation and Authorisation of Chemicals. ALTANA has always supported the goals of the legislation, namely the protection of human health and the environment, and the strengthening of the innovative ability and competitiveness of the European chemical industry. ALTANA therefore took an active role in the discussion about the amendment of the law. Many subsidiaries of ALTANA AG took part in an Internet consultation in 2003 and became involved in a pilot project of NRW, a KMPG study, and the SPORT project (Strategic Partnership on REACH Testing) to analyze the future impact of REACH.



We support the new EU chemicals directive in principle and see the amended version of REACH as an improvement, with certain limitations. We perceive an imbalance between protecting health and the environment on one hand and the strengthening of innovation and competitiveness of the European chemical industry on the other hand. One of the new mandates pertains to existing chemical substances that are listed in the European Inventory of Existing Commercial Chemical Substances (EINECS), for which the same amount of toxicological and eco-toxicological data is now required as for new chemical substances. Additionally, the new system

will place greater emphasis on the application of substances and the resulting exposure and hazards for humans and the environment. This takes the entire supply chain of a substance into account. We are concerned about the loss of proprietary knowledge to competitors from this practice.

While the inclusion of existing chemical substances makes sense, it nevertheless constitutes a large cost burden for the chemical industry. The problem is primarily rooted in the unequal cost distribution. Thus, the registration of small-volume substances is associated with disproportionate costs, in terms of their quantities. This hits specialty chemical manufacturers such as ALTANA especially hard. The registration costs for substances with production quantities of 1,000 annual tons or more far exceed 1 million Euros, while the registration expenses for substances between ten and 100 annual tons are estimated around 250,000. Based on this perspective, the registration cost for large-volume substances seems very high. This cost increase may result in the fact that EINECS-listed substances sold in small quantities are either taken off the market or become much more expensive. In addition, innovations may stop for reasons of cost. New substances are typically marketed in small quantities, and it is often not foreseeable when larger quantities will be feasible. This is all the more important when we consider that the German chemical industry competes in the global market primarily with innovations and therefore is particularly dependent on small-volume substances. We would have liked to see more balanced measures to reduce costs in this regard.

Furthermore, we expect problems or large personnel and financial expenditures in the communication about the application and exposure to chemicals in the absence of efficient rules. We will continue to advocate a simplification of the communication. There are two possible approaches: the consistent



use of broadly defined application and exposure categories, or standardized questionnaires for all supply chain participants.

The Globally Harmonized System (GHS) is another important piece of legislation. This is a standard developed by the United Nations with the goal to establish a globally unified classification and labeling system for chemicals to simplify their handling and transport. GHS is currently in the process of incorporation into European legislation. ALTANA supports the concept of a globally harmonized system and took part in the discussion initiated by the EU Commission to contribute our ideas for implementation.

The conversion to GHS will take a great amount of effort over the next years. However, we hope to enjoy the results of these efforts in the years to come. The current lack of system harmonization creates a lot of additional expenditures for companies that sell chemicals worldwide. GHS can only prevail if it is incorporated into national law all over the world. Since the United Nations only developed GHS as a recommendation, the final outcome remains to be seen.

## Audits

Environmental protection as well as occupational and process safety will be emphasized even more in future management decisions. The performance required from all companies in these three sectors is measured in accordance with the mandatory definitions of ALTANA. The results are reported to the ALTANA management. These data then form the basis for establishing areas of action. In addition to the systematic improvement process, the management defines specific goals and monitors the performance indicators.

The principles of a management system for environmental protection, occupational safety, and process safety represent the standard for all companies of the ALTANA Group. The implementation of these standards is documented by the certification of the management systems in accordance with EMAS or DIN ISO 14001 at the sites, with audits carried out by independent auditors. By the end of 2009, all production sites will have completed the corresponding audit process.

By the end of 2006, some 47 percent of all European plants had already been certified. The two Indian locations were audited in accordance with ISO 14001 and two of the three sites in China have already been certified. The third site is in the audit process this year. In the future, we are planning to establish an intensive exchange of experience between the auditors of the individual companies. The certification requirements for management systems will also ensure the continued implementation of internal audits at all companies in the future.

Prior to acquiring new companies, we conduct extensive environmental reviews, as part of the so-called environmental due diligence process. In the past five years, this included all sites of ECKART as well as Invex, Kelstar and Rad-Cure.



Opening of ELANTAS Zhuhai: Rohn Grant, Dr. Christoph Schlünken, Linbao Liu, Ezio Cancellieri (left to right)



Lab-opening in India: Chan Wah Cho, Bernhard Steinrück, Dr. Roland Peter, Detlev Lindner (left to right)



## Memberships

ALTANA AG joined the Global Compact Initiative of the United Nations in 2003 (see also page 9). Additionally, ALTANA is a member of the German Chemical Industry Association (VCI), and plays an active role in the Technology and Environment Committee as well as in the Environmental Committee of the German federal state of North-Rhine Westphalia. We also chair the environmental committee of the Chambers of Commerce in Duisburg, Kleve and Wesel and in this capacity regularly participate in the "Industry and Environment Dialog" of the state government and industry representatives in NRW. ALTANA also holds memberships in an industry association to promote the restoration of contaminated sites in North-Rhine Westphalia (AAV), the European Alliance for SMC, Europur, the European Aluminum Particulate Association, and the North American Paint and Coatings Association.



Dr. Andreas Diez (left), Vice President Environment, Health and Safety, welcomes a delegation of the European Union to Wesel.

## Goals and measures

We have established corporate goals to align ALTANA even more toward sustainability and the conservative use of resources in the future. The managers in charge of sustainability review the corresponding performance indicators to verify the implementation of these goals.



In the context of the voluntary "Responsible Care" initiative of the chemical industry, we have made the commitment to continuously improve our company in terms of product stewardship, hazard prevention, environmental and health protection, occupational safety, and facility and transport safety. Additionally, we are facing the challenges of energy efficiency and using renewable resources. We make every effort to utilize synergy potentials for the protection of the environment on the basis of clear corporate structures and responsibility and with multi-business cooperation.

Since we did not previously have a central "Corporate Office for Environment, Health & Safety," the status of environmental action differs significantly among the various sites. Accordingly, there are also a variety of improvement programs in place, which allow ALTANA to make only general statements at this time. Based on our knowledge of the sites and the performance indicators for environmental protection and safety, we have established the following list of goals and measures.

Goals	Measures
Further development of corporate management for EH&S	<p>Certification of environmental management systems at all sites according to ISO 14001 by 2009;</p> <p>compilation of all environmental and safety-relevant performance indicators and data in all companies by 2007.</p>
Continuous environmental reporting, both online and offline	
<p>Prevention of all occupational accidents, with the interim goal of no more than 5 occupational accidents with one lost working day and more per million working hours until 2010;</p> <p>globally standardized measurement of safety indicators</p>	<p>Preventive risk analysis;</p> <p>spontaneous safety instruction in the workplace;</p> <p>display table for visualizing accident-free days;</p> <p>various activities to influence the behavior of employees;</p> <p>incorporation of near-miss accidents;</p> <p>motivation of employees to report near-accidents;</p> <p>safety meetings;</p> <p>“clean/ tidy workplace” campaigns;</p> <p>search for Best Practice;</p> <p>processes for accidents and incidents of material damage”</p>
<p>No incidents of material damage (according to VCI definition);</p> <p>Reduction of significant incidents by 50% by 2010 according to internal definition</p>	See above, special emphasis: learning process based on near-miss incidents
No transport incidents with product release (according to VCI definition);	Influence and incorporation in the selection of shipping companies



Goals	Measures
Reduction of specific CO <sub>2</sub> emissions	Increased share of natural gas  Energy efficiency measures: <ul style="list-style-type: none"> <li>– Energy efficient lighting;</li> <li>– Improved insulation</li> <li>– Coupling of windows with heating/cooling systems</li> <li>– Use of geothermal energy</li> <li>– Reduction of standby consumption</li> <li>– Ventilation equipment with heat recovery</li> <li>– Reduction of compressed air losses</li> <li>– Reduction of nitrogen losses</li> <li>– variable-frequency drive</li> <li>– Utilization of process waste heat</li> <li>– Optimised forced air in biological wastewater cleaning systems</li> </ul>
Reduction of water consumption, especially drinking water consumption	Closed cooling circuits
Avoidance of waste	Re-distillation of solvents; process optimization
Reduction of VOC	Construction of exhaust air cleaning facilities
Reduction of dust emissions	Restructuring of dosing equipment for air classifiers;  dust-proof attachment of bulk containers;  cryogenic exhaust air cleaning
Soil protection	New finished product storage;  continuation and completion of soil remediation projects;  support for AAV in NRW

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## Product stewardship

“Economic success – as well as ecological success – ultimately depends on innovative products. ALTANA registered 28 patents last year and launched 127 new products.”

ALTANA takes full responsibility for its products. This means that we want to work in a manner that is least harmful to humans and the environment. Our products do not represent a hazard during and after their application. Nevertheless, we have to accept that industrial production will always have some impact on the environment. We are therefore concentrating our efforts on marketing products that have high benefits and the lowest possible environmental impact.

Product stewardship pertains both to the use of raw materials and products. We regularly replace potentially hazardous raw materials and products with safer alternatives wherever feasible. In the case of manufacturing, the replacement of critical substance with harmless ones in mixing processes also benefits the final product. Thus, ACTEGA DS in Bremen reduced its hazardous substances by 18 percent. ACTEGA DS offers its customers PVC-free sealing compounds to replace PVC containing ones. Some products of ELANTAS Beck in Hamburg used to contain lead catalysts. Lead-free alternatives were introduced in early 2007. Additionally, the company has developed new, monomer-free impregnating resins.

Another successful project of ELANTAS Beck India pertained to replacing the allergenic solvent Diluent P with the less problematic benzyl alcohol. The Indian site in Pune also replaced lead products with lead-free alternatives, and ACTEGA Terra in Lehrte

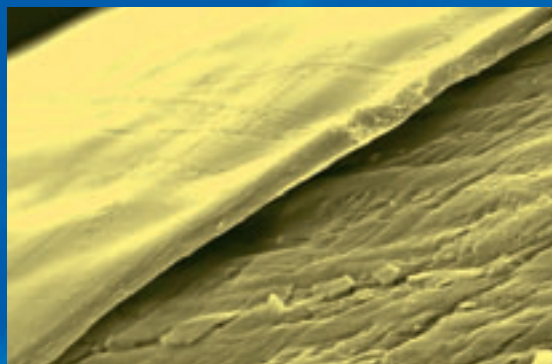
introduced a much safer alternative for the photoinitiator benzophenone in UV coatings, which resulted in the fact that the final product is no longer classified as an environmental hazard. ACTEGA Terra also has made great progress in the development of non-migrating water-based coating systems for food packaging, which translates into considerable improvements in consumer and food safety.

Product stewardship also involves the determination of all relevant toxicological and ecotoxicological data (intrinsic properties) of substances and the derivation of safe handling instructions for customers. This also means developing products that are biodegradable and safe to handle. We expect the regulations of the new European chemicals directive, REACH, to result in further improvements, which will provide ALTANA with more data about raw materials that can be shared with customers. In a broader sense, product stewardship also pertains to our efforts to ensure that our customers manufacture environmentally compatible and safe products and emphasize the corresponding manufacturing processes.

## The world of dwarves

### The importance of nanomaterials for innovative products continues to rise

Suddenly, everyone is talking about nanotechnology. It sounds like the future, like moving to a better world. Or, at least, a smaller one. After all, nanotechnology focuses on researching and utilizing minute particles, whose name is derived from the Greek word "nanos," for dwarf. A nano is a millionth of a millimeter, or approximately 2,000 times smaller than the diameter of a human hair. What does this miniature world have to offer? Why do we place such high hopes in this technology? And, will it help to protect our environment?

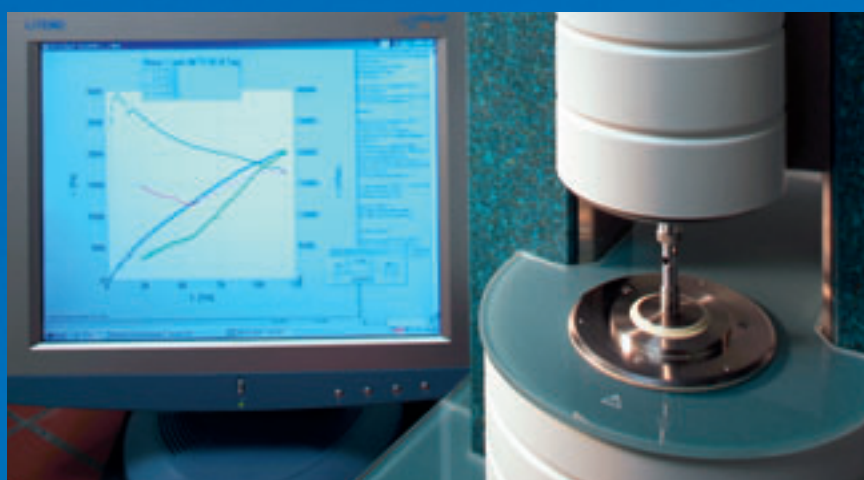


In principle, it is important to know that material properties change when material is decreased to a size of one to one hundred nanometers, and that the properties of nanoparticles depend on the utilized materials. Consequently, if ALTANA wants to improve the properties of coatings and plastics, it has to look at the materials used for this process. If coatings are to be scratchproof and color-proof, be easy to spread, or make surfaces harder, materials such as quartz, diamonds or silica can be used in nano sizes.

Nanoparticles can be used to influence properties such as abrasion resistance, UV protection, magnetism, conductivity or heat and flame protection. For ALTANA, this means the capability to make more functional or completely new products. In spite of the immensely high cost of research, ALTANA is convinced of the success and advantages of "dwarfdom." "Thanks to this innovative technology, we can offer new products in all Divisions, which represent an expedient addition to our existing product portfolio," says Dr. Thomas Sawitowski, the head of the Nano Program at ALTANA. "This helps us create considerable added value for our customers."



Nanotechnology not only has economic advantages, but also environmental benefits. At the mention of nanotechnology, most people may think of the well-known lotus effect, which prevents dirt and liquids from clinging to a surface and lets it appear clean all the time. However, this effect is actually taking place in the micro range. Although self-cleaning automotive coatings, which could help save enormous quantities of water and detergents, are not yet on the market, additives that significantly improve the scratch and abrasion resistance of coated surfaces



and help maintain value are actually available. There are numerous other sustainable applications of nanoparticles. Thus, they can enhance the insulating properties of insulating coatings, which could reduce the consumption of wire enamels, or protect coated hardwood floors from mechanical impact.

The public generally tends to be critical of new technologies, and debates the risks associated with nanotechnology. "We are following the discussion very closely to respond to possible risks and hazards right away," says Dr. Sawitowski. ALTANA takes its product safety responsibility for humans and the environment very seriously. Together with the American nanoparticles specialist Nanophase Technologies, which has been in a partnership with ALTANA for three years, the company is developing processes and procedures that offer maximum safety for employees and customers alike.

## REACH in practical implementation

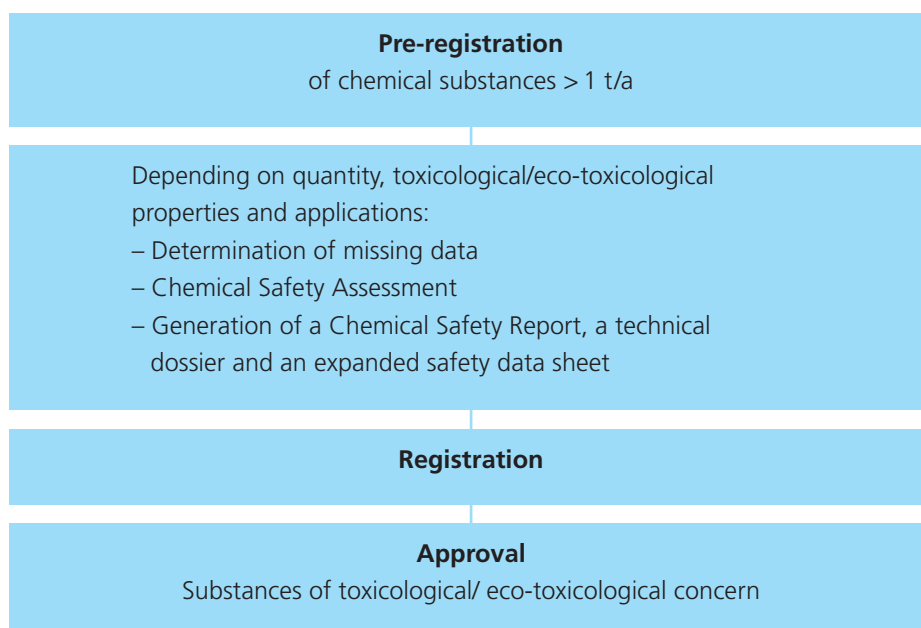
REACH, the new directive of the European Union for chemicals and their application, regulates the essential aspects of producing and distributing chemical substances. REACH stands for "Registration, Evaluation and Authorisation of Chemicals" and refers directly to substances and indirectly to preparations that contain such substances. All industrially produced chemical compounds, including all additives, are considered substances. The directive will take effect on June 1, 2007 and will only apply to substances that are manufactured or imported in quantities of more than a metric ton a year.

ALTANA started the implementation of actions to comply with this new chemicals law in January 2007. We initiated a project to comply with all statutory deadlines to ensure that we can provide our customers with all products in the future. Since we want all of these activities to be as efficient as possible, we will make use of all cost-savings opportunities provided by REACH.

Because the new regulations also affects imports from countries outside of the EU, REACH will also impact ALTANA companies with non-European sites that import substances or preparations to Europe. The new directive forces importers to have all substances registered, which leads to a significant disadvantage for all non-European suppliers and may cause changes in the supply chain.

REACH also affects ALTANA companies that are characterized as "downstream users", i.e. when they purchase substances from other manufacturers. We also are part of supply chains for other companies, in which case our subsidiaries have to ensure, as the vendors of preparations, that the applications of our customers, and if applicable, the applications of their customers, are recorded in the registration process. This requires a great communication effort throughout the supply chain. Furthermore, we have to implement REACH both as the manufacturer of polymers and substances and

### Procedure for Compliance with the Steps Required by the EU Directive REACH





as the importer of substances, since the directive calls for the registration of monomers and substances, including all applications, by the specified deadlines.

The efforts to comply with REACH are not cheap. Since the registration of small-volume substances is especially expensive in terms of volume, there is a risk that our suppliers may choose not to register raw materials in quantities below 100 annual tons. We have to place special emphasis on such specialty raw materials because they are needed by many of our ALTANA subsidiaries, although few other parties may only purchase them. Overall, we only have three alternatives to ensure the continued supply of our customers:

- We assume significant portions of the registration cost.
- We register ourselves as an importer of these substances and set up a contract manufacturer outside of the EU.
- We use the remaining time to find an alternative raw material. This will not be possible in most cases and may even be more costly than registration.

ALTANA will put great effort into the pre-registration until November 2008, both as a manufacturer and as a processor (downstream user) of substances. The pre-registration is mandatory to ensure that companies are permitted to keep producing until the final registration. In addition to the actual registration and the determination of the associated data for all participants of the supply chain (manufacturers, importers, downstream users), communication about use and exposure will be of utmost importance and may consume considerable resources. Any missteps in the supply chain are associated with the risk of wasted resources. By the same token, an expedient approach could be highly efficient.



From our perspective, there is the following approach: We have to analyze every single use and exposure scenario as part of a Chemical Safety Assessment (CSA) and document it in a Chemical Safety Report (CSR). Customers have to receive safety data sheets to learn about the uses and safe handling of the substances and preparations. It is unforeseeable what will happen if the scenario descriptions are too detailed. Since literally hundreds of scenarios are feasible for every substance, this approach is neither reasonable nor useful for safety from our perspective. However, REACH permits the logical formation of utilization and exposure categories to classify multiple uses. We should make use of this option in all cases where the categorization does not endanger safe handling. ALTANA plans to promote this concept in its communication within the supply chain.



5

## Occupational health

“Our goal is to achieve a rate of fewer than five occupational accidents with lost work time of one day per million working hours by 2010.”

The protection of our employees is our highest priority. This is part of the core principles of the Responsible Care initiative of the chemical industry. Within the scope of integrated occupational safety and health, employee protection from direct or long-term health hazards must be guaranteed. For this purpose, ALTANA considers it a matter of course to comply with all national regulations for occupational safety and health. Additionally, we implement reasonable preventive measures even when law does not explicitly mandate it.

Occupational health in the sense of preventing occupational illnesses is typically more difficult to track than keeping statistics on the number of occupational accidents. The reason is that health problems stemming from work often do not become evident until many years later. As a consequence, ALTANA's efforts for occupational safety and health are characterized by particular commitment. Our goal is to protect our employees from all health impairments caused by their work.

In the interest of standardized record keeping, all ALTANA companies maintain data on incidents of occupational illness, which are recognized for compensation by the responsible authorities and entitle employees to receive pension payments. To date, ALTANA has no record of any cases. However, due to the time delay in the manifestation of occupational illnesses, the control by key figures can be quite difficult.

Occupational health measures at ALTANA particularly pertain to the following areas:

- Exposure to chemicals
- Exposure to dust
- Exposure to noise
- Lifting heavy loads

A variety of actions have been initiated to prevent occupational illness. These pertain, for example, to working in closed systems (raw materials in tanks with automatic metering), to various ventilation and fume exhaust systems, the installation of dust filters, the use of lifting aids for moving heavy loads and sound insulation measures by encapsulating machines. Furthermore, all employees are subject to regular medical screening. The Indian sites have even hired a part-time works physician for this purpose.

ALTANA plans to define its own standards for occupational health in the near future and will closely monitor our compliance with these standards.



## “Improvements can only be achieved with behavior changes of the employees”

**ALTANA is committed to intensive occupational safety management and has established ambitious goals for the future. This requires everyone's contributions within the company. Dr. Dieter Lutz is the Head of Occupational Safety at ECKART GmbH & Co. KG Deutschland.**

### **Dr. Lutz, ECKART has been part of the ALTANA Group since 2005. What has changed at ECKART in terms of occupational safety?**

The first change for us was the switch from the guidelines of the professional trade association of metal workers to that of the trade association of chemical workers. The metal industry on average had 26.4 accidents with more than three lost days of work per million working hours in 2005, while the same figure for the chemical industry was just 9.5. The rate at ECKART was 18.6. While our performance had been considered quite good under the old system, we were forced to make significant improvements to match the achievements of the chemical industry. The objectives of ALTANA are even more ambitious.

### **Were you able to take steps in the right direction in 2006?**

Yes, we were able to reduce our average accident rate to 11.6 in 2006. This was a first approximation to the figures of the trade association of chemical workers. We also accomplished a 10-percent improvement in terms of accidents with one lost day of work.

### **What was the economic impact of these improvements?**

Overall, we improved from some 450 lost days of work to 290. This is approximately 160 days less within one year. Keeping in mind that every lost day causes expenditures ranging from 400 to 800 Euros, this means we saved at least 65,000 Euro.

### **Did the fact that ECKART is part of the ALTANA Group play a role in this?**

To a certain extent, yes. The issue of occupational safety is much more a management focus than before. The performance indicators are reported to management and we were given ambitious goals to achieve. These in turn were incorporated into the target agreements for every single manager. As a consequence, all executives are paying more attention to this issue.

### **Are you of the opinion that increased management attention will translate into greater safety?**

I am absolutely convinced of that. The technical optimization potential for safety has been largely exhausted. Significant improvements can only be achieved with behavior changes of the employees. In this regard, supervisors can play an essential role.



**That makes sense. What kind of support does ALTANA provide to executives?**

We conduct special training sessions, in which we provide detailed information about responsibility for occupational safety.

**Has this been sufficient or did you do even more?**

In fact, we did considerably more. In 2005, we took part in the "Step safely" campaign of the professional trade association of chemical workers. Accidents from falling and stumbling are quite common and often lead to severe injuries. Think for example about falling on stairs or in ice and snow conditions. We set up a display at the entrance gate to the plant, which shows the current status of occupational accidents and the number of accident-free days in order to create greater employee awareness for occupational safety. This display has a highly motivating effect, reminds everyone of safety right at the start of every shift.



**Do you have an occupational safety management system to ensure continuous improvement?**

Yes, we do, and we are particularly proud that the system became certified according to OHRIS in 2006 after an independent audit. This makes us one of the first ALTANA companies with a certified safety management next to ELANTAS Zhuhai.

**ALTANA has set itself the ambitious goal of reducing occupational accidents to approximately five accidents with lost work time per million working hours. Do you consider that realistic?**

The objective is admittedly quite ambitious. However, there are examples that show it can be done, even under difficult conditions. I am confident we can reach this goal in the intermediate term. Naturally, this presumes that all managers and employees consider safety a very high priority and consistently continue on our chosen path.

## Occupational safety

Within the scope of our activities to improve occupational health and environmental protection (EH&S), we place particular emphasis on safety. While some ALTANA companies already have achieved very good results, others still have room for improvement. For this purpose, we defined mandatory safety performance indicators for all companies in 2006. The objective is to make occupational safety transparent and to establish comparability not only between all companies, but also with third parties.

The definition of the performance indicators is based on international standards to ensure comparability. The following data are recorded:

- Number of occupational accidents with lost work time of a day and more
- Number of occupational accidents with lost work time of more than three days
- Total downtime
- Fatal accidents

To make the recorded numbers comparable, they are calculated in terms of one million working hours. The total downtime serves as a measure of accident severity and also as a measure of the economic dimension. Minimal downtime translates into the largest possible economic success. In addition to occupational accidents, we also record damage incurred from fires, explosions and product discharges to the environment. Following the definitions of the German Chemical Industry Association (VCI), we distinguish between major accidents with material damage (of more than 100,000 Euro externally or 500,000 Euro internally) and significant incidents that are defined internally. All accidents associated with product release to the environment are classified as significant, regardless of spill quantities. The same applies to minor fires that require the response of firefighters.

We also record all incidents in which protective systems, such as safety valves, are activated or which cause employee injuries.

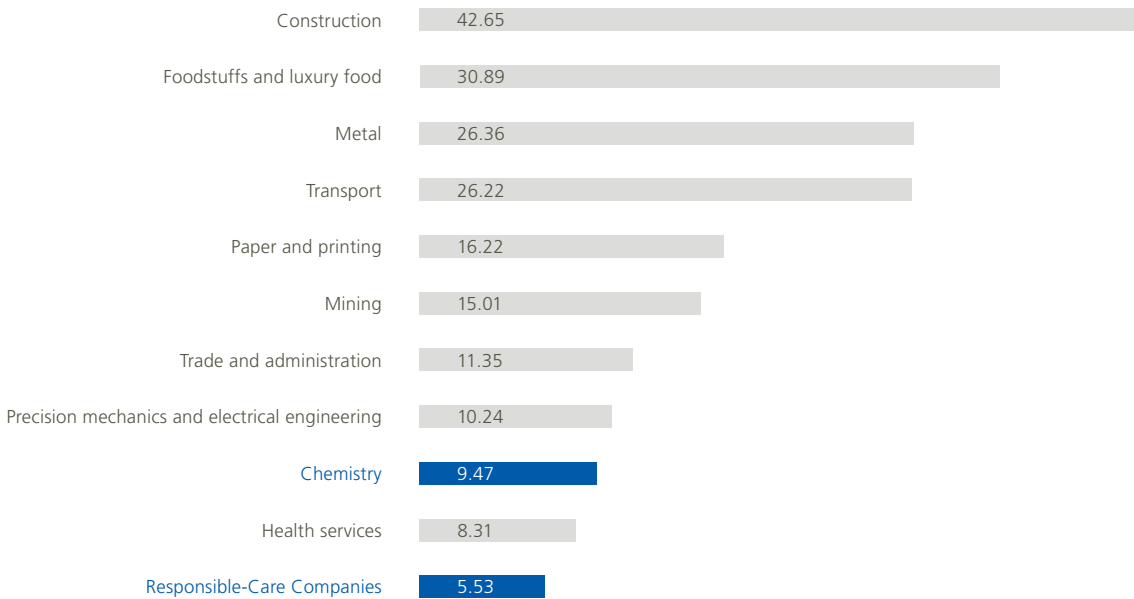
It is our declared objective to prevent all severe or significant incidents in the future. For this reason, we have provided the Divisions and the companies with objectives for the performance indicators explained above. These objectives are incorporated into the evaluation systems for managers. Additionally, we have revised our safety policy, based on the guiding principle that all accidents are avoidable. Every executive and every employee in occupational safety is responsible for the implementation of this safety policy.

We are currently in the process of establishing a network for all EH&S personnel in the various subsidiaries. Meetings have already been held in Europe, the U.S. and Asia. The objective of the network is to establish a platform for exchanging knowledge, recognizing so-called Best Practices for recommendation to other companies, and the presentation of defined safety standards. Furthermore, we have established an Intranet portal to support knowledge management, which also facilitates networking and the exchange of experience. The portal contains all Best Practice examples.

The Group has developed a standard process for the analysis of causes and initiating measures after occupational accidents and incidents. This process has already been introduced similarly at most subsidiaries. In the future, the Intranet will report on insights and actions to let all companies benefit from specific insights. The process is currently in its pilot phase at three sites and will then be rolled out in all companies after any necessary improvements.



**Accident frequency in several industry sectors in comparison 2005**  
(Reportable occupational accidents per one million working hours)



Source: German federation of institutions for statutory accident insurance and prevention (HVBG), BG Chemie

As a parallel measure, the reporting, data entry and examination of near-miss accidents will also be improved.

The graphic shows the accident frequencies (number of accidents with lost work time of more than three days) published by the German federation of institutions for statutory accident insurance and prevention for the year 2005 for comparison. Figures for 2006 were not yet available. The figure shows that the chemical industry is doing quite well compared to other industry segments. Companies that are committed to the principles of Responsible Care (see page 12) were doing significantly better with an average of 5.53 accidents. According to the statistical information of the European Chemical Industry Council (CEFIC), the number of accidents with lost work time of a day or more is larger by a

factor of 1.1 to 1.6. Independent of the vision of an accident-free company, ALTANA's objective for the next three years is to stay below the average accident rate with lost work time of a day and more that is achieved by Responsible Care companies.

The following accident figures are available for the 31 production sites of ALTANA for 2006:

**2006 Accident Statistics of the Production Sites**



Figures always refer to all sites (e.g., 6 of 31)

ALTANA had demanded an improvement of at least 20 percent over the previous year for 2006, unless a company had already reduced its incident rate to less than six accidents per million working hours. In the case of these companies, the goal was to achieve zero accidents. The following companies have accomplished this goal:

- ECKART Italia
- BYK USA
- ELANTAS Beck India, Ankleshwar site
- ELANTAS Beck India, Pimpri site
- BYK Cera
- ELANTAS Zhuhai

ELANTAS PDG experienced fewer than five accidents with at least one lost working day per one million working hours and achieved outstanding results.

ECKART GmbH & Co. KG in Germany was able to post a significant reduction of lost work time. The number of lost workdays fell from 452 in 2005 to 290 in the following year. Naturally, this led to considerable savings. It goes without saying that companies with zero accidents or with lost work time of less than three days achieved outstanding economic results. Within the scope of our Best Practice model, companies that have achieved a high level of occupational safety or which have accomplished outstanding improvements in this field are promoted as benchmarks and models for emulation.

None of the companies of the ALTANA Group have experienced a fatal accident to date. Three of the companies had three fatal accidents in the past 30 years prior to joining the ALTANA Group. ALTANA has no record of occupational illnesses that would have forced employees to retire early.

At the Italian sites of ELANTAS Deatech in Ascoli and Quattordio, new occupational protection man-

agement systems were established to improve occupational safety. At the sites of ECKART in Germany, the occupational safety management system was certified according to OHRIS, while ELANTAS Tongling and ELANTAS Zhuhai in China became certified according to OSHAS 18001. Some sites have installed displays to visibly show the number of accident-free days or of occupational accidents. Such displays are planned for all sites.

ELANTAS Deatech installed a dust filter in raw materials metering to improve the health protection at work. ELANTAS Beck in Hamburg expanded its fire alarm system to all relevant areas to shorten the response time of emergency personnel. In 2005,



ECKART took part in the "Step safely" campaign of the professional trade association of chemical workers. At ACTEGA Kelstar, the replacement of gas-operated forklifts with electrical vehicles further reduced the risk of health hazards for workers in the production hall. Additionally, the new device is more energy-efficient. Driver-less transport systems took over the work of forklifts in Wesel in



BYK: Material flow with fully automated transport system in Wesel

2006. ELANTAS Deatech in Ascoli and Quattordio installed automatic fire extinction systems (water/foam) in its production and warehouse areas.

ALTANA is not just concerned with the occupational safety of its own employees, but also supports the safety efforts of its customers wherever expedient. As an example, ECKART trained its customers in the special risks of dealing with aluminum powders that are a dust explosion hazard, and ELANTAS Beck India conducted safety-training sessions for customers after a deadly accident at another company involving a drying oven.

The EH&S network continually exchanges information about these and many other examples. As a consequence, many effective measures are incorporated into the recommendations and safety standards of ALTANA. "To learn from the best" is our guiding principle, and we are convinced that the occupational safety of ALTANA can be sustainably improved. This also includes making occupational safety a particular focus for top management.

### Process safety

It is the responsibility of every facility operator to engineer plants and processes in such a way that disruptions are minimized. Even though the law stipulates a general due care obligation, there is still quite a bit of room for individual responsibility. The chemical industry has reached such a high level of safety that severe accidents have become a rare occurrence. According to the information of VCI, less than 20 incidents per year occurred in Germany in the past 5 years in which external damage exceeded 100,000 Euro or internal damage was higher than 500,000 Euro.

and limit the effects with suitable emergency management. ALTANA did not experience any industrial accidents of the scale defined by VCI in 2006.

The various production processes of ALTANA involve the mixing of liquid and powdered substances, chemical reactions, some of which release heat, and the mechanical shredding of metal to make effect pigments. These processes and the involved raw materials as well as the manufactured substances and preparations are associated with the following risks:



Nevertheless, major industrial accidents can of course not be ruled out for the future. ALTANA works consistently to recognize weaknesses and to implement the corresponding improvements. The analysis of so-called near-miss incidents plays an important role in this necessary learning process. The resulting insights are quickly communicated in the EH&S network between the companies. Whenever insights can be generalized, we turn them into standards. These steps help us reduce the probability of occurrence of an event

- Fire hazard due to the use of organic solvents
- Loss of control and release of chemicals or fire due to chemical reactions with heat release
- Soil and water contamination due to handling and transport of chemicals
- Fire hazard and dust explosions when handling powders
- Smoke hazards in case of fire

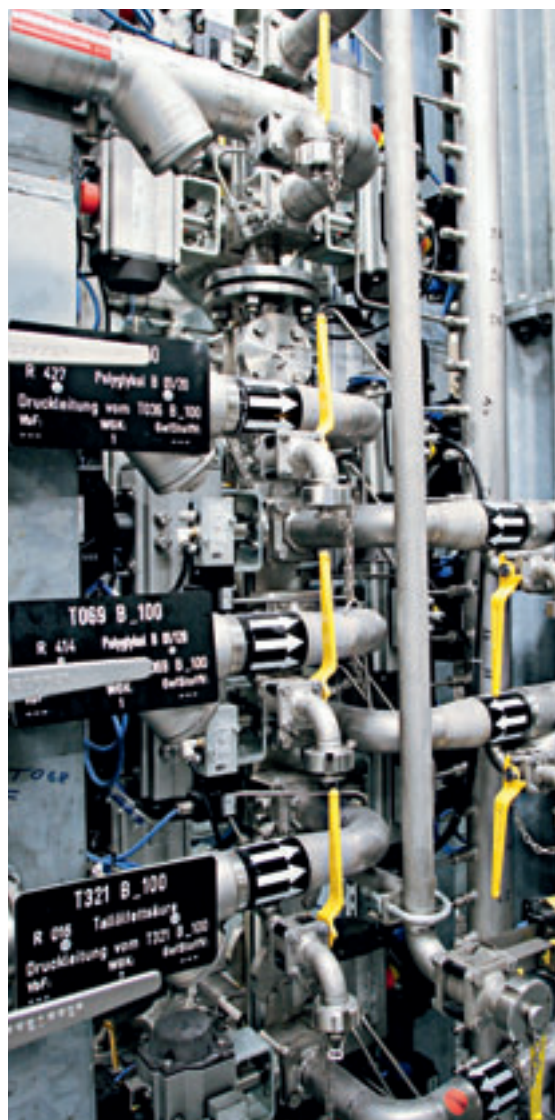


We try to minimize these hazards with fire prevention and firefighting measures. Fire prevention includes e.g., working in closed systems or in nitrogen atmospheres, with gas alarm systems, explosion-proof devices, mandatory grounding, and ventilation systems. Firefighting methods include fire alarm systems, automatic sprinkler systems (water/foam, misting, CO<sub>2</sub>) and so-called extinction monitors for water and foam. Additionally BYK has funded special training for professional firefighters in Wesel to acquire the necessary skills for extinguishing solvent fires and has purchased an extinction monitor.

We keep improving process safety by using process control systems for chemical reactions, which help reduce human error. We also systematically analyze all exothermic chemical reactions in the laboratory calorimeter to achieve the safest possible process design.

ALTANA did not experience any severe industrial accidents in 2006 (internal damage exceeding 500,000 Euro; external damage exceeding 100,000 Euro) as defined by VCI. Our list of incidents according to internal definitions included one fire that required calling the fire department. It only caused minor damage and did not lead to any personal injuries or external effects. An exothermic reaction with heat release got out of control at ELANTAS Beck India in the Indian town of Pimpri. However, the appropriate safety valves responded and a catching basin was used. Nevertheless, the site was unable to prevent the release of a gaseous substance, which caused an odor problem in the neighborhood. Some of the residents received precautionary medical screening, but no health impacts were found.

As a consequence of this event, we have issued a requirement for ELANTAS to analyze all exothermic



chemical reactions in accordance with a specific standard and to engineer the corresponding processes on the basis of fixed safety criteria. The BYK Additives & Instruments Division introduced this standard years ago. All existing exothermic reactions are analyzed accordingly.

## “The firefighters were very impressed”

Fires in chemical plants often require very special knowledge for proper emergency strategies, but this expertise may not be present in a typical fire department. We spoke to Herbert Quilitzsch, the Fire Safety Officer at BYK in Wesel, about the challenges of firefighting and special firefighter training.

### **Mr. Quilitzsch, what can you tell us about the fire safety concept at BYK?**

Of course, we primarily focus on measures to prevent fire, such as electrical equipment with explosion protections, ventilation equipment with controlled air exchange, or gas alarm systems. We have subterranean tank farms, which are covered with nitrogen, just as the production vessel. We also have installed a broad network of alarm systems, which are directly connected with the fire station and trigger automatic extinguishing systems, and we conduct regular training sessions to sensitize the employees to the topic.

### **Which types of extinguishing systems are these?**

The old production facilities, which were built in 1990, and the warehouses use CO<sub>2</sub>, which means the fire is extinguished by starving it of oxygen. In the new production units, we have a water/foam system, while the energy center uses a water atomizer system.

### **Can these systems replace firefighters?**

No, most definitely not. Firefighters will always be needed. On one hand, there is the risk that the systems do not have the desired effect or need back-up, and on the other hand, firefighters are needed to inspect the sites and make sure the fire is truly extinguished. However, our systems reduce the risk for firefighters and also respond much faster than they can. This allows the fire department to control fires much quicker.

### **Does BYK have a works fire department, as is the custom in the chemical industry?**

No, we don't have our own fire department, since the town of Wesel has an excellent professional fire department, which is located just a few hundred meters from our facilities. Our alarm systems are connected to that station, making sure they can respond to emergencies promptly. By the same token, we don't have any chance to call off a false alarm. They are simply too fast for us.

### **Chemical production probably represents special challenges for firefighters. How does the cooperation work?**

The cooperation works very well. When we built the new facilities, the firefighters inspected the new premises very carefully. They spent a number of Saturdays in the facilities to get to know them.

### **Is it sufficient to be familiar with the premises?**

No, of course our fire alarm center has all necessary information about the substances we use and their hazard profiles on hand. The center is located at a safe distance from potential fire sources.

### **Can you tell us about some of the hazards the firefighters need to look out for?**

Our company works a lot with flammable solvents. This represents a different challenge for firefighters, than, let's say, an apartment fire. Solvents can spill quickly and spread over a large area, forming ignitable vapor-air mixes. Accordingly, the fire develops much faster than in a house fire.

### **Surely, this type of fire is quite difficult to extinguish with water?**

Water is actually not very suitable, because it is heavier than the solvents in most cases. We therefore suffocate the fire with CO<sub>2</sub> or extinguish it with foam. The foam carpet extinguishes the spilled solvents. For this reason, we keep two so-called extinguishing monitors in our firefighting equipment room in addition to the automatic extinguishing system. These







mix water and foaming agent and the resulting foam can be used to fight a fire from a distance of about 50 meters. The local fire department is allowed to use these monitors for other fires in Wesel as well.

**What happens with the run-off water and foam? Aren't they a hazard for the environment?**

Essentially, yes, but our premises have a sufficient catching volume to retain them. Additionally, we are able to lock the sewerage system to make sure the mix cannot be released into the environment. The water is trapped in special run-off water retention pools and then disposed as waste.

**Does a fire department that typically deals with house fires have the necessary expertise for this kind of challenge?**

Certainly not. To protect our own interests, BYK fund a special training for the firefighters of Wesel in the Netherlands to prepare them for extraordinary circumstances.

**Why the Netherlands?**

That's where the leading event organizer is located. Germany doesn't even have any suitable training facilities.

**Does that mean the training is something quite special?**

Yes, I took part in it together with my colleagues. It was very impressive and extremely informative.

**What was so impressive? Did you see real fires?**

Yes, we did, the center offers training in various fire scenarios. The training manager is able to use a mix of flammable gases and liquids from the control center to realistically simulate a number of fire types.

**Can you tell us a bit more about this training?**

We initially discuss in the classroom how to proceed in specific firefighting situations. We then apply the content of these lessons in the training center. Firefighters not only have to make the right choices, they also have to make them quickly. When they make a mistake or are too slow, the trainer will notice. He then alters the parameters in such a way that the fire scenario escalates.

**What was the effect of these drills on the firefighters?**

When we were getting together for a beer at night, I could see how impressed the guys were with the presentation, and how much they had learned. I would highly recommend this training.

95



## Raw materials

“The efficient use of resources is an obligation. At ALTANA, 95 percent of the raw materials we use are contained in our final products.”

Considering the growing scarcity of raw materials on the global market and the associated, considerable increase in the price of raw materials, the conservative and efficient use of resources is not just an ecological, but also an economic necessity. Given the parallel rise in cost and competitive pressures, such efficiency increases are even more urgent. We make continuous efforts to improve our efficient use of resources and energy in the sense of sustainable business practices in order to systematically exhaust all ecologically relevant cost reduction potentials.

The subsidiaries of ALTANA primarily use chemical substances or substance mixes as raw materials. Due to the very high quality requirements, such resources typically do not consist of recycled material. The majority of our source materials are based on fossil resources, and in some cases on renewable resources. This includes, e.g., acids and derivatives from plant sources. Thus, ACTEGA Artistica in Spain uses natural rubber and all of its products are water-based. At BYK in Wesel, some 17 percent of raw materials come from renewable sources.

The degree of material usage is an important criterion for efficiency. We measure the percentage of any given material that is actually sold as a product. In most companies of the ALTANA Group, this rate is above 95 percent, which underscores the fact that efficiency improvements can only be made in very small increments. Nevertheless, we will continue our

efforts to further increase our resource efficiency for environmental reasons, but also based on the consideration that even minor improvements have a large economic impact, since raw materials make up between 30 and 60 percent of all production costs.

It is the task of process technology to achieve a high level of material usage, especially in chemical processes. Thus, it is feasible in many cases to further reduce distillation and filter waste. Another solution consists of the repeated use of resources. For example, water or solvents that are used for cleaning a vessel can be reused in another vessel to dissolve the same product. Additionally, we increasingly make use of the option to first process a resource in production and then reuse it to generate energy. This is the case, e.g., with cleaning solvents at BYK or with stearic acid at ECKART in Italy. Stearic acid is made from renewable resources. Two of the Italian ELANTAS Deatech sites have started thermal waste processing. At other sites, such as our Indian Ankleshwar site, solvents such as methanol are redistilled in a separate facility.

Even though politicians keep demanding significant efficiency increases, this will only be feasible by recycling final products, since we already have achieved a usage rate of over 95 percent. However, this is impractical in the case of ALTANA's products, which primarily consist of coatings or coating components that are lost during the recycling of the coated parts.

### Raw Material<sup>1</sup>

		BYK	ECKART	ELANTAS	ACTEGA	ALTANA
Renewables	to	9111	–	968	490	10569



## Energy

Based on the most current scientific knowledge, ALTANA assumes that increased output of CO<sub>2</sub> from fossil energy sources into the atmosphere most likely is harmful for the climate. Considering the potential consequences, we perceive a large need for action for our company. In addition to the use of renewable energies, one of the essential sustainability goals of ALTANA is energy efficiency.

ALTANA uses energy for a great variety of purposes. Thus, we require power for lighting, electrical devices and ventilation as well as for air-conditioning in our administrative and laboratory buildings and gas or oil for heating. The greatest energy demands are in our production facilities to power agitator motors, ventilation equipment, pumps, cooling units, and mills. We also operate our compressed air units and nitrogen generators with electrical power, and use gas or oil for generating thermal energy, for example to heat mixed batches for chemical reactions.

The finality of fossil energy resources also means that the currently most important raw material source of the chemical industry will come to an end. Contrary to energy generation, we consider the use of fossil fuels reasonable in the chemical industry, since carbons remain bound during use and are not released as CO<sub>2</sub>. Additionally, many products of the chemical industry, such as plastics, allow for repeated use of the resource.

Consequently, it is an important aspect of sustainability to delay the depletion of fossil sources. Increasing energy efficiency typically consists of many

small steps, which as a sum can achieve remarkable results. Thus, ALTANA reduced its specific power use (in relation to the production volume) at its Indian production site in Ankleshwar by eleven percent from 2005 to 2006 and by 35 percent from 2002 to 2006. The specific fuel oil use decreased by approximately five and 20 percent in the same time periods, respectively.

In the Indian site at Pimpri, we were able to reduce the specific power consumption by 12 percent and the specific fuel oil use by three percent in twelve months from 2005 to 2006. This progress was achieved with a number of different measures, which included the use of variable-frequency drives and other energy-efficient equipment, the optimization of the plant utilization and production planning, process optimization and the use of energy-efficient lights.

These approaches and other energy-saving technologies will now also be implemented at other sites. Some laboratories in Wesel use automatically closing fume cabinets and we also recover heat from ventilation equipment. In some buildings, the heating and air-conditioning systems are linked to windows, which means that these systems automatically are deactivated when a window is opened. Two successful projects involved saving compressed air at ECKART and nitrogen at BYK in Wesel.

We also save energy by using waste to generate heat. Even though this approach typically does not contribute to reducing CO<sub>2</sub> emissions, it is associated

### Energy<sup>1</sup>

		BYK	ECKART	ELANTAS	ACTEGA	ALTANA
Renewables energy	MWh	–	6022	–	–	<b>6022</b>
Natural gas	GWh	25,01	39,29	16,43	11,5	<b>92,23</b>
Oil	GWh	0,13	27,25	3,73	1,1	<b>32,21</b>
Power	GWh	25,19	114,25	7,05	15,27	<b>161,76</b>

with significant savings and prevents the use of further resources. Additionally, the reduced need for transport cuts down on emissions and reduces traffic. As an example, the Wesel and Ascoli (Italy) plants incinerate waste solvents. This will also be introduced in Quarttordio (Italy) in 2007. The Italian plant of ECKART uses fatty acids from plants as process aids. Parts of this process material remains as waste residue and can be used to generate energy. This is the first example of CO<sub>2</sub>-neutral generation of renewable energy at ALTANA, with multiple use of a raw material.

We generate thermal energy with natural gas wherever it is available, since this process generates significantly less CO<sub>2</sub> per kWh than heat generation with coal or fuel oil. However, our sites in Asia do not have any access to natural gas yet.

Until a few years ago, company-owned vehicles typically were equipped with gasoline engines. We have now implemented a regulation that makes it more attractive for employees to purchase diesel-powered vehicles. All vehicles are equipped with soot particle filters. Moreover, our new company vehicle policy no longer permits the purchase of sports utility vehicles (SUV).

## Water

The water volume consumed at all sites of the ALTANA Group in 2006 was 1.04 million cubic meters. We record this consumption as an environmental performance indicator, both for drinking water and for surface and groundwater without drinking water quality. We utilize water for cooling and in part also for vacuum pumps in laboratories and in production, as a raw material for products, and in sanitary installations. The cooling water in our production is usually routed through cooling towers in closed circuits. Water that is lost to evaporation must be replaced with fresh water. However, this water is not in contact with any products and is not contaminated with chemical substances. Wherever possible, for example in Wesel or Güntersthäl, we use surface or groundwater for this purpose.

The cooling and vacuum pump needs of laboratories can result in high water consumption. To conserve water, we have partly replaced water-jet pumps with alternative technologies and cooling water is now routed in separate, closed circuits. In some cooling circuits for production, water is not cooled in cooling towers, but in refrigeration units





due to procedural requirements. While this cuts down on water losses, it also consumes more energy.

As raw material water is primarily used as solvent for coatings. The water evaporates during or after the product application, for example when a coating is applied, and returns to the natural cycle. In this way, it is comparable to a renewable resource.

BYK has implemented a project for water conservation in Wesel. The plant needs sterilized water, but the sterilization process was associated with high water losses. The optimization of the sterilization system has led to significant savings. At ACTEGA DS, the optimization of the cooling circuit in 2005 also led to reduced water consumption.

#### Water<sup>1</sup>

		BYK	ECKART	ELANTAS	ACTEGA	ALTANA
Town water	Tm <sup>3</sup>	46,03	424,97	139	75,28	<b>685,28</b>
Surface/ground water	Tm <sup>3</sup>	21,7	331,05	–	–	<b>352,75</b>

#### Production

The various production processes of ALTANA involve the mixing of liquid and frequently also powdered substances, chemical reactions, some of which release heat, and the mechanical shredding of metal to make effect pigments. The processes produce waste, consume water and energy, and emit the resulting CO<sub>2</sub>. Additionally, the production process uses raw materials for the chemical industry, mostly from fossil sources, but also from renewable sources. Production also involves the emission of solvents and dust into the air. At very few sites, specific chemicals

contaminate the water, and all of the plants generate noise. It is the objective of environmental management to systematically reduce these environmental impacts.

ALTANA does not use any ozone-depleting raw materials and does not emit any climate-relevant gases except CO<sub>2</sub> and N<sub>2</sub>O from combustion processes. BYK replaced the problematic plasticizer dioctyl phthalate (DOP) with alternative substances several years ago.

#### Reference<sup>1</sup>

		BYK	ECKART	ELANTAS	ACTEGA	ALTANA
Produced finished goods	Tto	81,92	38,07	30,11	86,5	<b>236,6</b>
Total production	Tto	89,56	107,65	35,97	98,3	<b>330,73</b>
Gross value added	T€	163.655	156.563	31.416	56.030	<b>407.664</b>



### **BYK Additives & Instruments**

Additives improve the quality and manufacturing of coatings and plastics. In cross-linkers and deflocculating agents, they reduce the amount of pigments (saving resources) and speed up the blending process (saving energy). Additives can be used to improve anticorrosive properties agents to maintain value.

BYK is exploring the use of near-infrared (NIR) in online analysis for the speedy control of incoming raw materials and in production (see also interview). This process may improve the safety of exothermic reactions, since it verifies whether a reaction is proceeding as desired or whether raw materials are accumulating.



### **ECKART Effect Pigments**

This Division manufactures metallic effect pigments and pearlescent effects for coatings, printing inks, cosmetics as well as coated pigments. Other items include zinc-based products that improve anticorrosive properties and maintain material value. Effect pigments for water-based coatings and printing inks are contributions to environmentally friendly products.



### **ELANTAS Electrical Insulation**

The Electrical Insulation Division manufactures wire enamels, impregnating resins and casting compounds for the electrical industry. Wire enamels are the primary insulation for power generators, transformers and electric motors. Impregnating resins are the secondary insulation of electrical appliances such as electric motors, transformers, and generators. These secondary insulations are also referred to as area insulation materials. Casting compounds are synthetic resins with mineral content that encapsulate electrical components. Without these products, electrical motors would not be functional. Our products contribute to making electric motors smaller and more energy-efficient.



### **ACTEGA Coatings & Sealants**

This Division produces coatings and sealing compounds for the packaging industry (paper, cardboard, metal). The products help protect food and give it longer shelf-life. Innovative packaging allows for transporting and storage of food items that were previously inconceivable. Many coatings are water-based and environmentally friendly. Furthermore, we use natural rubber as a renewable raw material source.

## “Safety comes first”

Specially developed devices are used to retrieve direct samples from production, analyze them, and reset the process control system based on the results. We spoke to Werner Pettau, the Head of Analytical Services at BYK, about modern online analysis.



### Mr. Pettau, what exactly is online analysis?

In conventional analysis, for example to control a chemical reaction, we take samples and analyze them in the quality control laboratory for certain defined specification values. In online analysis, this work is done by a probe in the reaction vessel or the substance is pumped to a measuring station via a bypass. This allows us to measure the value any number of times and in real time.

### Are these two methods capable of measuring exactly the same values that used to be determined in the lab?

It isn't possible directly, but by way of calibration. This means that online measurements and the conventional methods are performed parallel to one another. Humans often cannot recognize the correlation between the results of online measurements and the lab data. The calculation can only be done with highly complex computer programs, which require data from many different measurements to calculate a correlation.



### That sounds quite complicated. Is that worth it?

Yes, because the conventional measurement is no longer necessary once the system is calibrated. This saves considerable work in the quality control laboratory.

### You were talking about increases in efficiency, but does this modern method also have advantages for the environment and safety?

Oh, absolutely. For example, we avoid a lot of waste and energy consumption. Every sample during the reaction requires filling a glass vial with e.g., 60 milliliters and sending it to the lab for testing. After the analysis, the contents and the reagents are thrown out. Many reactions require as many as ten samples or more. In addition, it is easier to take the measurements in real time. This in part leads to shorter reaction times, which naturally saves energy.

### And what about advantages for safety?

I see enormous advantages with the so-called exothermic reactions, which are reactions that involve the release of heat. These reactions can easily get out of control when too much energy is released in a short time. Cooling and precisely dosed raw materials can prevent this from happening. It is essential that there never is too much raw material that has not been converted. Online analysis



checks precisely that, in real time and at any frequency. This increases safety.

#### **Where is online analysis used?**

In addition to incoming raw materials, we have started to control a few reactions in production with the so-called near-infrared method. This primarily pertains to quality control. Our process technicians are working to transfer new polymerization techniques to production scale. They are currently developing three different online analysis processes. Safety definitely comes first.

#### **Which three procedures are these?**

We are testing near-infrared, Fourier transformation infrared spectroscopy and ultrasound. All of these methods require the complex computing process I mentioned earlier.

#### **Which method is the most promising?**

Every method has its advantages and disadvantages. Ultrasound has a certain edge because the method is quite robust and relatively affordable. However, the calibration requires highly qualified specialists.

#### **Which of the four ALTANA Divisions could use this method?**

It could actually be useful in all Divisions. I am thinking for example about increasing the safety of exothermic reactions. Such a reaction got out of control at a site in India. I see a lot of potential for improvement. In the future, we plan to exchange information at our new analytical services meetings within ALTANA to learn from one another.

### **Emissions**

ALTANA practices three different approaches to reducing air emissions. They include energy efficiency, switching to alternative sources of energy, and the use of technical facilities such as exhaust combustion or filters. None of our production sites use any ozone-depleting raw materials or products. Similarly, we do not emit any other climate-relevant gases than CO<sub>2</sub> and small quantities of N<sub>2</sub>O.

Until the year 2006, the most essential environmental investments for emissions reduction pertained to the reduction of volatile organic compounds (VOC) and of dust emissions, as well as to on-site energy generation from waste, which has cut down on CO<sub>2</sub> emissions by reducing the transport volume. Major investments included exhaust air cleaning systems to remove VOC and dust. In exhaust air combustion, the exhaust air is run past a flame that completely incinerates the VOC. The resulting energy can be used for production through a heat recovery process. In part, we also use solvent waste for generating the flame instead of natural gas. This saves disposal cost for waste and also reduces our consumption of expensive natural gas or fuel oil. As an example, the Wesel plant incinerated more than 1,000 metric tons of solvent waste in 2006. The lower waste volume also reduced CO<sub>2</sub> emissions since less trucking was required.

BYK in Wesel, BYK Cera in Deventer and ELANTAS Deatech in Ascoli have constructed facilities to reduce VOC emissions. BYK in Wesel also has built a cryo plant to reduce dust emissions, which will become operational in 2007 to prevent dust-generating substances from reaching the flame in the combustion process. ELANTAS Camattini in Collecchio and ELANTAS Deatech have installed dust filters. ACTEGA Rhenania in Grevenbroich and ELANTAS Beck in Hamburg have been utilizing exhaust air combustion systems for quite some time. Further



investments are planned at ELANTAS Brasil, at ELANTAS Deatech in Quattordio and at ELANTAS PDG in the U.S.

The emissions of ACTEGA DS, ACTEGA Terra and ACTEGA Artistica are far below the permissible limits. Due to the water-based production at these locations or the absence of volatile components, exhaust air combustion is not necessary.

Because of the closeness of residential neighborhoods and the traffic caused by three-shift operations, noise emissions to the outside are a particularly critical issue in Wesel. Noise reports were compiled as part of the construction permit process to enlarge the plant in Wesel in 2004. Based on the results of these expert reports, we have taken a variety of protective measures. They include, e.g., sound insulation walls, encapsulation of aggregates and a night-traffic ban in the yard. We then conducted measurements to document our compliance with the strict noise reduction limits. At ECKART, the operation of the ball mills is particularly noisy. A sound insulation system was installed in one unit in 2006 to address this problem.

## Effluent/waste/existing contamination

ALTANA uses water for a variety of purposes. We need water for cooling, for operating vacuum pumps in production and laboratory processes, as a raw material, for sanitary installations, and of course, as drinking water. Most of this water leaves the plants as regular effluent. Only very few sites generate effluent with specific chemical contamination. All other contaminated water volumes are disposed as waste and recorded statistically. Sanitary wastewater is discharged to public sewage systems. In the case of the Indian sites Ankleshwar and Pimpri, the chemically contaminated effluent is first cleaned in a biological wastewater plant. The chemical oxygen demand (COD), which is below the permissible limits, is consistently measured and reported. ECKART in Finland produces wastewater with sodium chloride content, which is discharged to the Baltic Sea in accordance with environmental regulations. We do not directly or indirectly discharge other wastewater containing significant volumes of CSB, halogens or heavy metals.

Solid waste results from cleaning solvents, filter waste, distillation residue, defective products, and packaging. In accordance with the applicable laws, we distinguish between hazardous and non-hazardous waste. Additionally, we evaluate our waste output for possible recycling, thermal use, and disposal. Some of our waste is used for energy generation at some sites (see also page 41). However, avoiding waste in the first place is the highest priority for ALTANA.

### Emission to air<sup>1</sup>

		BYK	ECKART	ELANTAS	ACTEGA	ALTANA
CO <sub>2</sub> avoided	to	0	2958	0	0	<b>2958</b>
CO <sub>2</sub> energy and other, intern	to	5352	17096	4130	2760	<b>29338</b>
CO <sub>2</sub> energy and other, extern	to	13855	62837	3878	8398	<b>88968</b>
SO <sub>2</sub> energy and other	to	0,043	7,152	1	0,306	<b>8,5</b>
NO <sub>x</sub> energy and other	to	3,526	10,718	3,025	2,116	<b>19,38</b>
N <sub>2</sub> O energy	to	0,049	0,787	0,04	0,052	<b>0,928</b>

VOC and dust are currently still being measured. The results will be published at [www.altana.com](http://www.altana.com).



One example of avoiding waste is the replacement of containers, such as steel drums, which are used for delivering raw materials. The empty containers are sent back, and are cleaned and refilled. In cases where cleaning is impossible, they are recycled. However, the disposal of these empty containers poses two problems: Raw materials are lost because the containers cannot be completely emptied, and the cleansing of the containers prior to recycling is very expensive. As a consequence, we have started purchasing raw materials in tank trucks and store such materials in tanks wherever the required volumes make it economically feasible.

The advantages for the environment are obvious. The use of tank trucks avoids empty containers and cuts down on raw material losses, which saves cost and reduces waste. Additionally, the filling process from the tank truck to the tank and the metering of the raw material from the tank to the production vessels takes place in vapor-recovery pipes. This closed system creates fewer emissions, which in addition benefits health protection. Furthermore, dosing with a fully automated process control system provides a higher level of process safety. The

lower traffic volume also benefits the environment, since every truckload now supplies 20 tons of materials instead of a few pallets with containers, as previously. At BYK-Chemie in Wesel, some 80 percent of raw materials are now delivered in tank trucks.

Our own products are typically filled in drums with capacities of 25 or 200 liters or in containers. Due to the low quantities, we rarely supply products in tank trucks. However, some companies, such as ELANTAS Deatech in Italy, work with stainless steel containers than can be reused. All single-use containers in Germany are disposed through the dual system.

Eight of our sites (ELANTAS Beck in Hamburg, ELANTAS Beck in Kempen, ECKART Suisse, ECKART in Porto Marghera, ACTEGA Rhenacoat in France, ELANTAS PDG, BYK Cera, and ELANTAS Brasil) have existing soil contamination from the time prior to joining the ALTANA Group. Steps to eliminate the contamination have been initiated at every site.

#### Emission to water<sup>1</sup>

		BYK	ECKART	ELANTAS	ACTEGA	ALTANA
Waste water – indirectly discharge	to CSB	1,4	–	2,95	–	<b>4,35</b>
Waste water – directly discharge	to CSB	–	–	4,5	0,19	<b>4,69</b>

#### Waste<sup>1</sup>

		BYK	ECKART	ELANTAS	ACTEGA	ALTANA
Hazardous waste	to	3765	4539	1809	1066	<b>7414</b>
Non hazardous waste	to	533	4630	406	939	<b>6635</b>
Hazardous waste recovery	to	11	187	661	762	<b>1610</b>
Non hazardous waste rec.	to	428	1325	250,8	464	<b>2039,8</b>
Hazardous waste thermal use*	to	3391	3070	159,7	11	<b>3240,7</b>
Non hazardous waste thermal use*	to	80	–	0	54	<b>54</b>
Hazardous waste disp.	to	143	1250	978	293	<b>2664</b>
Non hazardous waste disp.	to	24	1069	102	417	<b>1612</b>

\* for energy production

## Open spaces are important resources

**BYK supports remediation projects of contaminated sites in North Rhine-Westphalia**

**How often are environmentalists, municipal politicians and urban planners in full agreement? Probably not very frequently. Admittedly, they often represent very different points of view. However, all of these factions are in unanimous agreement when it comes to one point: too many ecologically valuable open spaces are being covered with structures.**



The consumption of open space in Germany is stunning. In 2002 alone, some 105 hectares were turned into residential or traffic structures every day. 2003 followed close behind with an average of 95 hectares a day. This is the equivalent of an incredible 12 m<sup>2</sup> per second, or far more than 100 soccer fields every day. At the same time, former industrial spaces, many of which are contaminated, remain unused. Consequently, there is much need for action to stop the rapid loss of natural and cultural spaces. Consequently, the recycling of open space, and the frequently associated remediation of contamination, has special significance.

This is why ALTANA supports the German Association for the Remediation of Contamination and Recycling in North-Rhine Westphalia (AAV) through the membership of BYK in the support group for AAV of the chemical industry in NRW. The association, founded in 1988, is a cooperative model that includes the state government of North-Rhine Westphalia, remediation companies, chemical and steel companies and RWE Power.



The annual budget of AAV for the remediation of contaminated sites and open space recycling is approximately 9 million Euro. The support also benefits two municipalities that are home to ALTANA sites. The premises of a former electrical-chemical company (ECF) were restored for new commercial use in Kempen in 2004/2005. As part of the effort, some 150,000 tons of industrial waste were properly disposed and no longer pose a threat to soil and groundwater.

In Wesel, the company seat of ALTANA and BYK, AAV helped fund another remediation project for almost 3 million Euro. The work took place on the premises of the former Wesel gas works. Severe soil contamination had been detected as part of soil studies, which were deemed a great hazard for the groundwater. The contamination included aromatic hydrocarbons, phenols, benzene, and cyanide. Today the space is home to a new shopping center with many other public facilities. If it had been built in the green fields at the edge of town, the construction would have meant the loss of another 6,000 square meters of untouched open space.



## Transport

ALTANA is aware that the transport of materials, and particularly of hazardous materials, always constitutes a risk for humans and the environment. For this reason, we always choose the best possible option for the transport and the transfer and storage of our products, keeping in mind aspects of economy and reliability as much as safety and environmental protection. For example, it is difficult to arrange short delivery times when goods are transported by the relatively safe and environmentally friendly train system. ALTANA typically ships its products on trucks, and sometimes in tank trucks, to its customers. For this purpose, we hire shipping companies (see also page 51). Goods intended for overseas delivery are sent by ship, and only in exceptional cases as airfreight.

Raw materials and products to be processed also arrive in bulk by truck or in tank trucks at ALTANA. BYK in Wesel and ELANTAS PDG in St. Louis have their own train station and receive some of their raw materials in train container wagons. Since most sites of ALTANA are located in industrial and commercial areas, truck traffic can be rated non-critical under the corresponding criteria. Traffic disruption because of the location within the city are most likely in Wesel, Pimpri and Tongling. However, the companies at the Tongling site plan to move to an industrial park soon. The construction is expected to start this year.



In principle, it is our objective to make the transport of our products continuously safer for humans and the environment. This is supported by a new finished product warehouse being under construction on the outskirts of Wesel, since the old warehouse no longer offers the required capacities.

Should an accident occur in spite of our precautions, ALTANA maintains an emergency on-call service, which is available around the clock. This service provider will inform the responding fire departments about the characteristics of the involved chemical products. In extraordinary situations, firefighters can also contact the experts of the transport accident information and assistance service (TUIS) for advice and support.

### Distribution<sup>1</sup>

		BYK	ECKART	ELANTAS	ACTEGA	ALTANA
Finished good distribution sea	Tto	30,43	9,83	4,78	16,97	<b>62,01</b>
Finished good distribution road	Tto	72,17	24,76	25,22	78,63	<b>200,78</b>
Finished good distribution air	to	323	396	76	171	<b>966</b>
Distribution Incidents with chemical released		3	0	0	4	<b>7</b>

## Supply chain

Our responsibility as a company also includes the careful selection of our service providers, such as suppliers and shipping companies. ALTANA is committed to continuously improving its logistics and supply chain to make transport routes and processes more reliable, safer, and more efficient. This not only saves cost, but also benefits the environment.

Our central procurement unit conducts a thorough review before we allow suppliers to provide us with materials, particularly if the supplier is from a country with less stringent environmental regulations than in the EU. A chemist and a procurement specialist independently review environmental aspects, such as waste management, production and warehousing,



companies and turn them into additives for coatings and plastics, pigments, coatings, and sealing compounds for the packaging industry, wire enamel, impregnating resins and casting compounds for electric motors (see also page 43). Our suppliers for the most part are renowned chemical companies, many of which publish their own Responsible Care or sustainability reports. Our customers include coatings manufacturers, wire enamel plants (electrical supply), and the packaging industry. We have selected two shipping companies to supply our European customers, with the selection process including safety and environmental aspects. Both shipping companies are ISO 14001 certified.

protective measures against soil contamination and general safety precautions and data. In part, we also ask about certified management systems, which are taken into consideration as part of supplier decisions.

<sup>1</sup> These data represent absolute figures. Since performance indicators are not yet available from all sites, supplements and additional data will be published at [www.altana.com](http://www.altana.com).



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## Employees

“We are very interested in raising the share of female employment at ALTANA. Currently, women make up 28 percent of the workforce at our German sites.”

The social commitment of a company starts with taking responsibility for its own employees. We influence the living environment of our employees in the long term – at all sites around the world – by being respectful to the people who work for us, showing them perspectives, and establishing work standards and social and ethical values that are rooted in the openness that characterizes ALTANA. As employers, this gives us an opportunity to help shape social conditions and to make positive changes. ALTANA is aware of this responsibility and takes its contributions very seriously.

In global competition, the qualification of employees is continuously gaining significance. We consider it our essential obligation to secure jobs and to offer attractive training and career opportunities. ALTANA promotes systematic personnel development, provides modern qualification and professional advancement offers, and advances the creativity and motivation of its employees.

Our German sites currently have more than 100 apprenticeship openings for various professions. The share of apprentices at our German sites is approximately four percent; almost all apprentices are offered full-time employment after the completion of their training. The training offers of ALTANA in Germany range from computer specialist to chemical laboratory assistant, and from coatings technician and industrial mechanic to business specialist. These traineeships offer a variety of additional specialization and qualification options, for example to become an industrial foreman or a coatings/chemical engineer.

### The “JuniorCompany”

The apprenticeship company “JuniorCompany” established at ECKART in 2002 offers a special challenge to our apprentices, which is as exciting as it is practically relevant. Apprentices from various professions run this miniature company with real business operations in its own premises. Even though the junior company is not legally registered as an independent company, it still makes real sales and profits with the sale of merchandise, services, and products manufactured in the training workshops. The juniors have their own production and sales program, determine the prices, plan marketing and promotion campaigns, and design all corporate processes, including accounting, cost and service calculation under their own management. Tasks also include the organization of and participation in training and junior company tradeshow as well as the compilation of a detailed business report. The trainers act as consultants and only interfere in exceptional situations. Thus, the “Junior-Company” not only contributes to advancing technical knowledge and strengthening key qualifications such as team skills, independence and responsibility, but also sensitizes the young people to issues associated with occupational safety, occupational health, and environmental protection.

Together with the German Chemical Industry Association (VCI), ALTANA takes part in the training campaign "Chemie4you." The goal is to offer additional training openings and to ensure a pool of qualified junior talent for the future. We participate in training and university job fairs and offer internships to high school and university students. Additionally, we have established a scholarship program at Dresden and Konstanz University through the Herbert-Quandt Foundation and regularly provide support to the "German Institute of Science and Technology" (GIST) in Singapore, which offers junior chemists and engineers from the Asian region scholarship options. These junior scientists complete their laboratory internships or write their thesis at the institute and have an opportunity to start their career with a domestic or foreign ALTANA company after completing their degree.

#### Top examination results in Germany

In a ceremony held in Berlin, two apprentices of ALTANA received awards for achieving the best nationwide examination results. The German Chamber of Commerce Association and Chancellor Angela Merkel congratulated Christine Bouwman (BYK) and Jovana Luber (ECKART) for achieving top grades in their respective fields as coating laboratory technician and junior workshop technicians.

We consider qualified and motivated employees an essential asset for the long-term success of our company. The goal of professional advancement is to prepare talented employees for new, advanced tasks and to train all employees in such a way that they can fully meet their tasks and expectations, today and in the future.

ALTANA offers individual training modules on leadership and management topics to its current and



future executives. We have also developed special advancement programs for particularly talented and capable young people to prepare them even more intensively for future management tasks, while keeping our international focus in mind. Thus, we have been conducting our "Management Development Program" (MDP) for the development of executives since 2004. MDP starts approximately every two years and lasts 18 months. During this time, the participants, who come from all ALTANA companies and typically from several continents, complete a total of six modules on topics such as leadership, project management, strategy, controlling, and presenting. The module seminars are held at various sites of our worldwide subsidiaries. Every participant works with a personal mentor and has to complete a specific project assigned by the Management Board in addition to regular work tasks. The central component of the program is intensive international exchange. The program, which focuses on securing long-term company development – an essential component for global cohesion and our future as a global player – , is rounded off by discussions with the members of the Management Board.

In addition to individual training and our highly successful MDP, we also began the development and introduction of regional "Development Programs" (DP) in 2006. The regions USA/Brazil, Italy,

Germany/Netherlands, China and the rest of Asia will have personnel development programs that are specifically tailored toward the local conditions and requirements. They also consist of multiple training modules on leadership, project management, and finances. During the modules, the participants have the opportunity to visit other ALTANA companies in the region. For many employees, this is a first chance to see other Group companies. In addition to technical skills, the exchange of participants and “broadening the horizon” is of essential importance. The programs allow for networking, and promote cooperation across the boundaries of individual companies and Divisions. This advances a sense of commonalities, but also an appreciation of the specific characteristics of individual companies, markets, and countries. Similar to MDP, these programs help a corporation such as ALTANA, which consists of many small operative companies, to develop and maintain a shared corporate culture.

We continuously optimize, advance, and supplement our trainee programs. ALTANA introduced two new advancement programs for junior scientists in 2006. They are open to young coworkers who have just completed their degree in plastics or coatings engineering (Junior Program) or who already have some working experience (Young Professional Program). This on-the-job training, for example within the scope of projects, takes two years in both programs; as in the case of professional advancement, the programs help employees acquire a thorough knowledge of the company, which frequently involves intercultural exchange.

Most of our subsidiaries have established their own regional professional advancement programs for their employees. In Germany, the training catalog includes numerous in-house training opportunities and a great variety of local course offers for practical operations requirements, ranging from economic





simulation games and project management workshops to language courses, intercultural training, computer courses and public speaking training in German and English. Additionally, the program includes courses on safety and occupational health, decision-making and problem resolution as well as time management and organization skills.

We have implemented a fixed progress dialog to promote the career development, performance, and self-initiative of our employees. These special employee meetings are held at least once a year and focus on individual expectations for professional development, career planning, and consulting. The supervisor and the employee discuss and determine the work goals and qualifications of the employee, and settle on suitable measures for training and continuing education. Ultimately, the progress dialog serves to strengthen the mutual trust of employees and supervisors and supports cooperation that is focused on the corporate goals and principles.

To provide performance incentives, we have established a uniform performance- and result-based position evaluation and compensation system that ensures comparable compensation for comparable work. Transparent and fair compensation significantly contributes to the motivation of our employees. Our compensation system additionally ensures that the profile of ALTANA continues to develop, since the incentives are custom-tailored for ALTANA. This includes our vision, our corporate strategy and philosophy, as well as our environmental, safety and personnel policy. The focus of our award system is on innovation, customer service, and quality and keeps factors such as cost management and resource efficiency in mind.

Overall, the income level of ALTANA employees is above the average of comparable companies. To maintain this level in the long term, we rely on an international position evaluation system that shows reference compensation for equivalent positions in the various local markets and makes them comparable.

ALTANA makes efforts throughout the group to increase the share of women at the executive level and to attract more employees from different national and cultural backgrounds. The above-described trainee programs MDP and DP also serve this purpose. The more diverse the backgrounds and experiences, mentalities and biographies of our employees are, the more an international enterprise such as ALTANA can benefit from employee qualification that exceeds the purely technical level. In 2006, the share of women in the German ALTANA payroll was 28 percent, while foreign nationals accounted for five percent of employees.

Family-friendly personnel policy is an important prerequisite for equal opportunities. ALTANA wants to make additional efforts to help employees balance the needs of family and work. To allow especially female professionals and executives options for professional (re)entry and career advancement, ALTANA offers flexible working hour models. Women continue to decide in favor of part-time jobs in order to find a balance between their professional and private commitments. Naturally, our flexible working hour models are also available to our male employees. The share of part-time employees at our German sites is currently 8.1 with a rising tendency. This approach is supplemented by modern continuing education methods such as e-Learning.





Dr. Giovanna Biondi, ELANTAS Deatech (left) and Dr. Thomas Sawitowski, BYK-Chemie

As a globally active company, ALTANA wants to make a contribution to humanizing globalization. As part of comprehensive policy guidelines, ALTANA has established specific work, social, and ethical standards (see also Page 8). Thanks to a number of simple, practical and consequently, very effective routines, which are regularly monitored, these standards have become fixed rules in the company and are firmly rooted in the minds of our employees.

However, we are not content to promote the establishment of these standards in-house. Our commitment reaches beyond our own actions and business procedures. Thus, ALTANA is proud to support partners and initiatives worldwide to advance social and ecological priorities in global business. After all, stable relationships in working worlds and societies based on reliable shared values are an essential prerequisite for our economic success.

ALTANA joined the “Global Compact” initiative of former U.N. Secretary General Kofi Annan in 2003.

This global project supports the millennium development goals of the United Nations. It is based on ten principles, which may seem self-explanatory in European countries and had been established at ALTANA long before joining the initiative, but which can still not be taken for granted at sites outside of Europe. The principles of the “Global Compact” include protection of and support for human rights within the company’s sphere of influence, protection of the right of association and the right to collective bargaining, bans of all forms of forced labor and child labor, and avoidance of discrimination in hiring and employment in any form. Additionally, all parties signing the pact agreed to fight corruption in all its forms.

ALTANA works constructively with unions, works councils and employee representatives on the basis of partnerships, both at the national and the international level.

## Social commitment

ALTANA strives to continuously develop its social commitment in the sense of modern "corporate citizenship." Some of our first initiatives are outlined below. Corporate citizenship assigns a new role to corporations in society. Progressive companies shape social change toward more self-initiative and self-responsibility as corporate citizens. ALTANA wants to make a contribution to cohesion, democracy and better quality of life. To this end, we promote the volunteer commitment of our employees, initiate neighborhood projects at ALTANA sites and financially support social projects with donations and sponsorships. In the future, our efforts will primarily focus on education, research, and science.

Many of our employees are active in cultural, athletic, or social organizations in their leisure time and support health and environmental projects as volunteers. We support this type of civic commitment, which is why some of our sites have introduced programs that allow our employees to take paid or unpaid time off for their volunteer commitments, within certain restrictions.

Ultimately, we also support volunteer commitments by providing our own infrastructure. This includes, for example, information platforms such as the ALTANA Intranet or communication media such as our employee newsletter "faces," which report on projects and call for donations or participation.

To be truly successful, we need the acceptance, trust and support of our neighbors. We are consequently making serious efforts to be recognized as a reliable partner and attractive employer at all sites, who takes the responsibility for the site very seriously.

Our headquarters in Germany has started a survey to compile models of neighborhood projects conducted at our sites in Europe, North America, Asia and elsewhere in the world. This overview will provide employees with suggestions for social projects at their sites in the future. However, we would like the survey results to report more than just good and versatile project ideas. We also would like them to support direct exchange and help us identify contacts who can help with project planning and implementation based on their practical experiences gathered locally. This will result in an international ALTANA network of volunteer skills.

To cite a project example from the area of education and science: KIS, the "Cooperation between Industry and School" of ALTANA is intended to get high school students excited about natural sciences. The project, which began in 2000, provides schools around the Wesel site with presentations and group assignments, laboratory tours and exciting experiments to teach chemistry with fun and excitement. The memorable "I get it!" moments of the program include more than just the famous lotus effect. Rather, the project also gives 10th and 11th graders a first glimpse of professional life. To us, KIS is an effective and – thanks to the dedicated contributions of many enthusiastic young people – lively and practical contribution to addressing the lack of qualified junior talent.

## “Lessons are a lot more exciting than usual”

The increasing lack of qualified employees is turning into a problem for the chemical industry, and good ideas are in great demand. We spoke with Dr. Wilfried Scholz, the Head of Technical Marketing, about the lack of qualified junior talent and the cooperative initiative Industry and School (KIS).

### **Dr. Scholz, what does the German acronym KIS stand for?**

KIS stands for the cooperation between the industry and schools. It is an initiative to foster partnerships between schools and chemical companies, which is supported by the German Chemical Industry Association (VCI). There are other similar European programs entitled “Education Industry Partnership.”



### **What are the objectives of the cooperation?**

The German chemical industry expects a significant shortfall of qualified chemists in the years to come. By the same token, we have an increased need for highly qualified natural scientists to advance our innovations. The Association rightly points out that special efforts must be made to ensure we have sufficient numbers of qualified junior talent.

### **What does KIS contribute to this?**

We are convinced that an intensive cooperation between a company and one or more schools will be worthwhile. Our chemical-technical assistants, laboratory assistants, engineers, and chemists make it clear to students that chemistry in research and applications is very exciting and fun. The students quickly grasp the practical benefits of chemistry and the lessons are a lot more exciting than usual.

**When did the initiative start and are there plans to continue?**

The first project was started in 2000 in a technical high school in Hamminkeln, a neighboring community of Wesel. This school also started the initiative. We have since then supported one project a year. Although no school project came together in 2006, we continue to be available for further cooperation in the future.

**What exactly happens during the events?**

We demonstrate and explain the effects of additives, some of which can be quite surprising, during nine morning sessions held in school and in our company. We also produce an additive together with the students, which is then tested in a next step. Analysis is another topic we talk about.

**Is this a program that makes the teachers' work easier?**

No, most definitely not. The program differs considerably from lesson standards and requires great commitment from the teachers. The project takes much more work than conventional lesson preparation. The school administration also has to actively support the project to make sure the students can attend sessions on nine mornings.

**That sounds like work. What are the contributions of ALTANA?**

We contribute a lot to the project, and particularly the first project was very work-intensive for us. There was a lot to prepare and coordinate with the teacher. The preparation became more routine in the following years. We needed at least two employees per morning session, who had to volunteer in addition to their "regular" work assignments.



**Was it worth it and did the students enjoy it?**

I think so. They were usually quite involved and very interested. With the first project, we also held an open house to present the project and the learning content to visitors. That was quite exciting and required a lot of effort. However, many students became interested in an internship and some even applied for an apprenticeship. Even the local press was interested in KIS and ran several positive articles. In my mind, the effort pays off for all involved, and we continue to be open for such projects.

**Have there been any other activities of students?**

Yes, one chemistry class of the Konrad-Duden High School took the project results and participated in the high school competition "Schools for the Future" of the news magazine Focus. The project was entitled "Additives and the significance of BYK for Wesel." It contained many photos and illustrations about additives. The jury was very impressed, and the students presented their results to 200 people in a 90-minute session.



ALTANA is in contact with a great variety of social groups: customers and suppliers, employees and investors, government representatives, municipalities, associations and non-governmental organizations, media and opinion leaders. The more we involve these groups actively into dialog, our projects, and partnerships, and the more openly we inform them about our plans and goals, the more trust they will place in our entrepreneurial actions. Consequently, we want to keep our information policy as open and transparent as possible. We want to respond to and promote ideas and suggestions arising from the dialog with our shareholders. Additionally, we want to actively oppose any form of non-transparency, especially corruption.

ALTANA is making worldwide efforts to effectively fight corruption. This effort begins in our own company. All executives of ALTANA have to uphold a Code of Conduct, and the review committee of the Supervisory Board has established a procedure for submitting written complaints, including anonymous complaints, about issues in accounting, auditing and internal reporting and review procedures. This body actively pursues specific information about possible cases of fraud and corruption.

New ideas advance our company and are indispensable for our future economic success. Consequently, idea management is a central management task for us. We have refined our company suggestion system and created an Intranet page for sharing ideas to make it easier for our employees to contribute ideas while minimizing the associated effort and potential obstacles. The authors of successfully implemented innovations and improvements, which are evaluated on the basis of transparent and uniform criteria, receive a reward. The ideas and suggestions of our employees provide us with direct competitive advantages, such as new product ideas or more cost-effective production processes.

The guiding principles of ALTANA call for transparent and trusting relationships with our employees, our partners, and numerous interest groups, and for the continuous development of our stakeholder relationships. Open and transparent information and communication policy is an essential prerequisite for lasting success.

We regularly hold open houses to foster direct contact with the public and especially with our neighbors. Upon request, we also are pleased to provide individual groups with customized guided tours through our sites to meet their specific interests and requests. This helps our neighbors get to know us better and gather insights in our production and work processes. In return, we find out about existing expectations or concerns and can respond to them in a more specific and appropriate manner. Most ALTANA sites maintain a complaint hotline for the public, for example in case of sudden noise or odor problems. This means of communication allows employees on site to respond promptly with an appropriate solution.

Our experts and managers are available for public meetings and information events, such as panel discussions and technical forums in broadcasting and print media. They not only participate in technical debates as speakers and discussion partners, but also in public and political discourse to share our point of view and proposed solutions.

## Glossary

### Additives

Additives are substances that are added to coatings and plastics in small quantities (<1%) to improve their quality or optimize their production.

### Audit

An audit is an examination procedure to verify that a specific process sequence meets the corresponding requirements and regulatory guidelines. It is a prerequisite for the certification or validation of companies with sound environmental management. An environmental audit verifies the environmental compatibility of production sites and service operations in accordance with defined criteria.

### Chemical oxygen demand (COD)

COD is a measure of oxidizable (typically organic) substances, especially in wastewater streams. The measure indicates how much oxygen is needed for the complete chemical oxidation of the substances contained in the wastewater.

### CO<sub>2</sub>

Carbon dioxide is the stable and natural final product of every combustion involving organic substances. CO<sub>2</sub> is estimated to contribute approximately 50% to the human-caused Greenhouse Effect.

### DIN ISO 14001

International standard to review the organizational structure, procedures, and methods of specific organizational units in a company in terms of the effective implementation of environmental policies and environmental objectives.

### EMAS

Acronym for "Environmental Management and Audit Scheme." This Directive (1863/93) describes the guidelines for the voluntary participation of

commercial enterprises (from specific industry sectors) in the shared system of the European Union (EU) to introduce environmental management systems. As an expansion of ISO 14001 it can be combined with existing management systems, but demands, for example, the publication of regular environmental declarations. While the guidelines of EMAS apply to individual production sites, ISO refers to an entire company.

### Greenhouse gases

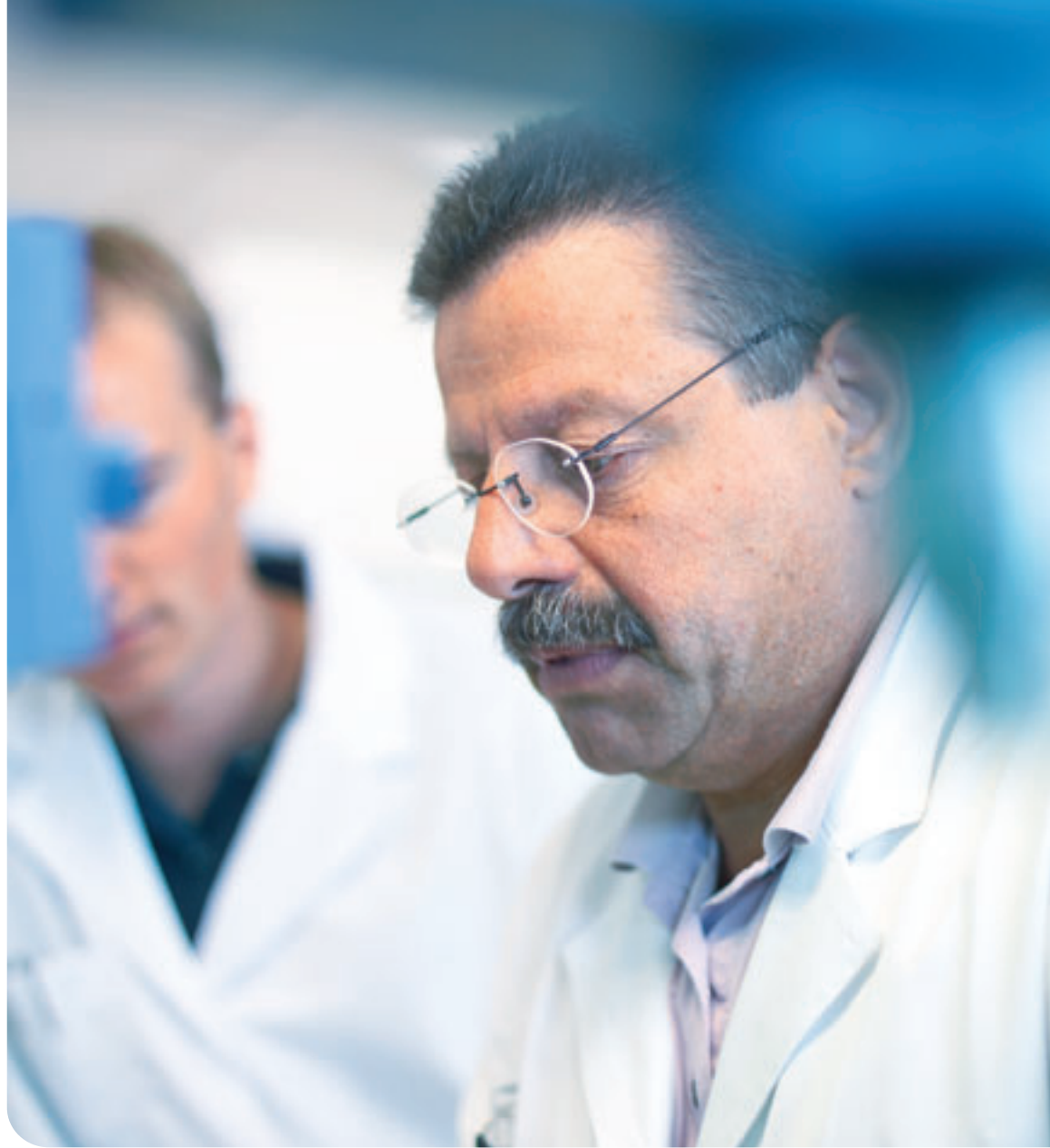
The most important natural greenhouse by far is water vapor. Other natural greenhouse gases include carbon dioxide, methane, dinitrogen monoxide, and ozone. The natural greenhouse effect allows for life on earth. It keeps the average temperature of the earth's surface 33° C warmer than would be the case without greenhouse effect (-18 °C instead of +15 °C).

### GRI

The Global Reporting Initiative (GRI) develops guidelines for sustainability reporting, which are used by companies, governments and non-governmental organizations.

### Methane

Methane (CH<sub>4</sub>) is a colorless and odorless gas. It is the main component of natural gas and biogas and is generated in swamps, rice paddies, and in digestive processes. Methane is a greenhouse gas and 60 times more active than CO<sub>2</sub>. Experts estimate that about half of CH<sub>4</sub> emissions come from agriculture.



### **Nitrogen oxides**

Nitrogen oxides ( $\text{NO}_x$ ) are defined as the sum of NO and  $\text{NO}_2$  (nitrogen monoxide and nitrogen dioxide). NO is a colorless and odorless gas that quickly turns into  $\text{NO}_2$  in the presence of oxygen ( $\text{O}_2$ ).  $\text{NO}_2$  is a red-dish-brown gas with an acrid smell. Nitrogen oxides result from all combustion processes from the nitrogen contained in air. They contribute to the formation of acid rain and are responsible, with other substances, for the generation of tropospheric ozone.

### **Solvents**

A solvent is typically a liquid substance that can dissolve gases, other liquids, or solids without causing a chemical reaction. Organic solvents guarantee the

processing ability of coatings. They are increasingly being replaced by water and are only present in reduced shares in water-based coatings.

### **Vapor recovery**

Recovery of fuel vapors when filling tanks in closed systems.

### **VOC**

“Volatile Organic Compounds” are typically emitted in gaseous form by liquids (but in part also by solids) when they have a sufficiently high vapor pressure or sufficiently low boiling point (e.g.,  $<250\text{ }^\circ\text{C}$ ) to vaporize in significant quantities.

## Publisher

Issued by:  
ALTANA AG  
Abelstr. 45  
46483 Wesel  
Germany  
Telephone: +49 281 / 670-8  
Fax: +49 281 / 670-376  
info@altana.com  
www.altana.com

Responsible for the content:  
ALTANA AG

Design, editing and layout:  
crossrelations, Düsseldorf

Print:  
Gebrüder Kopp, Cologne  
Printed with products of ALTANA AG  
Front page: Terraeffect Pearlescent coating G29 / 460

Photos:  
ALTANA AG  
Sven Simon, Stefan Freund, dpa, Corbis

Contact:  
Environment, Health & Safety  
Dr. Andreas Diez  
Telephone: +49 281 / 670-338  
Fax: +49 281 / 670-523  
Andreas.Diez@altana.com

Corporate Communication  
Achim Struchholz  
Sven Kremser  
Telephone: +49 281 / 670-200  
Fax: +49 281 / 670-1114  
press@altana.com

Version dated: May 2007



