

Our planet - our responsibility

Environment Safety Health 2000

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 wherever you see this icon more information can be found on our website at www.boehringer-ingelheim.com

Reporting time frame: January 1995 to December 2000

Message from the Board



“In the process of adopting a new approach to the whole scope of our activities in the areas of Environmental Protection and Safety, we have rewritten our company policy. This now devotes greater attention to comprehensive responsibility for our products, for sustainable development and for the consistent implementation of the principles of Responsible Care®. For a company like ours with global operations, this also means that further intensifying cooperation with all our business partners will play an increasingly important role.

Boehringer Ingelheim’s mission is to discover, develop, produce and market medicines which benefit mankind, and in doing so the company assigns high priority to minimising the impact of its activities on the environment in every part of the world where it operates.

Our own employees make a major contribution to environmental protection and to safety through their degree of commitment as well as social engagement, to ensure that our group of companies remains successful in a demanding area of business activity.

The protection of the health and safety of our employees is for me a very personal issue, as will become clear in the following report. I am convinced that all accidents can be avoided, for example, and I dedicate my efforts towards this end.”

A handwritten signature in black ink, appearing to read 'H. Leuchs', written over a white background.

*Dr. Hans-Jürgen Leuchs,
Member of the Board of Managing Directors, CBD Operations*

Introduction

Since we published our last worldwide Environment, Health and Safety Report in 1996 and an interim report in 1999 Boehringer Ingelheim has made further successful development, both in its global business activities and in its environmental performance.

The targets we set in our last report have largely been achieved. Where this was not the case, we examine the causes, explain the reasons and commit to increasing our efforts.

Our Corporate Principles of Environmental Protection and Safety have been updated and combined with those assuring the quality of our products. They are published in this report.

We are convinced that everyone benefits from the high quality of our products and safe and environmentally friendly processes.

This report will provide you with an overview of Boehringer Ingelheim’s progress in Environmental Protection and Safety in its operations, together with some insights into individual projects in different countries.




Corporate Head Office in Ingelheim

The Company

Boehringer Ingelheim is a privately owned company that was founded in 1885.


Today, nearly 120 years later, it has become a global family of around 150 companies, operating in 139 countries around the world. The company's largest site and corporate headquarters is located in Ingelheim am Rhein, Germany. The Boehringer Ingelheim group is one of the world's top 20 pharmaceutical companies, employing more than 27,000 people worldwide. Boehringer Ingelheim researches, develops, manufactures and markets pharmaceuticals and biopharmaceuticals. The primary focus is on Human Pharmaceuticals which are responsible for 95 per cent of our sales.

The remaining five per cent of sales are mainly attributable to the Animal Health business.

In 2000 net sales exceeded EUR 6 billion. 

Boehringer Ingelheim has developed as a research-driven company, in which discoveries in the laboratory are transformed into effective and widely used products. The company's traditional strengths are in the treatment of respiratory and cardiovascular diseases, disorders of the central nervous system and the gastro-intestinal tract.

More recently, the company's seven research and development centres worldwide have

achieved success in new therapeutic areas such as immunology, oncology and virology. 

The biopharmaceutical business is one of the fastest growing areas of Boehringer Ingelheim. The company early recognised the potential of biopharmaceuticals and it can now look back on pioneering achievements and long experience in this area, as well as in the commercial application of genetic engineering techniques. Thus Boehringer Ingelheim has become a world leader in biopharmaceutical manufacturing, including products produced for industrial clients – an international market currently estimated at EUR 300 million. 

Company acquisitions and divestments

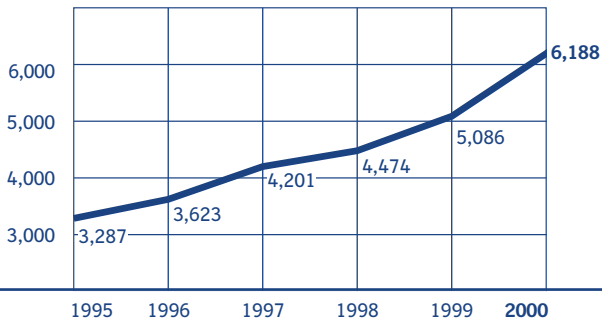
A small chemical plant in Baurú, Brazil was sold in 1999 as well as a pharmaceutical production site in Sant Juan Despi, Spain.

Therefore we commissioned a new plant in Sant Cugat del Vallès, Spain.

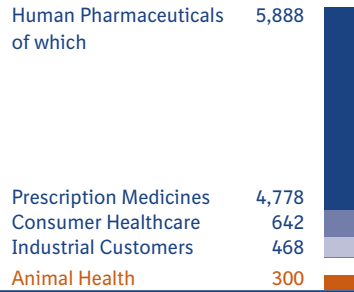
In 2000 a pharmaceutical site in Estrées St. Denis, France and a 50 per cent joint venture chemical site in Mexico were divested.

Early in 2001 we sold a pharmaceutical plant in Compiègne, France and we will open new pharmaceutical plants in Shanghai, China and Bogor, Indonesia during 2001.

Chart 1: World sales in million Euro



Sales in 2000 according to business areas in million Euro



- Pharmaceutical production
- Chemical production
- Biopharmaceutical production
- Veterinary production
- Research and development
- Plantation

Europe

- Bracknell, Great Britain
- Reims, France
- Blanquefort, France
- Ingelheim, Germany
- Biberach, Germany
- Vienna, Austria
- Lugano, Switzerland
- Reggello, Italy
- Fornovo, Italy
- Milan, Italy
- Sant Cugat del Vallès, Spain
- Malgrat, Spain
- Lisbon, Portugal
- Koropi, Greece

Americas

- Burlington, Canada
- Ridgefield (CT), USA
- Columbus (OH), USA
- Bedford (OH), USA
- St. Joseph (MO), USA
- Sioux Center (IA), USA
- Elwood (KS), USA
- Petersburg (VA), USA
- Guadalajara, Mexico
- Mexico City, Mexico
- Bogotá, Colombia
- Buenos Aires, Argentina
- São Paulo, Brazil
- Arapongas, Brazil

Africa, Asia, Australasia

- Randburg, South Africa
- Hino, Japan
- Toride, Japan
- Yamagata, Japan
- Kawanishi, Japan
- Shanghai, China
- Bogor, Indonesia
- Cheong-Ju, Korea (50 %)
- Hsin-Chu, Taiwan
- Kingaroy, Australia

The Human Pharmaceutical business includes mainly Prescription Medicines and a variety of products for Consumer Health Care as well as

for Industrial Customers (active pharmaceutical ingredients, biopharmaceuticals, injectables).

Human Pharmaceuticals

Prescription Medicines

covers a product range that represents one business area within Human Pharmaceuticals. These drugs must be prescribed either by general practitioners for primary care or by specialists in certain indications. They may also form an integral part of hospital treatment.

Consumer Health Care

comprises Human Pharmaceutical products which do not need a prescription and may be purchased 'over the counter' (OTC) by the users at a pharmacy or drug store.

For many decades Boehringer Ingelheim has been known for its expertise in the indications of

- Cardiovascular diseases such as acute coronary disease, hypertension and stroke
- Diseases of the central nervous system such as Parkinson's disease
- Urological diseases such as prostatic hyperplasia
- Respiratory diseases such as chronic obstructive pulmonary disease (COPD) and asthma.

In the recent past, Boehringer Ingelheim has introduced products in the field of virology (VIRAMUNE®) and oncology (BEROMUN®). The suc-

cess of these products is evidence of Boehringer Ingelheim's competence in these fields.

Biopharmaceutical products, such as ACTILYSE® and METALYSE® for the treatment of acute myocardial infarction or Imukin® for chronic granulomatosis, demonstrate the company's future-oriented product strategy.

The Boehringer Ingelheim Animal Health products focus mainly on four areas: respiratory diseases for horses (VENTIPULMIN®), cattle and swine; anti-inflammatory drugs to treat cattle and dogs (METACAM®); anti-infective products (MAMYCIN®) which are mainly for mastitis in cows and biological vaccines as INGELVAC® for swine.

Europe, Japan, Mexico and the USA are the largest customers, accounting for more than 85 per cent of worldwide pharmaceutical sales. The remainder of sales are in South America, Asia, Australasia and Africa.

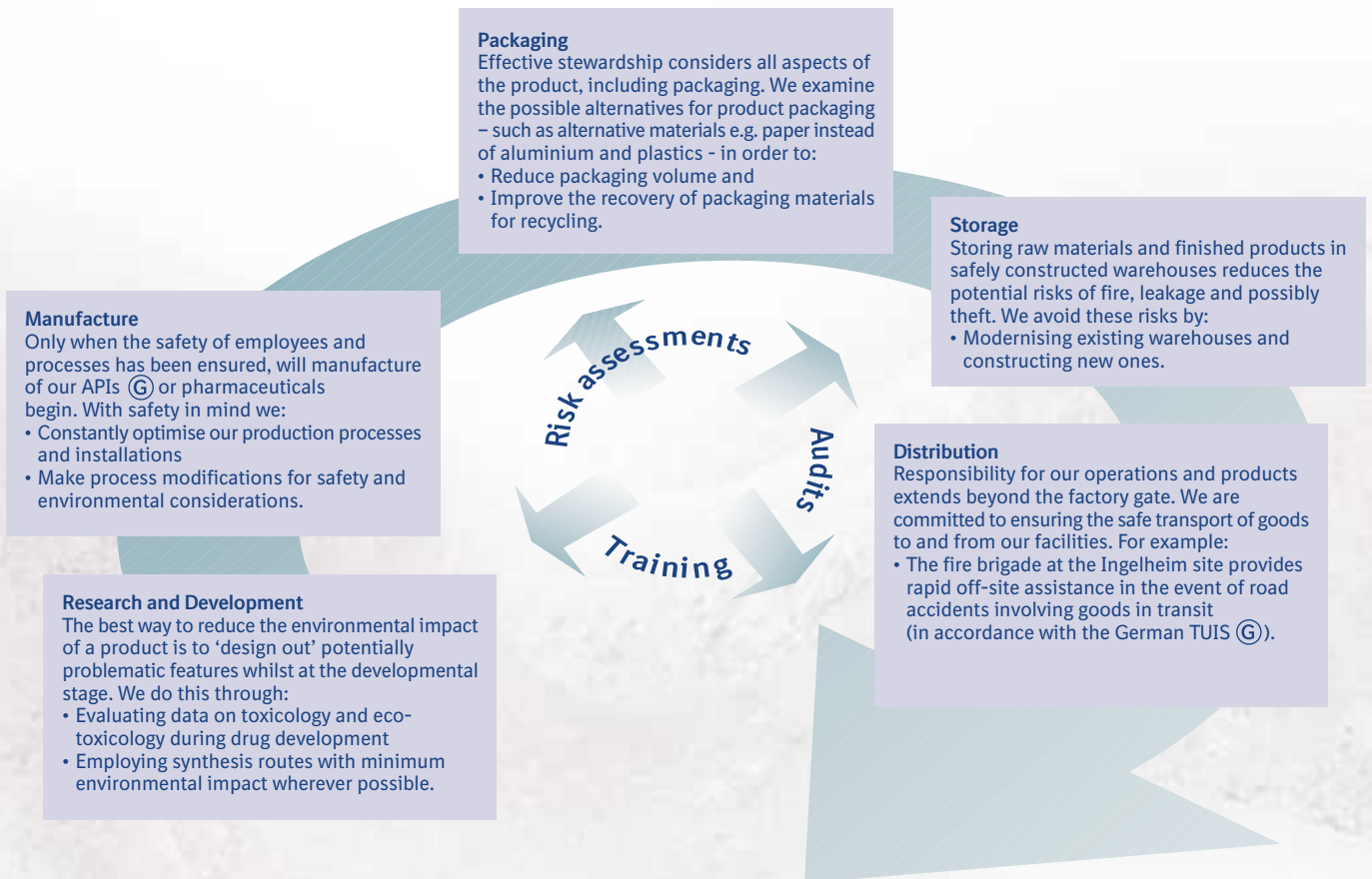
In a contribution towards fighting the world AIDS epidemic, Boehringer Ingelheim has initiated the VIRAMUNE® Donation Programme. This programme offers VIRAMUNE® free to developing economies for five years to prevent HIV from being transmitted from mother to child during birth (MTCT). In addition to this programme, Boehringer Ingelheim is participating in the Accelerated Access Initiative together with four other pharmaceutical companies and various UN agencies. The objective of this initiative is to significantly expand access to HIV/AIDS prevention, care and treatment. Boehringer Ingelheim has thus committed itself to making VIRAMUNE® available to developing countries free for MTCT and at significantly reduced prices for chronic treatment.

Phasing out CFCs

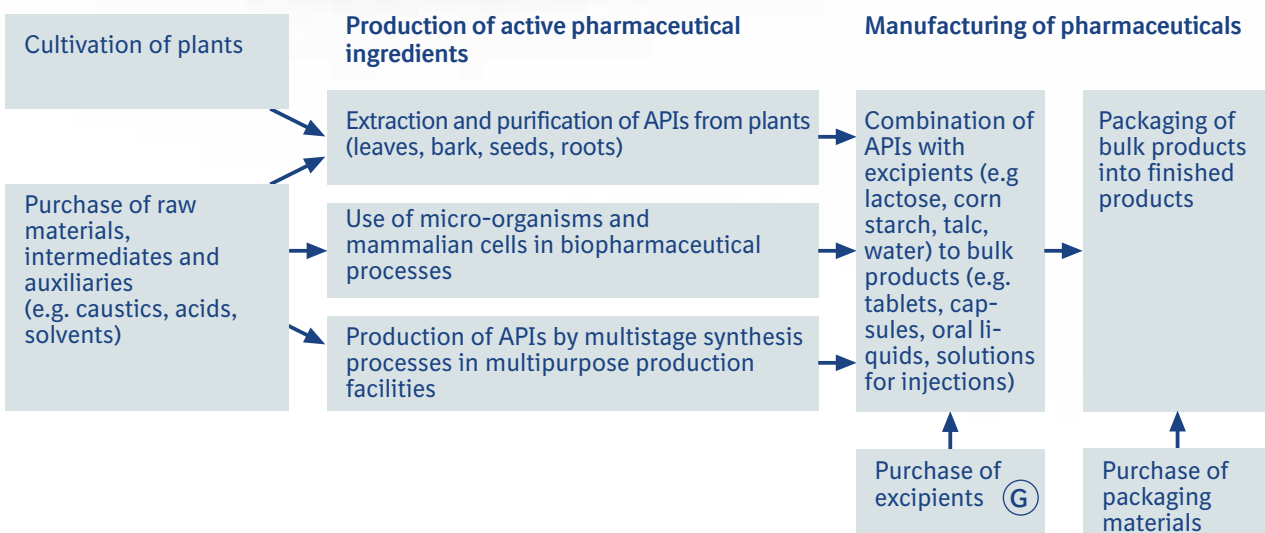
Boehringer Ingelheim has demonstrated an ongoing commitment to phasing out CFCs. Boehringer Ingelheim is reformulating most of its CFC Metered Dose Inhalers (MDI) with HFAs and is also developing propellant-free metered liquid inhalers and dry powder inhalers. This commitment has required the allocation of significant human and financial resources.

At Boehringer Ingelheim, Product Stewardship is an essential part of responsible care for employees, clients and the environment. Since it encompasses all phases of the drug product lifecycle, from research to waste disposal, Product Stewardship makes an important con-

tribution towards Sustainable Development. In accordance with the chemical industry's Responsible Care® programme, the Company endeavours to develop and manufacture safe products with reduced environmental impacts.



From active pharmaceutical ingredients (API) to finished products



How is Safety, Quality and Environmental Protection ensured?



For reasons mentioned in the message from the Board (see page 3) the company's Principles for Quality and for Environmental Protection and Safety were updated and combined with the Principles for Safety, Quality and Environmental Protection (see right).

Following the restructuring of the Corporate Headquarters at the beginning of 2000, Environmental Protection and Safety (EPS) merged with Quality Assurance to form the new Corporate Division Safety, Quality and Environmental Protection (CD SQE).

The operation of the SQE organisation has given rise to synergies that lead to increased

efficiencies across the company. For example, among the key tasks in this area is the assurance of compliance both with external legal and regulatory provisions for our business, as well as the internal company standards.

Further common ground is seen in

- Conducting joint audits covering Safety, Quality and Environmental Protection
- Using the same management systems – including ISO 9001  and ISO 14001 
- Employing similar methods for risk management
- Assessing Safety, Quality and Environmental implications of planned changes in manufacturing processes before approval. This is undertaken by the Corporate Change Review Committee - CRC.

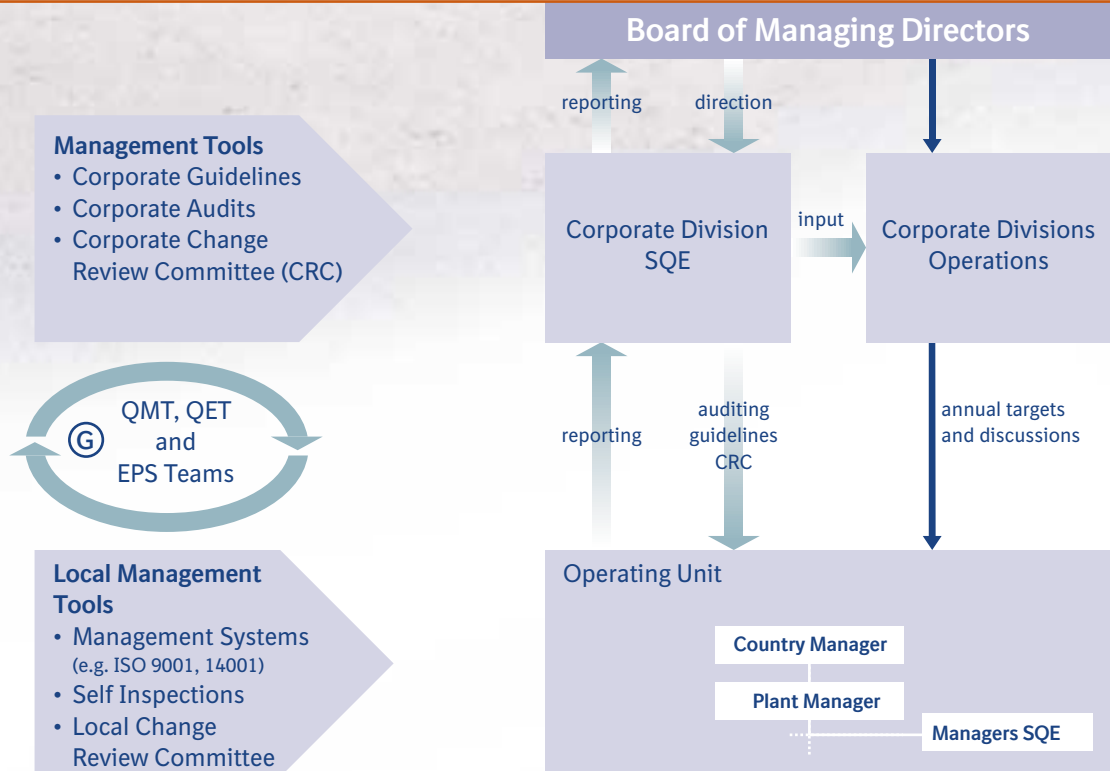


Chart 2: SQE management at Boehringer Ingelheim

Boehringer Ingelheim is an international research-driven pharmaceutical company dedicated to advancing the frontiers of medical knowledge, with the aim of promoting health and improving the quality of life.

Our Policy

In addition to complying with all relevant legislation, we also participate in voluntary initiatives which go beyond regulatory requirements. We subscribe to the chemical industry's Responsible Care® guiding principles and support the principles of sustainable development.

We firmly believe in acting responsibly towards our customers, our employees, our neighbours and society at large.

We always weigh commercial interests against our responsibilities regarding human health and safety and environmental protection.

With the increasing globalisation of industrial activity, we believe it is necessary to develop standards and procedures for worldwide application. We are actively engaged in this process and strive for continual improvement in safety, quality and environmental protection.

Product stewardship

We know that our long-term competitiveness can only be assured by developing products and technologies that are innovative and environmentally friendly. We acknowledge social consensus when developing strategies for product development and technology use.

In this context, we will work to improve and expand our knowledge of our products and processes and the effects they have on man and the environment.

Minimising environmental impact

When developing our products and processes, we regularly incorporate technological and scientific resources to minimise environmental impact.

We are continually striving to reduce both the amount of waste we produce and our emissions to air and water. We

endeavour to conserve natural resources and use them in an efficient manner.

Management systems

Management systems are in place for all health-, safety-, quality- and environmental protection-related activities and these are refined on an ongoing basis. We use risk management techniques to prevent hazards and losses, thereby ensuring the continuous availability of quality medication to patients.

Responsibility for our employees

One of our foremost responsibilities as an employer is to concern ourselves with the well-being of our employees by providing suitable workplaces and working conditions. As appropriate, we monitor employees' health on a regular basis.

We carry out continuous training to promote awareness of responsible behaviour in connection with health, safety, quality and environmental protection procedures.

Co-operation with business partners

When choosing our business partners, we consider their safety, quality and environmental protection standards. Consultancy support in this area is given as requested.

Information and dialogue

We provide our customers and the general public with up-to-date and comprehensive information on major advances and new developments relating to our products and the technologies we use.

We are committed to pursuing an open dialogue with our employees and neighbours, with the media, the medical profession, the authorities and the patients we serve. Our aim is to increase mutual understanding and to reinforce other people's confidence in the way we conduct our activities.



Chart 3: International collaboration with operating units

Setting objectives

During Boehringer Ingelheim’s Annual Discussions, the heads of the various business divisions (Pharmaceutical Manufacturing, Chemicals, Biopharmaceuticals, Animal Health) agree on objectives with the Country Managers and the Operations Management. The agreed objectives for Safety, Quality and Environmental Protection are then incorporated following close consultation with CD SQE. These objectives are implemented at the operating units, reaching all employees through establishment of their individual goals during their Annual Discussions, which are held wherever we operate in the world.

International collaboration

Boehringer Ingelheim has deployed international Quality Management and Quality Expert Teams for collaboration with operating units on Quality Assurance and Environmental Protection and Safety, for example:

Quality Management Team for EPS (QMT EPS)

The members of this team meet twice a year under the leadership of CD SQE to discuss current Environmental Protection and Safety issues, to prepare strategic decisions and to define projects.

Quality Expert Teams for EPS (QET EPS)

These teams are deployed to develop and recommend solutions to projects defined by the QMT; they comprise members from various disciplines, depending on requirements. Solutions are then presented to and approved by the QMT EPS (see chart 3 above).

Furthermore regional EPS meetings with EPS managers from the operating units are regularly held. Using a workshop format enables colleagues to discuss methods and approaches to dealing with EPS issues on a day-to-day basis. These meetings also provide the strategic orientation for various EPS matters handled by CD SQE.

Environmental, safety and health audits

In 1992 Boehringer Ingelheim implemented a corporate-wide audit system focusing on environmental and safety risks. Since 1995, more than 40 audits have been completed at our chemical, pharmaceutical and veterinary sites. By the end of 1997, almost all operating units within the Corporation had been audited at least once.

Before we audit an operating unit we send a detailed questionnaire covering 20 different areas relevant to the site management to build up an environmental, safety and health profile. Interviews and site visits supplement this information, as does the assessment of EPS related records and documents.

For the second round of audits, which began in 1998, we developed a new audit questionnaire covering the major elements of the ISO 14001 environmental management system. On the basis of the audit results, action plans were implemented where necessary to eliminate any weaknesses identified. CD SQE conducts regular follow-up audits to ensure continuous improvement. Joint audits with Quality Assurance are planned for early 2002.

Benchmarking

Boehringer Ingelheim considers benchmarking a useful way of comparing itself with other companies in the pharmaceutical industry and does not shy from critical examination. In 1999 we participated in the "Top 50 Study" of the Hamburger Umweltinstitut e.V. (Hamburg Environmental Institute, HUI). This study assessed the 50 largest chemical and pharmaceutical companies in the world for environmental impacts. We were ranked seventh.

Integrating and certifying management systems

Boehringer Ingelheim decided early on that every operating unit should establish an environmental management system along the lines of the international ISO 14001 standard. Following successful ISO 14001 certification in France (see page 16), we now intend to have other sites certified.

Preparing for emergencies

How does Boehringer Ingelheim ensure that, in case of unforeseen events which could have an environmental impact or jeopardize safety, appropriate countermeasures are taken in good time?

One of the Company's Corporate Guidelines concerns "Emergency Preparedness". This obliges all operating units to implement a Crisis Management System. Annual mock drills allow Crisis Management Teams to analyse emergencies and initiate specific countermeasures (see page 22). CD SQE is also notified immediately in the event of accidents or emergencies.

Planning and Reporting System

CD SQE collects and compiles all environmental and safety performance data using Boehringer Ingelheim's electronic Planning and Reporting System. More than 65 Boehringer Ingelheim sites, reflecting 95 per cent of our employees, are connected to this system. Every February we automatically receive year-end reports which are processed and consolidated using an electronic database. The electronic system allows us to analyse trends, to identify strengths and weaknesses of each operating unit, and to discuss opportunities for environmental and safety improvements as required (see page 28 and onwards).

Environmental activities



In touch with the community at Fornovo

In 1993 Boehringer Ingelheim's Italian subsidiary Bidachem joined the Responsible Care® programme, launched by CEFIC, the European Chemical Industry Council. This is a worldwide initiative aimed at continuously improving health, safety and environmental protection within the chemical industry. Since then, Bidachem's commitment has always been clear: to make both the Responsible Care® message and Boehringer Ingelheim's own Environmental Protection and Safety policy part of its everyday life. Reaching out to the community is one way in which Bidachem has achieved this goal.

Bidachem holds regular public meetings to inform its neighbours about the safety of its processes and products. Company representatives discuss chemical safety, accident prevention, and emergency preparedness. They explained the safety systems the company has in place to ensure the local community is comfortable with Bidachem as a neighbour. A brochure was distributed to all families living nearby.

Open houses have also proved an effective means of reaching out to the community. Every two years, Bidachem opens its doors to local residents, employees' families, authorities, and the media. Facility managers conduct tours through the plant, showing the manufacturing process from start to finish – from the warehouse, through production, into the laboratories, and finally explaining the environmental controls. Staff also demonstrate what



“People are often misinformed and therefore worried. Openness, communication and a transparent policy play a key role in creating positive images and attitudes towards chemicals industries,” says Mauro Arrigoni from Bidachem.



Bernardo Duarte from Boehringer Ingelheim Colombia (centre) and Luis Nieto (left) from Tubotec Colombia, receive their awards from the DAMA director, Manuel Felipe Olivera.

they do on a daily basis, and how their own safety at work is assured.

These steps have generated an excellent response, and our last open house in May 2000 was attended by 800 people.

Environmental award from the City of Bogotá

Late in 1999, Boehringer Ingelheim Colombia decided to upgrade its boiler equipment in order to enable substitution of sulphur-containing fuel oil with cleaner burning natural gas. This change allowed the company to participate in a competition organised by the DAMA, (Technical Administrative Environmental Department of Bogotá) together with 27 other national and multinational companies.

The contest, which was supported by the United Nations Environment Programmes, evaluated the performance of companies committed to environmental protection and focused on the reduction of emissions to air from fixed sources. National and international experts selected the top-performing companies and assessed them based on the actual reduction of emissions as well as the project’s cost-effectiveness.

The participants reduced emissions of particulate matter by a total of 67 tonnes per year.

Boehringer Ingelheim Colombia achieved emission reductions of 90 per cent for particulate matter, 73 per cent for nitrogen oxides, and 100

“We implemented different measures to improve our environmental performance and today we are very proud to receive this award, as it acknowledges our efforts.”

*Bernardo Duarte,
Boehringer Ingelheim Colombia*

per cent for sulphur dioxide and was awarded first prize in Category II (participants were divided into two categories according to the size of their boilers).

This is not the first time Boehringer Ingelheim Colombia has been recognised for its environmental commitment. In 1998 the company received a gold medal from the City of Bogotá and the Water Supply Company for its outstanding achievements in water conservation. The company is currently directing further efforts towards environmental improvements in areas such as waste recycling and pollution prevention.

Emissions	Amount in kg/hour		Reduction achieved (%)
	January 2000 (Fuel: oil)	June 2000 (Fuel: natural gas)	
Particles	0.10	0.01	90%
SO ₂	0.12	0.00	100%
NO _x	0.63	0.17	73%

Emission reduction achieved over the project implementation period



"Naturally, the better trained the workforce, the greater our effectiveness in all areas: productivity, quality, safety, etc... This in turn puts us in a better position to collectively meet and/or exceed the requirements of all our stakeholders" says Gene Langley.



Japanese colleagues contributing to energy saving.



Individualised training plans in Petersburg

Training has always been an important part of chemical plant operations. At Boehringer Ingelheim's facility in Petersburg, Virginia, USA, a new method of managing our training was required due to the site's growth, increasingly complex processes, and the desire for ISO 9001 registration. The solution was a computer-based training management system implemented in 2001, covering all aspects of an individual's training requirements.

The system manages a range of modules devoted to safety training. Additional training such as Good Manufacturing Practice, environmental protection, human resources, as well as job-specific training, are also managed with this system. Each employee will have his or her own individualised training plan. The system notifies them of their training requirements for initial and refresher training, and it tracks their progress as training is completed. Finally, the system produces comprehensive, documented, and up-to-date records which make it easier to demonstrate compliance with the Company's training requirements.

This electronic programme provides a component that is missing in the traditional paper tracking system. It automatically notifies the responsible parties that an employee's training plan will be out of compliance if action is not taken within 30 days. In the past this was tracked manually and in most cases was handled less

effectively. Given the nature of the business and the amount of training driven by regulatory requirements, this management system is an invaluable tool in ensuring Boehringer Ingelheim's continuous compliance with industry standards.

Environmental improvements in Japan

In 1999, a combination of well planned investments and extra effort by employees at our Japanese operating units in Yamagata, Toride and Hino, proved highly effective in saving energy and reducing waste:

- Air conditioning and lighting systems were optimised by fine-tuning the specific requirements of each room = 7.2 per cent saving in annual electricity consumption
- Installation of new boiler technologies enabled us to manage the system more flexibly and closer to actual demand = 6.2 per cent saving in oil consumption at the three sites
- Provision of strategically located waste collection facilities at Hino combined with staff training = 77 per cent reduction in packaging waste volumes and 16 per cent increase in overall recycling rates.

Optimising wastewater treatment in Reggello

The operation of a biological wastewater treatment plant is always a challenge. The composition and volume of the incoming water is con-



"Prevention is better than cure" says Dr. Rosario Cesario, Reggello.




A hard nut to crack: Dr. Andreas Runge, Barbara Helmschrott-Betz and Elmar Mueller (l. to r.) contributed many ideas to the online system in Biberach and now reap the benefits in their daily work.

stantly changing and effluent characteristics and external conditions such as temperature, influence the effectiveness of the treatment.

In 1999 the environmental department at Boehringer Ingelheim's plant in Reggello, Italy agreed that a tool making it possible to forecast volume and composition of the effluents from the production departments would greatly improve management of the wastewater treatment plant, and increase its degradation rate.

With the cooperation of the production and maintenance departments, the EPS coordinator of the site, Dr. Rosario Cesario, developed the software system called PrevScar. PrevScar is a database linked to the production planning system used at Boehringer Ingelheim, Italy. It contains data including average yield of production batches and even the standard cleaning procedures for the machinery. With all this information, the system is able to provide a forecast of water volumes and composition up to 10 days.

For Dr. Cesario, the main purpose of the system is to provide advance warnings about peaks in COD  (Chemical Oxygen Demand) and consequently to assist the management of the wastewater treatment plant. PrevScar is currently being tested in a pilot phase and will be fully operational in mid 2001.

Online eco-control at Biberach

Boehringer Ingelheim has developed an

'Enhanced Environmental Information System' at its facility in Biberach/Riss, southern Germany, to provide an ongoing evaluation of environmental impact. This initiative is directed towards resource-flow management, and although currently still a pilot project undergoing further development, it is already delivering substantial results.

The system is extremely flexible in managing data inputs and outputs: formulae can be included to calculate environmental and economic parameters, and data – the basis of the system – can be input from a variety of sources.

The project is helping to create a site eco-balance for Biberach, and to deliver important data on a wide range of environmental parameters, including:

- Use of resources – from raw materials to water and energy
- Volumes of hazardous materials
- Wastewater discharge volumes
- Volumes of solid waste
- Inputs and outputs across the site, or from specific operating units.

The information provided by the system has a number of applications: environmental protection experts use it to improve processes and decision makers use it to measure progress towards meeting targets. All our employees at the Biberach site will be able to obtain online-environmental performance information whenever they need it via the company's intranet system.

*Dr. Marc Lecoq,
Labso Director (right) receiving the
OHSAS 18001 certificate by
Mr. Charpentier, Director of the Bureau
Véritas Qualité International.*



Implementing environmental standards at Blanquefort

Boehringer Ingelheim's chemical plant at Blanquefort in France, Labso Chimie Fine, has achieved a qualitative improvement in environmental management systems by combining the implementation of international standards with local initiatives.

Using its existing environmental management system as a foundation, Labso Chimie Fine decided to pursue the International Standards Organisation's environmental management system, known as ISO 14001.

As a result in July 1998, Labso became the first Boehringer Ingelheim operation to attain ISO 14001 certification.

More recently, the site has implemented a new safety management system according to OHSAS 18001. **G** This system was integrated with the existing ISO 14001 system, and adds a management system for safety. Labso is one of the first sites in France certified under the new system. "The workers are more confident using our installations since they know OHSAS 18001 is the perfect tool for an integrated and systematic approach to safety," says Dr. Marc Lecoq, Labso Director. Labso has already benefitted from systematically managing environmental issues. For example, dust emissions from the atomiser system have been reduced from 120 mg/m³ to 5 mg/m³ by using a filtration system rather than a wet scrubber. In addition, the certification process has led to improved relations with the local environmental authorities, making it easier to obtain the required operating permits.

Helping underprivileged children in Itapecerica

Boehringer Ingelheim, Brazil takes an active interest in Brazilian social issues and supports organisations and initiatives which offer sustainable solutions to poverty and social issues.

Boehringer Ingelheim makes monthly contributions to philanthropic institutions, including:

- An initiative called Abrinq, which defends the basic rights of children: since 1993 we have supported a project which enables poor children to attend various day nurseries, educational institutions and other social organisations. As a sponsor, Boehringer Ingelheim has "adopted" 10 children to date
- Creche Lar Jane Suzana is a day nursery for children of needy and working families in the neighbourhood of our production unit. This tends to the care, nutritional, educational and supervision needs of over 140 young children aged between 4 months and 6 years, while their mothers are working. Boehringer Ingelheim has supported this crèche with grants since December 1999
- Prefeitura de São Lourenço da Serra is a municipal district in the neighbourhood, where Boehringer Ingelheim from time to time supports individual projects, for example the renovation and expansion of buildings and the acquisition of vehicles. This year we sponsored the renovation of a school building which was converted into a rehabilitation centre for physically and mentally handicapped people.



Social Initiatives

The same community also received a vehicle for the transportation of needy children and teenagers.

Sowing seeds for the future

To celebrate Earth Day, an international event, Boehringer Ingelheim Colombia helped to organise a family tree-planting day together with the Botanical Gardens, a government institute for plant conservation in the Bogotá area. Around 150 Boehringer Ingelheim employees and their relatives participated in this event, planting more than 40 native trees in the city of Bogotá.



Families participating in tree-planting activity.

The jury selecting pictures in Ingelheim, Germany



One of the artists in Mexico is proud to receive a prize

Seeing through the eyes of a child

Pollution, endangered species, destruction of the rain forests and natural disasters are just some of the environmental issues which preoccupy people all over the world.

Conferences are held on the environment, on climate changes and similar topics to debate these issues.

Boehringer Ingelheim decided to try a somewhat different approach: ask children for their opinions, rather than asking adults.

How do children see Environmental Protection and Safety? An interesting question, which led to the idea of developing a calendar, with pictures painted by children aged from five to fourteen.

In August 1999, employees at all operating units were asked to encourage their children to participate. The approach differed from country to country, but the Latin-American units demonstrated the greatest enthusiasm. In Colombia, for example, a group of 50 young painters were asked to close their eyes and to imagine colours, birds and nature.

We received about 400 pictures from 19 different countries and the results show that young artists tackled their subject with a great deal of creativity and skill. We had planned only 12 pictures for our year 2000 calendar, but in view of the abundance of excellent paintings we decided to double this number. The final selection was made by an independent artist and art teacher from Bingen, Germany. The children received thanks in the form of small gifts, and the result was a very special calendar for the year 2000.

Saving endangered species

At Solana, Boehringer Ingelheim's Duboisia Plantation in Brazil, our employees, land and water resources are seen as our most precious assets. Crop rotation, green manure and soil preparation using the "no tillage" system are common practice on our farm. Furthermore, large areas of the farm have been reforested, allowing the wild animal population of the area to increase significantly. Among other species, several tapirs, the seriously endangered and largest wild mammal of South America, were observed. This discovery encouraged some of our co-workers to found a wildlife conservation society called "Grupo Tapirus" in 1998. Since then, a group of ten volunteers has been working to ensure the protection of wild animals on the farm.

They work mainly with three priorities:

1. To watch and learn more about the animals and local environment,
2. To protect the fauna and flora on the farmland and neighbouring areas,
3. To promote environmental education among the local population.

Several initiatives have met with great success, in particular, the education programme, which attracts young visitors, arriving in classes almost every week.

The biggest attraction is a three-kilometre rain forest track incorporating exhibits of indigenous species of trees and wild orchids.

From a watch tower built at a quiet spot the



visitors can observe wild animals in their natural habitat. A small education centre has been opened with an exhibition of posters, photos and a collection of related objects. “Grupo Tapirus” well understands that the best way to protect the environment is by creating

awareness through environmental education, important not only in the big cities, but also in the countryside, where it is still possible to observe species and ecosystems which have survived the human population explosion and its ever-increasing effects on nature.



“I used to be a hunter, and now as a member of the Tapirus Group I am glad to use all my knowledge about the animals for something more positive”
says Alberto Dias dos Santos,
one of the most active members of the
Animal Conservation Society.



“I think about my children, who should also have a chance to see all the beauty of nature, but only if we succeed in keeping alive what has been left to our care”
says Paulo Dias da Costa,
one of the members of the
“Grupo Tapirus”.


Safety and health

“The introduction of mechanical harvest has eliminated the danger of chainsaw accidents and exposure to the leaves,” says Don Nielsen who has been working on the Duboisia plantations in Australia since 1985.



Minimising exposures and side effects at Kingaroy

As well as manufacturing pharmaceuticals and APIs, Boehringer Ingelheim also cultivates medicinal plants at its farms in Australia and Brazil.

The Australian Boehringer Ingelheim Plantations extend over 1,100 hectares and produce up to 1,000 tonnes of Duboisia  leaf annually. These leaves contain valuable alkaloids for instance for BUSCOPAN®, a Boehringer Ingelheim product to ease stomach and bowel cramps.



The cultivation of Duboisia has environmental implications due to the intensive farming methods employed, and also health and safety implications, since contact with Duboisia leaves could potentially expose workers to the alkaloids they contain, inducing skin and eye irritation. To address environmental considerations our plantation managers employ good agricultural practices including:

- Leaving land fallow in rotation
- Protection against soil erosion by selection of suitable cultivation methods



"Harmonisation of our approaches to worker safety will facilitate technology transfer between Germany and the United States" says Dr. Daniel Liberman, Environmental Affairs, Ridgefield.

"Higher alkaloid content in the leaves has made it necessary to use personal protective equipment whilst taking cuttings," says Jan Haack, Nursery Manager and employee of Boehringer Ingelheim since 1983.

- Construction of contour banks to control water run-off
- Judicial use of farm chemicals.

To satisfy health and safety standards, mechanical harvesters with filtered air-conditioned cabins have all but eliminated physical contact with the Duboisia leaf and the inevitable side effects they contain. Negative flow air streams with filter bags are installed at the packing station and air conditioned tractors fitted with charcoal filters are used when applying agro chemicals. The plant nursery staff who collect and prepare the Duboisia cuttings also have to protect their hands from dermal absorption of the alkaloids. Successful trials were conducted by the staff to identify acceptable protective clothing including overalls, gloves and safety eyewear which are now worn by the workers.

Working together to control worker exposure

Employee safety is a priority at all Boehringer Ingelheim operations. Recently, a joint effort between the company's facilities in Ridgefield, USA, and in Germany led to the development of a new worker protection programme. The Boehringer Ingelheim Exposure Level (BIEL) programme, was developed to further protect our employees during the normal course of development and production of new and potent pharmaceutical substances. BIEL provides guidance on safe handling in all phases of the drug development cycle in order to minimise unnecessary employee exposure to pharmaceutical compounds.

Establishing a BIEL is a team effort, requiring the use of our internal experts in the fields of toxicology, pharmacology, industrial hygiene, and other highly specialised fields. The BIEL Committee, which includes members from Germany and the USA, uses a process which employs all available toxicity data to evaluate the way humans can become exposed to the substance, and to establish safety factors. When the BIEL has been established, the programme provides a safe work place exposure standard, guidance on the proper handling methods and worker protection requirements. Workplace monitoring is then conducted to confirm that these exposure levels are not exceeded.

As the industry trend moves towards developing higher potency drugs, the BIEL programme ensures that our employees have a safe working



Patty Reilly during an emergency drill

environment. In some cases, it may even require investment in additional equipment to safely handle these substances. Projects to install isolation technology, such as gloveboxes, have been completed in Biberach and Ingelheim, Germany, and Ridgefield, Columbus and Petersburg, USA, among others. This state-of-the-art technology gives us the capability to develop and manufacture highly potent compounds while reducing worker exposure.

Not all compounds will require sophisticated isolation equipment. Some may be handled with gloves and a lab coat. With the BIEL programme we have a tool for allocating resources to these areas where safety considerations are most important. The BIEL programme will be implemented at all Boehringer Ingelheim operating units during 2002.

Cleaning up in Ridgefield

The research laboratories at the Ridgefield facility in Connecticut, USA handle a wide variety of materials in small quantities. Due to the nature of pharmaceutical research, many have hazardous chemical, biological and radiological properties. The Unified Spill Response Team (USRT) is trained to handle incidents involving these materials, and we routinely have discussions with the external local emergency response groups about co-ordinated efforts to deal with these incidents. Patty Reilly works in the Biology department of Boehringer Ingelheim in Ridgefield. She is also a member of the site's USRT. Here she describes what this entails:

“Several years ago, the local emergency response groups were not comfortable with their own ability to rescue an individual who was contaminated with such materials. After both local fire departments observed the USRT practice drills, they agreed our team could very effectively handle recovery of workers who might have become contaminated.

Now, we are trained to handle hazardous material incidents, and to remove injured persons from a contaminated area. The site's Medical Response Team is also trained on how the spill team responds, and how safety zones are established around an accident. During an incident, the spill team can remove the injured person to an area where he or she can be decontaminated enough to begin emergency treatment by the Medical Response Team. After the decontamination process and initial emergency treatment, the fire department and its medical unit will take over. Fortunately emergencies do not occur frequently, but we are prepared.”

Monthly training sessions are held to cover the selection and proper use of protective equipment and clothing and to review and practice usage of equipment and procedures.

Every year the entire team is trained and certified by an outside consultant to ensure they meet government standards. The team members are all volunteers and Boehringer Ingelheim recognises their dedication and commitment to helping people and to protecting the environment and company assets.



“With the new computerised system we can manage much more efficiently the new safety and security systems and react precisely and quickly in case of an incident”.

Luis Fernandez, Environmental Protection and Safety co-worker, Sant Cugat, Spain.





Monitoring safety at Sant Cugat del Vallès

In 1998, the pharmaceutical production of Boehringer Ingelheim in Spain moved to Sant Cugat, near Barcelona. In the new facility all safety and security systems are linked and managed by means of a software system which allows the monitoring of data transmitted from smoke detectors, gas alarms and burglar alarms. Access to the site and the fire extinguishing system are also controlled by the system.

Data from different parts of the plant are monitored in the control centre on a real-time basis. The centre is manned 24 hours a day, 365 days per year. The centre staff are capable of a speedy and appropriate reaction at any time. This is not only a major challenge for the people directly involved in the monitoring system, but also for everyone on site. Emergency response plans have been developed in collaboration with all departments.

All co-workers are trained on how to react in emergency situations and simulations will take place this year.

Specific targets set in 1995. Where do we stand in 2001?

Areas of improvement	Targets	Status	Comments
Eco-efficiency	Reduction of water consumption relative to production by 15%	●	Reduced by 26%
Eco-efficiency	Reduction of energy consumption relative to production by 20%	●	Improved by only 2% because of more energy intensive clean room technology and air conditioning required by regulatory agencies
Emissions	Reduction of CO ₂ emissions relative to production by at least 20% 	●	Reduced by 23%
Emissions	Reduction of SO ₂ emissions relative to production by at least 10% 	●	Reduced by 60%
Emissions	Reduction of overall VOC emissions relative to production by 20% 	●	Reduced by 47%
Emissions	Improvement of accounting methods for organic solvents	●	PaRS system was improved for specific solvents
Emissions	Account for trends in the consumption of packaging material in our next report	●	Classification has been improved (see Input/Output-inventory)
Waste	Promote further initiatives to reduce the size and mass of pharmaceutical packaging	●	Pilot project with alternative packaging material
Water	Continuing efforts towards COD elimination by treatment to 85%	●	Total elimination rate increased to 87%
Waste	Reduction of total waste for disposal relative to production by 15%	●	Reduced by 34%
Waste	Improvement of recycling rate to at least 70%	●	Rate was improved up to 78%
Waste	Elimination of landfill disposal of special waste, if technically feasible	●	Achieved
Hazardous waste	Reduction of total hazardous and special waste relative to production by 10%	●	More stringent regulations have classified - wastewater from production to hazardous waste, and - non hazardous waste in various countries as hazardous waste
Audits	Initiate second round of audits in 1998	●	Achieved
Audits	Complete baseline audits of chemical, pharmaceutical and bakery production sites by end of 1997	●	Second audit round started in 1998. Two remaining audits were conducted in 1999
Audits	Pilot EMAS/ISO 14001  certification at two production sites by end of 1997	●	Achieved
Safety	Strive for zero accidents	●	Significant improvements since last EPS report
Training	Review and update the present structure and content of site EPS training programmes by end of 1997	●	Implementation of EPS brief discussions at various sites
Input-Output inventory	Upgrade our accounting methods for packaging material and toxic materials such as chemical solvents by 1998	●	Methods improved and implemented for hazardous materials and packaging materials
Input-Output inventory	Include significant impacts of our operations such as transport and distribution by 1998	●	Consideration of company car fleet related emissions but not transportation of goods


● Target achieved

● Target ongoing

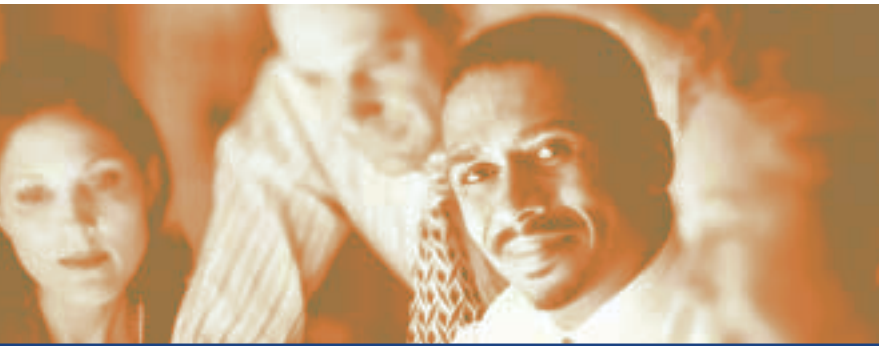
● Target not achieved

General targets for 2003

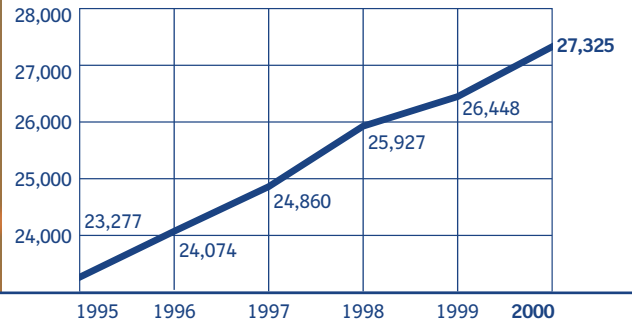
Audits	Implement joint audits with Quality Assurance to take advantage of integrated management systems
Safety	Strive for zero accidents and incidents
	Increase safety awareness of all employees through further training programmes
	Implementation of Boehringer Ingelheim Exposure Limit programme
Management Systems	Implementation of ISO 14001 Management Systems at sites Prepare priority sites for certification
Product Stewardship	Support systems to improve counterfeit-proof packaging
	Improve product information through adding recycling and disposal advice
	Conduct environmental risk assessment for existing products
	Promote environmentally preferable packaging technologies
Eco-efficiency	Support eco-balance systems as pilot projects at priority sites
	Support energy efficient technology in new investments
Emissions	Reduce SO ₂ emissions through new boiler technologies, e.g. changes from oil to gas
	Further reduce greenhouse gas emissions (CO ₂ and VOC) relative to production
Water	Reduce water consumption at major chemical production sites
Waste	Improve the recycling rate at priority sites as identified by our production related waste index
Communication	Promote local EPS reports at pharmaceutical and chemical sites

Major site specific targets for 2003 from operating units	
Site	Targets (all quantified targets are relative to production)
Bracknell, U.K.	Energy consumption to be reduced by 10%
	CO ₂ emissions to be reduced by 10%
Reims, France	Reduction of VOC emissions from production by 90%
	Improvement of recycling rate up to 80%
	Reduction of COD and BOD load by 10% 
	Implementation of specific waste categories to improve waste segregation
Ingelheim, Germany	Start-up of an incineration plant for gaseous emissions (2002)
	Construction of a wastewater stripping facility for reduction of volatile chlorinated hydrocarbons in wastewater
	Reduction of water consumption by installation of closed loop circulating cooling system for power plant turbines
	Refurbishment of the sewer system for wastewater from chemical production
Biberach, Germany	Improvement of effluent treatment to accommodate the expansion of the biopharmaceutical production and research and development activities
	Extension of the storage capacity of the waste treatment facility
	Optimisation of a computerised waste treatment and monitoring system
	Increase EPS awareness by expanding training
Reggello, Italy	Implementation of an ISO 14001 management system
	Reduction of waste by 10% (assuming no major increases in production)
Fornovo, Italy	Implementation of ISO 14001 management system and improvement of the safety management system
	Improvement of the recycling rate by 10%
	15% reduction of water consumption by installation of closed loop circulating cooling system
Malgrat, Spain	Significant reduction of VOC from production
	Further reduction of COD load
	Evaluation of eco-toxicity data of manufactured products

Site	Targets
Koropi, Greece	Reduce SO ₂ emissions by using natural gas instead of oil in boilers
	Improve recycling rate by 25%
	Reduction of total waste by 10%
	Implementation of a new training programme for the site
Ridgefield, USA	Reduction of accidents to less than two government recordable accidents per 200,000 hours worked in 2001
	Return \$20,000 of value to the Corporation by reducing or recycling waste materials
Columbus, USA	Reduce waste by at least 5% by increased recycling
	Reduce VOC emissions by at least 5% by changes in product life cycle
Petersburg, USA	Reduce SO ₂ emissions by 80%
	Reduction in wastewater organic loading to the municipal effluent treatment plant by 80%
	Increase in municipal waste recycling by 10%
Promeco, Mexico	Improvement of recycling rate by 20%
	Cost reduction of incineration by 15%
	Reduction of the number of accidents by 30%
Buenos Aires, Argentina	Reduction of waste
	Reduction of accidents
	Improvement of the effluent treatment plant
	Noise reduction in the manufacturing area
São Paulo, Brazil	Reduction of waste by 15%
	Improvement of the recycling rate by 20%
	Energy savings of 5%
	Reduction of water consumption by 10%
Yamagata, Japan	Decrease electrical consumption by 20%



Number of employees within Boehringer Ingelheim



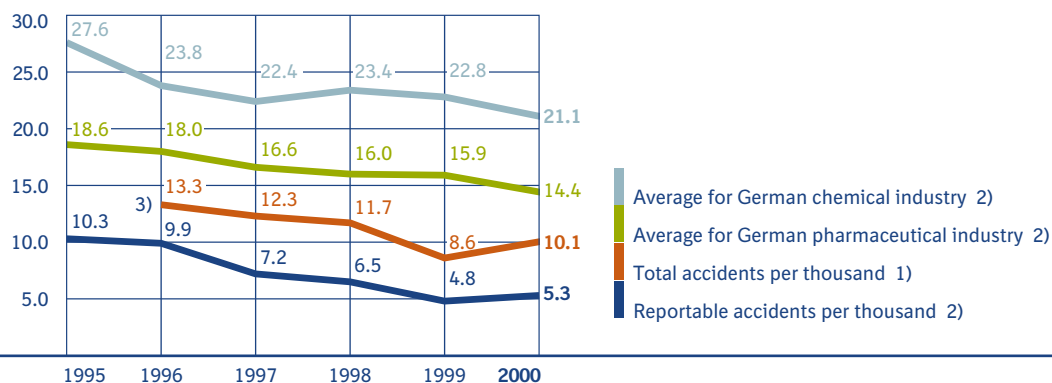
People drive our commitment to Environmental Protection and Safety. Over 1000 individuals worldwide volunteer for fire brigades, spill response teams, medical emergency teams, and safety committees. We believe a secondary effect of their commitment is a heightened awareness of environmental and safety issues, particularly at manufacturing sites. This awareness may be a factor in accident reduction.

Number of employees working in Environmental Protection, Health and Safety (2000)

Environmental protection	88
Safety/industrial hygiene	54
Security	133
Fire prevention (fulltime)	26
Medical service	29
Volunteer firemen	432
Volunteer safety representatives	613

Five per cent of all Boehringer Ingelheim employees are directly involved in Environmental Protection, Health and Safety.

Work accidents



- 1) Work accidents with more than 1 day time loss, including accidents on the way to and from work, not counting the day of accident.
- 2) Work accidents with more than 3 calendar days time loss, not counting the day of accident.
- 3) Registered since 1996

Since our last environmental report we have made remarkable progress in reducing the number of accidents. No fatality has occurred during the reporting time frame.

As a corporation, we have achieved an accident rate of 5.3 accidents per thousand employees, well below the chemical and pharmaceutical industry average (see chart above).

Occupational diseases

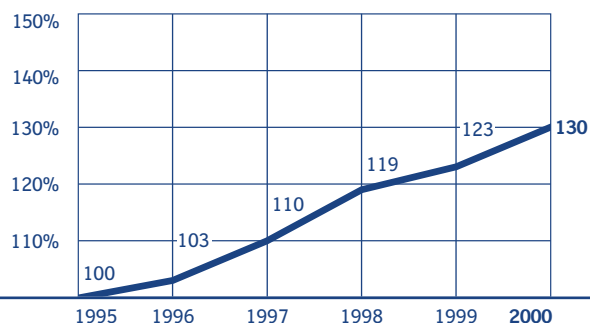
	1997	1998	1999	2000
Cases reported to authorities of suspected occupational diseases	2	5	3	3

Expenditures on Environmental Protection, Health and Safety in million EURO

	1997	1998	1999	2000
Expenditures for effluent treatment	12.6	12.0	9.7	9.7
Expenditures for waste treatment	10.6	10.1	10.6	10.7
thereof hazardous waste	3.4	3.6	5.5	5.6
Expenditures for occupational safety and health	19.2	18.6	16.9	17.4
Total	42.4	40.7	37.2	37.8



Production Index



Our priority in terms of environmental management, is to create more and better goods with less use of resources, waste and pollution – to become more eco-efficient.

For this reason, our environmental impacts are shown both as absolute values and relative to production - represented in our Production Index. This Index represents our overall production in all business areas including Human Pharmaceuticals, Biopharmaceuticals,

Chemicals, and Animal Health, and is weighted to compensate for differences in environmental impact. Our weighting methods were determined in 1995 and were revised in 1998 to reflect the sale of our Bakery and Food business and the expansion of our Biopharmaceutical business.

Presenting environmental data against an indicator of activity gives a more objective assessment of progress in environmental protection.

Noteworthy accidents for all sites: 1999 - 2000

Site	Details	Remedial action
Ingelheim, Germany January 1999	Following a vehicle accident on a construction site, 100 litres of diesel fuel from a contractor's vehicle were released into the soil.	The effected soil was excavated and disposed of as special waste.
Ingelheim, Germany May 1999	When disposing of a chemical (about 30 litres) in a zinc-plated metal drum, a chemical reaction caused the drum to explode. The shock wave destroyed windows in the immediate area. No one was harmed.	Detailed investigations showed that the substances react violently on exposure to zinc (drum material). The Standard Operating Procedure was revised to prevent a repeat incident.
Ridgefield, USA December 1999	While draining treated cooling water from a utility line, the waste was incorrectly directed to a storm sewer instead of to the plant's industrial waste discharge which goes to the wastewater treatment plant of Danbury.	After reporting the release to the state authorities, Boehringer Ingelheim undertook dye testing of all drains in the plant to determine the actual discharge point of all storm sewers.
Ingelheim, Germany February 2000	When removing 80 kg of substance from a drier, an electrostatic discharge caused a minor explosion. No employees were harmed. There were no effects outside the building.	New, electrostatically conductive parts will prevent any repeat of this incident.

Water consumption

The Corporate goal of 15% reduction in water consumption has been achieved prior to the target date of 2000. This was due to several improvements including cooling water reuse at Biberach, Ingelheim and Blanquefort.

Energy consumption

In 2000 our energy consumption data showed a 2% reduction on 1995 levels. Our reduction target of 20% was not achieved due to a number of energy intensive improvements to our manufacturing and research and development facilities (mainly clean room technology and air conditioning required by regulatory agencies), and only limited success in further reducing the energy consumption in office buildings.

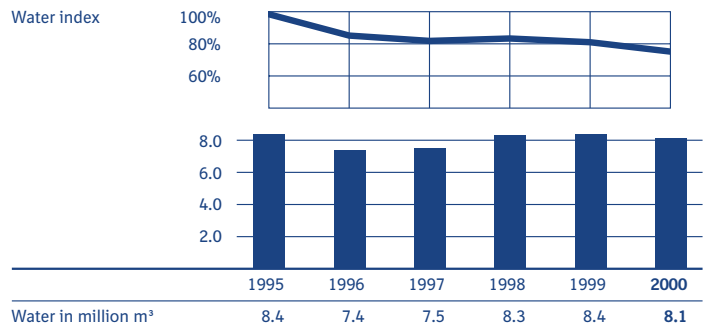
CO₂, SO₂ and NO_x emissions

The majority of our direct CO₂ emissions result from the combustion of fossil fuel (listed on page 34). Our next reports will include emissions from indirect sources and transport. In 2000 we calculated CO₂ emissions of 36,750 tonnes attributable to our company car fleet (not shown in the chart). We have achieved a 23% reduction relative to our 1995 performance through cleaner combustion technologies and reduced fuel use.

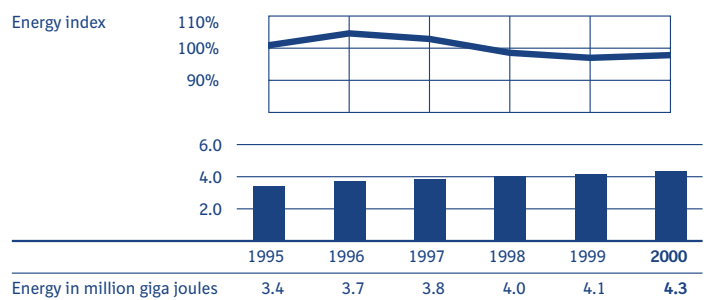
Our major reductions in SO₂, an acid rain precursor, are mainly attributed to utilisation of lower sulphur fuels. This switch in fuel use has also led to significant reductions in NO_x emissions.

36,750 tonnes CO₂ were emitted due to the use of 5,422 company cars travelling a total 175 million kilometres on company business. Average performance baseline: 0.21 kg CO₂ per driven kilometre.

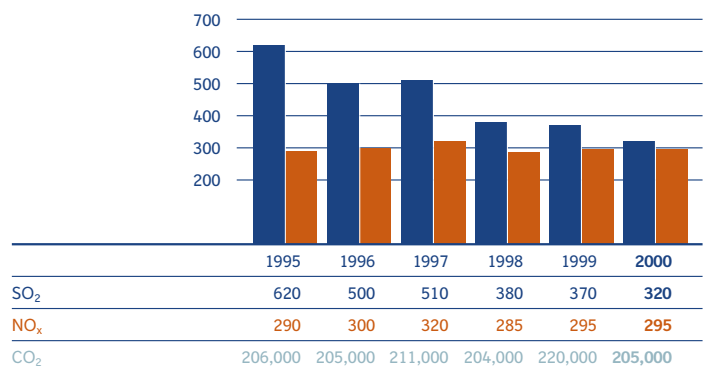
Use of natural resources



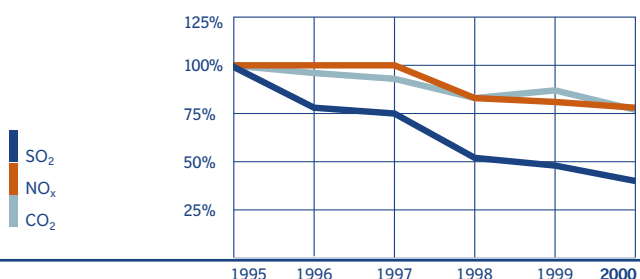
Energy consumption



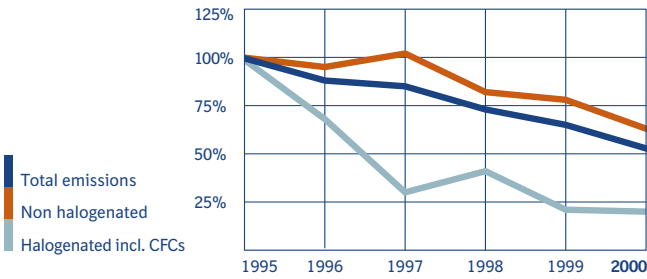
CO₂, SO₂ and NO_x emissions in tonnes



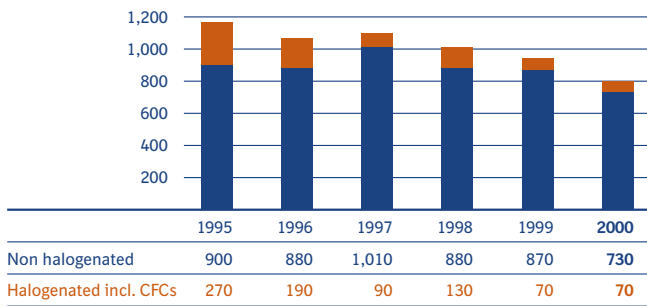
Emissions indices



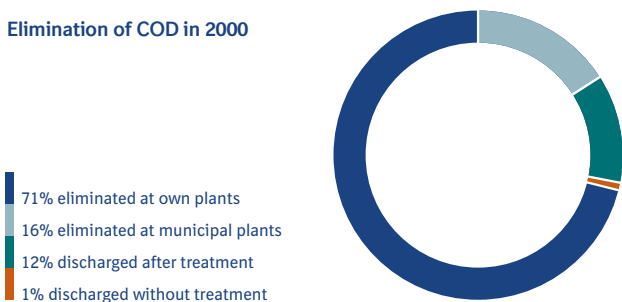
VOC emissions indices



VOC emissions in tonnes



Elimination of COD in 2000



VOC emissions

Volatile organic compounds are typically solvents which, when emitted into the air, contribute to the formation of ground level ozone, also known as smog. Although the Corporation's VOC reduction goal had been met by 1998, recent investments in VOC emission control equipment at our chemical manufacturing sites in Malgrat and Petersburg, have resulted in further emissions reductions.

Pollution prevention techniques, such as employing water-based tablet coating instead of solvent-based coating, also contribute to VOC reduction.

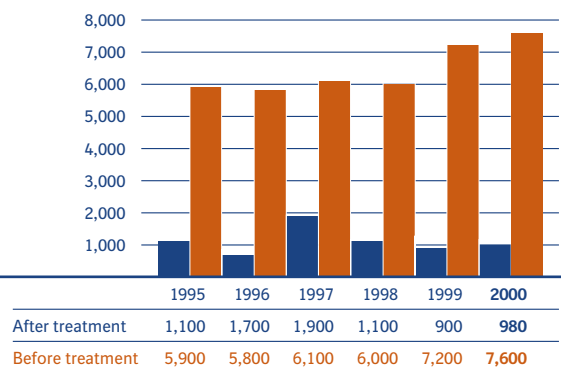
Chemical Oxygen Demand (COD)

COD load of effluent to wastewater treatment plants has increased in proportion to higher production volumes.

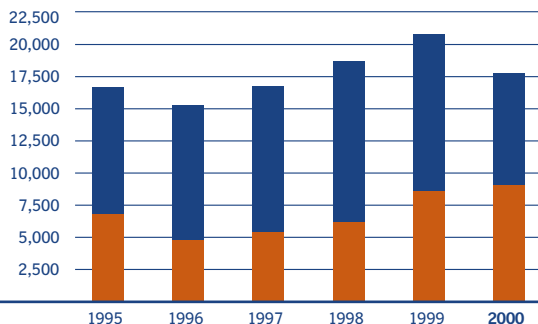
The COD load of effluent after treatment has been successfully reduced through a series of improvements and upgrades in our wastewater treatment plants.

An overall target of 85% removal of this wastewater pollutant indicator was established in the previous report. In both 1999 and 2000, we achieved overall COD removal of 87% from our wastewater discharges worldwide.

COD load



Disposed waste in tonnes

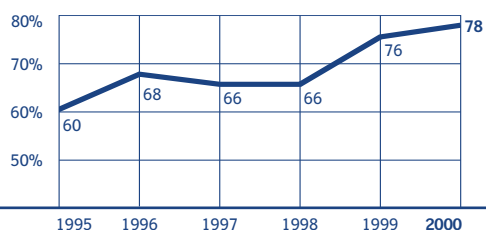


	1995	1996	1997	1998	1999	2000
Domestic	9,900	10,500	11,400	12,500	12,200	8,700
Hazardous	6,700	4,700	5,300	6,100	8,500	9,000

Waste

In 2000 we revised our data collection methodologies, and all figures shown now exclude excavation and construction waste. Since 1996, waste for disposal has increased due to increases in production. However, the proportion of recycled material has increased and in 2000 most of our solvents (over 40,000 tonnes) were recycled, and 20,000 tonnes of paper, glass, metal and plastics were collected on our sites and recycled externally. We have also developed alternative disposal routes for sewage sludge which in 2000 enabled a reduction of 4,000 tonnes of waste to landfill.

Recycling rate



Input/Output inventory 2000

Input		
Water		8.09 million m ³
Energy		4.30 million GJ
thereof	Electricity (external)	343 million kWh
	Coal	32,800 tonnes
	Heavy oil	3,000 tonnes
	Light oil	3,050 tonnes
	Natural gas	51 million Nm ³
	Fuel (petrol/diesel)	12,950 tonnes
Raw materials		
Non hazardous		26,000 tonnes
including	Sorbitol	4,100 tonnes
	Glycerol	1,000 tonnes
	Lactose	1,000 tonnes
Hazardous		25,400 tonnes
including	Caustic Soda	2,900 tonnes
	Acetone	1,900 tonnes
	Hydrochloric Acid (conc)	1,500 tonnes
	Calcium Hydroxide (Sol.)	1,200 tonnes
	Theophylline salts	1,200 tonnes
	Methanol	1,200 tonnes
	Toluene	1,100 tonnes
Packaging materials		
Total		35,000 tonnes
including	Glass	13,000 tonnes
	Plastics	10,400 tonnes
	Paper	9,300 tonnes
	Metal	1,800 tonnes
	Others	500 tonnes

Output		
Our products		
Human Pharmaceuticals		690 million packs
Chemicals		5,750 tonnes
Veterinary products		17 million packs
Biopharmaceuticals		290 kg
Emissions to air		
From energy generation:		
CO ₂		205,000 tonnes
SO ₂		320 tonnes
NO _x		300 tonnes
From company car fleet:		
CO ₂		36,800 tonnes
From production:		
Total volatile organic compounds (VOCs)		799 tonnes
Non halogenated VOCs		730 tonnes
Halogenated VOCs (without CFCs)		36 tonnes
CFCs		33 tonnes
Emissions to water		
Effluent volume		5 million m ³
COD discharged		1,000 tonnes
Total nitrogen		90 tonnes
Total phosphorus		75 tonnes
Waste		
Total waste		43,400 tonnes
thereof	Recycling	25,700 tonnes
	Domestic waste for disposal	8,700 tonnes
	Hazardous waste for disposal	9,000 tonnes

An input-output analysis is a 'black box' manner of looking at a system, whereby material flows and energy flows are taken into account, but without any analysis of what happens within the system itself. This way of looking at things allows a simple illustration of environmental impacts in the form of the use of resources and the emissions which result from the transformation of raw materials into products.

In the case of Boehringer Ingelheim, this 'black box' represents all our production and research and development sites. In addition, we have taken into account the environmental impacts of our car fleet in 2000.

Inputs: The reported 4 million GJ of energy include not only purchased electricity, but also the fuels used to

generate energy and steam. The fuel consumption of our car fleet during 2000 has been included for the first time.

Material flows include the raw materials which go to form our products and also the supplementary materials necessary for our production processes. We have listed these materials in hazardous and non-hazardous categories, and in each case reported those materials which we use in quantities over 1,000 tonnes.

Packaging materials are sub-divided into different categories – these data are based on estimates.

Outputs: We report CO₂, NO_x and SO₂ emissions both from our production sites and also resulting from the emissions of our car fleet. We have not included emissions resulting from electricity purchased from external sources.

API	Active Pharmaceutical Ingredient
Audit	A system to ensure systematic, well documented, objective and periodic assessment of Environmental Protection, Health and Safety within Boehringer Ingelheim
BVQI	Bureau Véritas Qualité International (international organisation for certification)
BOD	Biological Oxygen Demand – a standard measure of the pollutants in water which can be biologically eliminated. The lower the BOD level, the less polluting the aqueous discharge
CFCs	Chlorofluorocarbons - most important ozone depleting gases
CO ₂	Carbon dioxide – the most significant greenhouse gas
COD	Chemical Oxygen Demand is the quantity of oxygen required to oxidise the organic and inorganic material in water. The lower the COD level, the less polluting the aqueous discharge
Duboisia	”Corkwood”, Solanaceae
EMAS	The European Eco-Management and Audit Scheme
EPS	Environmental Protection and Safety
EUR (Euro)	Currency for 12 countries in Europe. 1 Euro = 0.92 US Dollar, end of February 2001
Excipients	Inert substances used to manufacture pharmaceuticals
Giga Joule	Unit of work, energy and heat (1 Joule = 1 Watt x second); Giga = 10 ⁹
HFAs	Hydrofluoroalkanes
Immunology	Branch of science which studies resistance to infection in humans and animals
ISO 9001	International Standard for Quality Management Systems
ISO 14001	International Standard for Environmental Management Systems
NO _x	Oxides of nitrogen – gases causing acid rain
OHSAS	Occupational Health and Safety Assessment Series for Safety Management Systems
Oncology	Branch of science which studies origin, formation and treatment of tumours and tumour associated diseases
QET	Quality Expert Team
QMT	Quality Management Team
SO ₂	Sulphur dioxide – gas causing acid rain
TUIS	Transport, accident, information and assistance system in Germany
Virology	Branch of science which studies viruses and viral diseases
VOC	Volatile Organic Compounds – organic solvents used in chemical processes to dissolve substances and as a reaction medium

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(from left):
 Carmen de Rosendo
 Matthias Richter
 Gabriele Ramsey
 Julia C. Kleinmann
 Dr. Yutaka Mori
 Art Slesinger (inset)

An aerial photograph of a desert landscape, showing rolling sand dunes in the foreground and middle ground. In the background, a line of palm trees is visible against a clear sky. The overall scene is arid and sandy.

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