



Environment, Health & Safety Report 2003



Environment, Health & Safety Report 2003

ASML Mission Providing leading edge imaging solutions to continuously improve our customers' global competitiveness

# Contents

- 3 About ASML
- 4 Message to Our Stakeholders
- 5 Environmental, Health and Safety Policy
- 6 EHS Management System
- 7 Highlights
- 9 Environment
- 13 Health and Safety
- 18 Compliance
- 19 Goals for 2004
- 20 ASML Worldwide Contact Information

# About ASML

ASML is the world's leading provider of lithography systems for the semiconductor industry, manufacturing complex machines critical to the production of integrated circuits or chips.

ASML technology transfers circuit patterns onto silicon wafers to make every kind of chip used today and tomorrow. As digital products, such as PCs and mobile phones, become more pervasive, the technology behind chip manufacturing becomes more advanced.

With each generation of chips, personal and business products become smaller, lighter, faster, more powerful, more precise, more reliable and easier to use. In parallel, the global semiconductor industry is pursuing its long term roadmap for imaging ever-finer circuit lines on silicon wafers.

# **Core business: semiconductor lithography**

The technology behind our business is known as lithography, and we have always been at the leading edge of that technology. ASML systems – called steppers and Step & Scan tools (scanners) respectively – use a photographic process to image nanometric circuit patterns onto a silicon wafer, much like a camera prints an image on film.

ASML researches, develops, designs, manufactures, markets and services lithography systems used by the semiconductor industry to fabricate state-of-the-art chips. Most of the major global semiconductor manufacturers are ASML customers. For chipmakers, technological advancement in imaging means increased manufacturing productivity and improved profitability.

The ASML TWINSCAN<sup>™</sup> lithography system exemplifies our technology leadership. It is the industry's only dual-stage system that allows exposure of one wafer while simultaneously measuring another wafer. This gives our customers greater productivity and improved yield when producing high volumes of chips.

ASML is committed to providing customers with the right technology that is production-ready at the right time. Doing so enables our customers and their customers to sustain their competitive edge in the marketplace. ASML Special Applications focuses on solutions for application markets, where it has evolved as the lithography market leader in serving the Thin Film Head and Compound Semiconductor industry. We have also developed expertise to certify and relaunch previously used ASML equipment into the market.

ASML MaskTools provides innovative mask technologies and software products that extend the limits of optical lithography for chip manufacturing at 90 nanometer and beyond. These are optimized for ASML's advanced scanners, enabling the delivery of complete and integrated mask design to wafer imaging solutions.

ASML Optics is an extreme precision optical foundry offering design-to-image solutions for the semiconductor and optical manufacturing industries. Expert resources and capabilities in optical design and manufacturing, cleanroom assembly, systems engineering, test and metrology offer solutions across a range of application requirements.

ASML facilities, like its customers, are worldwide, in 14 countries and over 50 sales and service locations. ASML is a responsible global citizen committed to safeguarding the welfare of our employees and of the communities and environments we work in.

ASML is not only technically driven, but also expresses its long-term commitment to the community we live in. ASML Trust is a foundation, which operates in countries where ASML is present. Its purpose is to extend financial support for projects that focus on technical education, as well as charities in general. ASML Trust encourages self-reliance of parties involved.

## **Headquartered in the Netherlands**

ASML's corporate headquarters is in Veldhoven, the Netherlands. The company has lithography research, development and manufacturing operations in Wilton, Connecticut, U.S., and Veldhoven, the Netherlands. Technology development centers and training and application facilities are located in Asia, Europe and the United States.

ASML is traded on Euronext Amsterdam and NASDAQ under the symbol ASML.

For more information, visit www.asml.com

# Message to Our Stakeholders

The year 2003 was a turbulent year for ASML, but although uncertain business conditions led us to cut costs and delay some projects, our commitment to world-class performance in terms of the Environment, Health and Safety (EHS) has not wavered. ASML understands that the continued success of our company must be measured not only in terms of our commercial and financial success, but also in terms of our responsibility to the well-being of all of our stakeholders and the welfare of the environments in which we operate. The strength of our Commitment to Leadership depends, at least in part, on the strength of our commitment to this responsibility. Our participation in the Semiconductor Equipment Manufacturing Institute (SEMI) Global Care Initiative, which promotes excellence in workplace health and safety, resource conservation, product stewardship and community service, is a clear statement of our commitment to sustainable development.

I am therefore pleased to be able to include in this report our new, combined Environmental, Health and Safety Policy, which sums up the EHS mission and objectives for our entire company. This is our first policy statement to encompass both environmental and health and safety issues, and will provide a yardstick against which each of our employees can measure their activities, and our stakeholders can monitor our progress. Combined with the many other initiatives outlined in this report, this policy demonstrates our efforts to embed and integrate EHS management throughout our company, providing our people with the knowledge and tools to improve performance, and ensuring that we have the structures and systems in place to assess that performance.

I am also proud to announce that we continued to make great headway toward global ISO 14001 environmental standard certification for all our facilities. At the time of publishing this report, the certification process is still ongoing. I expect ASML to be certified by the first half of 2004. Our Veldhoven operations obtained certification in 2002, and in 2003, we focused on aligning our U.S. production plants with the standard. In 2004, we will focus on the activities of our global Customer Support and Sales groups. These groups operate out of offices that already have a minimal environmental footprint, in many different locations and with staff often working irregular hours and at the factories of our customers. The ISO 14001 program for these groups will therefore focus on extensive training programs for staff. These will be substantially facilitated by the new EHS management system for Asia that we have put in place in 2003. Globally, over the coming year, we will also focus on meeting the requirements of the international OHSAS 18001 specification for occupational health and safety assessment.

We look forward to continuing to improve our EHS performance worldwide in 2004, in the interests of all our stakeholders.

Doug J. Dunn

President, Chief Executive Officer and Chairman of the Board of Management ASML Holding N.V.

Veldhoven, January 30, 2004



# Environmental, Health and Safety Policy Statement

ASML is a responsible global citizen committed to safeguarding the welfare of our employees and the community and environment we work in. We therefore strive to conduct our operations in an environmentally responsible manner, and to create health and safety practices and work environments that protect employees from injury or occupational illness.

We will achieve this by:

- Meeting or exceeding applicable EHS regulatory requirements
- Proactively promoting employee health and safety, continuously improving our performance in this area
- Ensuring the safety of our products and auxiliary equipment for our employees, distributors and customers through appropriate design

- Continuously improving our environmental performance using materials and energy efficiently and reducing waste, emissions and discharge as much as practically achievable
- Developing and implementing EHS procedures and reviewing them periodically to ensure their effectiveness
- Informing and educating our employees about the EHS policy and procedures
- Communicating EHS issues with our stakeholders and all interested parties
- Communicating our EHS performance in an annual report

To enable us to achieve these objectives, ASML will integrate EHS into our business planning and decisionmaking as much as possible, monitoring our performance and establishing clear targets on an ongoing basis.

#### Doug J. Dunn

President, Chief Executive Officer and Chairman of the Board of Management ASML Holding N.V.



# EHS Management System

# **Global commitment, local requirements**

ASML is firmly committed to world-class EHS performance at each and every one of its sites, and our newly drafted, combined Environmental, Health and Safety Policy applies around the globe. For all countries in which we operate, the twin pillars for EHS management are the same: the ISO 14001 standard for the environment and the OHSAS 18001 standard for occupational health and safety. At the same time, complex and differing local regulatory requirements and different cultural attitudes to EHS issues require a decentralized – but aligned – EHS management system.

# Regional management, central alignment

ASML believes that effective EHS management depends on timely and direct communication and control, and this is reflected in our EHS management system, which focuses on regional management and limited central directives. In 2003, we established an EHS organization for our operations in Asia, thereby completing our regional EHS management system.

ASML's headquarters in Veldhoven is responsible for developing policies and procedures in close consultation with the Board of Management. For each of our production sites in Europe and the U.S., full-time EHS managers are assigned. In Asia, the U.S. and in Europe, an overall EHS manager coordinates EHS issues via local EHS facilitators, of which there is at least one per country. In addition, within Marketing and Technology System Engineering, Product Safety engineers based in Wilton and Veldhoven monitor all EHS issues relating to product safety.

In total, ASML employs around 14 full-time employees to monitor and manage EHS issues. Our Product Safety and Manufacturing groups employ full-time EHS staff. Within our Customer Support group, EHS management in the field is carried out by EHS managers, coordinators and facilitators on a part-time basis, as part of their engineering role. However, responsibility for EHS issues resides with each and every ASML employee.

# **Highlights**

# **EHS objectives for 2003**

The table below summarizes ASML's performance in 2003 against the goals outlined in the 2002 EHS report.

Objective	Performance
Reduce energy consumption	Worldwide, our energy consumption fell by 2.5%. Although plans for
	underground energy storage in an aquifer at Veldhoven proved not to be
	feasible, operational adjustments to our co-generation plant will in due course
	result in savings that exceed those predicted for the aquifer.
Reduce water consumption	Our global water consumption rose by 1% in 2003, mainly due to increased
	use of cooling water. To address this, a feasibility study into using
	non-potable rather than potable water as cooling water at Veldhoven was
	completed. The operational changes made to the co-generation plant will
	result in reduced water consumption.
Reduce waste and optimize recycling	The first phase of a waste-stream separation project has been implemented,
	starting in Veldhoven. In close cooperation with our SITA waste hauler,
	we have cut domestic waste by 20% and increased the proportion of waste
	that is recyclable by 3%. Also in Veldhoven, we began separating foil from
	other plastic waste and installed a foil-compressing machine: the collected foil
	is baled and exported for recycling.
Manage, measure and monitor EHS	A formal EHS organization for operations in Asia has been created and EHS
performance more effectively	staff trained.
Obtain global certification of our	Our operations have now implemented ASML's Environmental Management
environmental management system	System, and the certification process is still ongoing.
Initiate inclusion of OHSAS 18001 criteria	In 2003, we launched a project to map ASML's existing health and safety
into our health and safety management system	measures against legal requirements and those of the OHSAS 18001
	standard. In the fourth quarter, this project was staffed, tasks assigned and
	targets set. A number of OHSAS 18001 safety management criteria have
	already been incorporated into our health and safety management system.

#### **Other developments**

## Environmental benefits of immersion technology

On December 2, 2003, ASML proudly announced it had received orders for its first immersion tool. Developments in immersion technology, which allow finer patterns to be printed on wafers, have significant environmental benefits. Because as many as 10 to 15% more chips can be put on each wafer, fewer resources such as chemicals and energy are required per chip, and each chip has increased capacity. The full environmental benefit is realized at the chip production facilities.

#### **Extending system lifetimes**

ASML also minimizes its impact on the environment by reusing older lithographic systems for specific customer groups. In high-volume production, the emphasis is on both the productivity and performance of the chips. In contrast, producers of smaller series (to be used in research, in the biochemistry or aerospace industries, for instance) and producers of chips with an unusual format are often satisfied with the lower productivity or lesser performance of older generation systems. ASML helps these special customers by providing the technology, expertise and lithographic systems suitable for their special purposes. This kind of recycling allows us to extend the lifetime of a number of our older products.

## **Consolidating sites**

During 2003, ASML streamlined its offices, training and manufacturing facilities, resulting in considerable operational savings and a more efficient use of resources, through lower power consumption and reduced waste for instance, as well as secondary environmental benefits (less commuting, etc.).

# **Environment**

## **Toward global ISO 14001 certification**

In 2002, ASML's facilities in the Netherlands were granted ISO 14001 certification. Building on this success, we focused in 2003 on ensuring our U.S. production sites met the requirements of the standard. Toward the end of 2003, we launched a number of ongoing initiatives and actions from our environmental management system in our global Customer Support organization.

ASML operates in over 50 sites in Asia, Europe and the U.S. Most of these are offices, with a very limited environmental impact and minimal occupational health and safety risks. We concentrated on increasing EHS awareness throughout ASML by training employees in environmental management. Cultural and legal differences between East and West make standardizing EHS processes across the globe a challenge. However, taking local differences into account, we are committed to obtaining full global certification in 2004. ASML will continue to increase environmental awareness throughout the company.

#### **Conserving energy**

ASML actively seeks out and pursues opportunities to use energy in the most efficient way possible, minimizing associated gas emissions in the process. We do this by developing energy-efficient products, investigating alternative energy sources and reducing energy consumption in all our operations. Our Product Safety engineers ensure the energy specifications for all our products remain as low as possible without compromising performance. One example of this is the installation in our products of motors that not only meet but exceed the requirements of the U.S. Energy Policy Act (1992).

# **Reducing energy consumption**

In 2001, ASML launched an investigation into using an underground aquifer to store water to cool our cleanrooms in Veldhoven. ASML's facilities there are located near the Dommel river basin, which is designated as an area of natural beauty by the Dutch Nature Conservancy Act. The Dutch government therefore imposes stringent requirements with regard to the variation in the groundwater level of the surrounding area. In-depth research in 2003 into a number of well configurations concluded that plans for underground energy storage in an aquifer were not feasible. However, the research showed that by changing how the co-generation plant in Veldhoven is operated, we will nevertheless be able to reduce energy consumption by as much as or even more than the underground storage.

# Performance

Total electricity use fell by 2% compared to 2002, and total fuel consumption decreased by 1%.

Energy (TJ) <sup>1</sup>	2002	2003
Electricity	454.7	447.1
Fuels	388.7	385.7
Total	843.4	832.8
<sup>1</sup> TJ = Teraioule = 10 <sup>12</sup> ioules		

#### **Energy consumption**



# **Reducing emissions**

ASML closely monitors emissions from its operations to the air in order to minimize them or eliminate any adverse impact on the environment. Emissions of greenhouse gases, i.e., nitrogen oxide ( $NO_x$ ) and carbon dioxide ( $CO_2$ ), are by-products of our combustion processes. In addition, a number of specialty gases (natural constituents of the atmosphere), including helium, krypton and fluorine, are used in varying quantities and compositions in our lithographic systems. The fluorine is captured, and the inert gases emitted into the atmosphere. The fluorine traps are subsequently returned to the manufacturer for recycling.

## Improved gas management system

In 2003, ASML Veldhoven completed the implementation of our new gas management system by connecting the individual gas controls to our PRIVA building intelligence system. This management system enables us to monitor the flow of these gases online, thereby detecting any gas leakages and indicating trends in usage.

# Performance

Due to careful pollution control, the use of design-forenvironment principles and reductions in energy consumption, emissions of greenhouse gases in 2003 were almost 2% lower than in 2002.

Emissions of greenhouse gases (tons) 2002		2003	
CO <sub>2</sub> direct	22,811	22,191	
CO <sub>2</sub> indirect <sup>1</sup>	40,941	40,433	
NO <sub>x</sub> direct	17.6	23.7	
Total	63,770	62,648	
<sup>1</sup> by purchased electricity			

Emissions of inert gases (tons)	2002	2003
Nitrogen produced	5,180	5,893
Nitrogen bulk	1,109	820
Specialty gases	39.4	27.2
Total	6,328	6,740

Our consumption (and consequently emissions) of inert gases (i.e., nitrogen and specialty gases) increased by 6.5%. This was due to a change we effected from noble gases to nitrogen to ensure a protective atmosphere for ASML machines. In total, specialty gas emissions were cut by as much as 31%.

#### Gas emissions (kilotons)



#### **Cutting water consumption**

ASML is committed to reducing its water consumption through comprehensive, state-of-the-art reuse, recycling and other water-reduction projects. In 2002, we launched an investigation to identify means of lowering consumption in the Netherlands. This investigation continued throughout 2003, and the various measures proposed are now being evaluated for feasibility, with a view to implementation in 2004.

#### Performance

Worldwide, ASML water consumption rose by 1% compared to 2002. This rise can be explained by increases in the temperature of water used for cooling. Both the Wilton and Veldhoven sites, with their large cleanroom areas, contributed to the increased consumption. However, this was almost entirely compensated for by the reduction in water consumption that resulted from ASML's withdrawal from Track and Thermal in 2003.

Water (1000 m <sup>3</sup> )	2002	2003
	437.3	442.2





## **Reducing waste**

We are continuing to make strides in minimizing waste and enhancing efficiency in the use of materials throughout our processes. In addition, by maximizing our recycling efforts, we promote sustainable production practices and reduce landfill.

#### Recycling

Almost all ASML facilities operate a glass, paper and plastic collection and recycling program. In addition, product shipping containers are returned to the company for reuse. Exact procedures vary per site and region. In the U.S., for instance, our California and Connecticut sites collect waste batteries, obsolete electronics and waste lamps for recycling, whereas in Tempe, Arizona, all waste collected in Tempe and neighboring cities is separated at the county dump site.

# Separating waste streams

In 2003, the project initiated in 2002 to separate waste streams at all major locations in order to optimize recycling was rolled out in the Netherlands. At our Veldhoven facility, we have begun to separate foil from plastic waste, and installed a foil-compressing machine, which also bales the foil. The foil is separated by type of polymer (into polyethylene [PE] and polypropylene [PP]), then recycled into granules ready for use by the plastic processing industry.

# Performance

Our Waste Optimal project in Veldhoven, in conjunction with our SITA waste hauler, delivered particularly impressive results in 2003, with an overall reduction in waste of 11% and reductions of almost 23% in domestic waste and 24% in hazardous waste. Globally, some 57% of the waste generated at ASML facilities (metal, wood, electronics, paper, glass, etc.) was recycled – an increase of 3% compared to 2002. In Veldhoven, some 199.4 tons of paper were collected for recycling in 2003, and 6.7 tons of plastic foil was separated from the domestic waste stream, baled and exported for recycling.

Veldhoven waste (metric tons)	2002	2003
Domestic	477	368
Recyclable	461.9	482.4
Hazardous waste	101	76.6
Total	1,039.9	927

#### **Veldhoven waste**



Also in Veldhoven, the quantity of sulfuric acid used (and disposed of) fell by 68% from 47.1 tons to just 19.9 tons. This was due to the increased use of 300-mm wafers as well as a plasma-stripper for cleaning wafers.

#### Waste water analysis

ASML's 18-month waste water analysis program in the Netherlands drew to a close in 2003. The insights that resulted from the analysis program have enabled less frequent sampling and reduced parameters, and therefore the Water Board and ASML have agreed to a new reduced waste water inspection regime.

Due to a technical failure, the neutralization unit in Veldhoven twice accidentally discharged waste water with a lower pH than permitted. Waste water is discharged into ASML's sewage, where it is diluted with other waste water streams before entering the public sewage system. ASML reported both incidents to the authorities, enabling them to monitor any possible effects. To prevent this from occurring again, ASML plans to connect the pH meter to the PRIVA intelligence system, which will raise an immediate alarm in the event of a permit threshold being exceeded. As PRIVA runs 24 hours a day, this will dramatically cut response time.

# **Environmental training**

ASML seeks to ensure that all its employees are able to contribute to environmental excellence. We do this through formal training and through internal communications media, including a number of dedicated intranet sites.

In 2003, 131 employees received formal training in environmental issues – over twice as many as in 2002.

Environmental training (attendees)	2002	2003
Introduction to Environmental		
Management	40	106
Environmental Management		
for Supervisors	15	16
Auditors (Internal and Lead Auditors)	5	9
Total	60	131

# **Health and Safety**

### **Reducing risks, protecting people**

The health and safety of all those who come into contact with our products and services is an overriding concern at ASML. This means making sure that all our facilities are safe to be in, that our business processes are safely carried out, and that our products are safe to use. It also means ensuring that our employees and users are properly informed about safety procedures.

To monitor that our health and safety system is operating effectively and efficiently, we conduct annual routine assessments, followed by corrective actions and periodic management reviews. In 2003, we performed 6 safety audits at 5 sites, including all manufacturing sites in the U.S. The same number of reviews was conducted in 2002. As a result of these audits, ASML's Goodsflow group also completed a comprehensive revision of work instructions based on an updated risk assessment.

# **Toward OHSAS 18001 certification**

OHSAS 18001 is the voluntary international specification for occupational health and safety management systems. In 2003, we began to evaluate our existing measures and procedures against the OHSAS 18001 (or equivalent) safety management criteria. This process will continue throughout 2004 and 2005, with the ultimate aim of global certification for all our facilities.

# One global health and safety policy manual

In the last quarter of 2003, we launched a key project to develop a single, worldwide ASML health and safety policy manual. Overseen by a Steering Committee and carried out by a working group, this project consists of compiling a total inventory of all legal health and safety requirements in the countries in which we operate, as well as an inventory of all the many internal measures, procedures and customs within our facilities. These inventories are expected to be completed by mid-2004. A gap analysis will then be conducted for the two inventories to reveal any deficiencies and regional differences. This will enable an exhaustive, globally applicable policy manual to be drawn up that will meet all local requirements as well as laying down standard processes and procedures wherever possible. The aim is to complete the policy manual by the end of 2004.

#### **Preventing incidents**

Through comprehensive safety training, stringent safety practices, control of workplace hazards and design-forsafety principles, ASML aims to achieve a zero occupational injury rate in all its facilities. In the event that an incident does occur, procedures are in place for effective investigation. In the U.S., our Customer Support group developed an accident investigation toolkit that managers must use to investigate any incident.

# **Incident definition**

In the U.S., the injury rate as defined by the Occupational Safety and Health Administration (OSHA) as the number of recordable injuries multiplied by 200,000 and divided by the number of hours worked. Recordable injuries are divided into occupational deaths, 6 types of injury and 4 types of illness resulting from occupational exposure.

In Europe and Asia, accidents are divided into lost time injuries (accidents resulting in a worker being absent for at least a day) and medical attention incidents (incidents whereby a worker receives attention either from a medic or an outpatient clinic, but is able to continue working thereafter). At our Veldhoven site, we also record those incidents in which a member of staff is examined by a First Aider.

The definitions for near misses and environmental incidents apply globally. A near miss is defined as an incident that did not result in injury or financial damage, but which could easily have become an incident in which injuries or damage were sustained. An environmental incident is defined as an incident with a negative impact on the environment but no personal injury (e.g., a spill or violation of permit requirements).

# Performance

As part of our focus on continually improving our health and safety standards, in 2003 we launched a program in Veldhoven emphasizing the need to report near misses, however unimportant these may seem. ASML is a learning organization that uses the information from near-miss reports to prevent accidents. The fact that the environmental management system was extended to all locations in 2003 also contributed to the number of near misses reported. While the inclusion of near misses inflates the overall number of incidents, it does not indicate a rise in the number of actual OSHA recordable incidents or lost time injuries. There was a slight rise in medical attention injuries, which is entirely due to an increase in First Aid Assistance reports by our Customer Support and Optics groups. In 2003, ASML's global employee injury rate was 1.3 incidents per 100 workers – well below the U.S. industry injury rate of 4.6 injuries per 100 workers, and there were no work-related fatalities.

Incident	2002	2003
OSHA recordable incident	15	15
Lost time injury	3	3
Medical attention injury	33	39
Near miss	15	45
Total	66	102



#### **Product safety**

ASML's existence depends upon our ability to provide customers with products that are not only superior in terms of performance, but also in terms of safety. Our Product Safety engineers make certain that safety measures are incorporated into equipment from the earliest design stage. All potential hazards are identified early, when most problems can still be easily and cost-effectively resolved. Where equipment hazards cannot be designed out, steps are taken to design safeguards into the system to make certain that no single failure mode or operator error can lead



to a hazardous exposure of the operator, facility personnel or the environment. This is achieved through investigating and reviewing new designs, often directly with the customer on site, and providing advice and information within the company. Product safety at ASML is literally "cradle to the grave": Product Safety engineers are not only responsible for reviewing the design, but also for defining specifications for the safe disposal of equipment once it reaches the end of its lifecycle.

#### **Meeting SEMI standards**

Standards followed for product safety include all applicable regional regulations and the Semiconductor Equipment Manufacturing Institute (SEMI) S2 Safety Guidelines for Semiconductor Manufacturing Equipment, which address chemical, radiation, electrical, physical, mechanical or environmental hazards, as well as fires and explosions, earthquake protection, ventilation and exhaust, and ergonomics. Third-party audits are conducted to ensure these standards are met. We also apply our own additional safety standards.

# Leading the way

ASML seeks to participate actively in raising product safety standards for the semiconductor industry. In 2003, one of our Product Safety engineers was appointed co-Chair of the European SEMI EHS Committee. Participating in activities of this kind enables us to proactively look ahead and plan our response to proposals for standards that are still to be finalized. One example is the proposal currently out for ballot at SEMI with regard to EHS metrics for lifecycle analyses of tools. ASML is already investigating and preparing data to enable the new standard to be implemented as soon as it is passed.

# Performance

Throughout 2003, an extensive program was rolled out to inspect, test and certify the tools we design for special applications, and to place them within a calibration and re-examination scheme. In addition, SEMI S2 reviews were conducted both for the PAS 5200 product series and our AT:1200 series, demonstrating our commitment to compliance for our entire range, from the very oldest to the very newest products. At the start of the year, an S2 review was completed for our SVG heritage Micrascan VII product, now on the market. Product Safety was also responsible for ensuring all tools and equipment transferred from the Netherlands to our Wilton facility met or exceeded U.S. safety regulations, including compliance with the National Electric Code (NEC). Other indicators of our successful product safety program include rapid and smooth safety negotiations with customers and the limited number of product safety-related complaints and requests for changes to lithography equipment.

### **Screening new materials**

In pursuit of innovation, ASML continually investigates new technologies and materials. As part of our commitment to responsibility, our EHS experts regularly screen new materials for any chemical, physical or toxicological properties or hazards in order to protect both the environment and our people.

## Performance

In 2003, we investigated 6 chemicals for use in advanced processes in our laboratories. Of these, 5 were approved and are currently in use.

# **Rapid emergency response**

In the event of an emergency, such as a fire or earthquake, responding rapidly can save lives. ASML ensures its employees are taught how to respond, and has appointed designated emergency response teams trained to assist and lead other employees in dangerous situations. These teams are trained in First Aid, building evacuation and fire-fighting.

# **Safer buildings**

In 2003, our Veldhoven facility opened its new 20-story office building to staff. With such tall constructions, in the event of a disaster, emergency services often face delays or difficulties in accessing parts of the site. To address this issue, the building has been fitted with sprinklers throughout, and for each floor, two evacuation leaders have been appointed, ensuring that at least one trained member of staff is always present during working hours. Test drills to highlight any areas for improvement have already been conducted with the local fire brigade, and relevant actions taken. All Veldhoven manufacturing facilities were also fitted with sprinkler systems.

In the course of the year, all other ASML buildings were audited in terms of fire safety performance by FM Global, one of the world's largest commercial and industrial property insurance and risk management organizations specializing in property protection. All were rated good to excellent.

# Safer storage

At the ASML Optics Richmond facilities, a new storage facility for hazardous solvents was erected to replace an old one. The new facility, located at a distance from the factory itself, is fitted with alarms and an automatic fire extinguisher.

#### **First Aid**

In addition to its existing First Aid provisions, our Veldhoven facility has now installed four defibrillators (AEDs) on site, to be used by trained staff, to enable rapid treatment for any employee or visitor suffering from a heart rhythm disorder.

# **Preventing work-related conditions**

ASML is aware that employees who suffer physical discomfort in the performance of their duties are vulnerable to conditions such as Repetitive Stress Injury (RSI). Such conditions can be serious and debilitating, and disrupt operations and affect employee motivation. We address this issue by providing ergonomically optimized workplaces and workstations for all employees.

# Advice

Upon request, at each of its main sites, ASML provides ergonomic advice to any employee suffering from discomfort. In Veldhoven, in 2003, this resulted in an audit of 113 workstations, the provision of 14 chairs with special features, and 22 corrections to chair settings and desk heights.

# **Cleanroom audits**

In 2003, all types of cleanroom workstation in Veldhoven were examined for ergonomic fit. The resulting recommendations for improvements will be implemented in 2004.

#### **Assembly working conditions**

We continuously monitor the impact of manufacturing requirements upon our employees' health, and make adjustments accordingly. For instance, the construction of our TWINSCAN machines begins with the attachment of devices to the bottom of the base frame. This used to require employees to lie beneath the frame in order to accomplish the task. We therefore developed a tool allowing the height and angle of the base frame to be adjusted so that employees have easy access and can attach and line up the devices from a standing position.

#### Performance

Workplace ergonomics	2003	
Adjustments and ergonomic advice	27	
Myo-feedback, posture advice	20	
Neck/shoulder/back complaints	52	
RSI grades 2/3	69	
Total no. of workplaces investigated	113	

Note: No figures are available for 2002, as ASML began providing ergonomic advice at the end of 2002, after a period of training. The figures for 2003 are inflated due to the fact that some employees have received more than one visit, and some may be counted in several of the categories listed (e.g., an employee visited with regard to RSI may receive posture advice during the same visit).

# Health and safety training

As in the case of environmental issues, ASML seeks to ensure all its employees are aware of the relevant health and safety issues, and able to play their part in upholding standards and following procedures. We do this through formal training and through internal communications media.

Our company recognizes that management commitment to health and safety is vital. In the U.S. in 2003, Customer Support therefore rolled out a new program entitled MESH (Managing Employee Safety and Health), which was compulsory for all regional managers. Also, in the U.S., Customer Support have recruited and trained 13 health and safety facilitators (bringing the total of trained facilitators up to 15), and implemented a system for documenting and tracking all safety training given to field service engineers. Customer Support North America implemented a program to ensure that all Customer Support engineers who work on ASML equipment received appropriate safety training in compliance with state and federal standards. This included a minimum of 10 contact hours, plus training on First Aid and Adult CPR. Some 92% of engineers were trained, with the remainder to receive training in January 2004.

In Asia, we focused on training staff members within the EHS organization there for their new responsibilities. All facilitators from Taiwan, Singapore, Korea, Japan and China came together in an intensive four-day workshop in Shanghai to cover all necessary topics and provide a consistent approach. Topics covered included lock out/tag out, electrical safety, bloodborne pathogens, job hazard analysis and ladder safety.

## Performance

In 2003, 2,462 employees received formal training in health and safety issues: 6% more than in 2002.

Health and Safety training	ifety training No. of No. of	
	employees	employees
	2002	2003
Dangerous Goods	36	12
ERT Training 1	48	84
Ergonomics	1,320	-
FP&BE <sup>2</sup>	740	1,053
First Aid	103	112
Workshop/Introduction to EHS	-	14
Laser Safety	70	82
OHSA training (U.S.)	N/A	1,014
Use of Fire Extinguishers	-	91

<sup>1</sup> Emergency Response Team Training

<sup>2</sup> Fire Prevention and Building Evacuation

# **Recognized leaders in safety**

ASML is proud of its achievements in the continuous improvement of health and safety measures within the company, and never more so than when these achievements are recognized by the customers we serve. A number of our customers have expressed their conviction that our tools are so safe that they do not require reviewing within the customer's own safety review process.

# Compliance

ASML takes its commitment to complying with all applicable safety laws and regulations extremely seriously. We therefore believe we have a duty of transparency toward all our stakeholders in identifying any non-compliance, whatever the cause, and stating what prompt action we have taken or will be taking. There were 4 incidences of non-compliance in 2003.

Incident	Location	Action taken	Penalty/fine
Late report to Labor Inspectorate	Veldhoven	Instructed relevant EHS personnel	No
Late payment of emission taxes	Wilton	Paid	Yes
Discharge of waste water with insufficiently high pH	Veldhoven	Reported to authorities	No
Dangerous goods shipment violation	Tempe	Project on shipping procedures started	Yes

# Goals for 2004

# In 2004, ASML will focus on the following EHS objectives:

## Increasing EHS awareness worldwide

As part of our continued efforts toward global ISO 14001 and OHSAS 18001 certification, we will roll out EHS awareness and training programs to create the necessary knowledge base. This will include ensuring facilitators in the U.S. are fully trained with regard to the ISO 14001 standard and certified to train others. We will also conduct internal EHS audits within an intensive global audit schedule, for both checking and training purposes. Throughout North America, we will maintain the safety certification for all Customer Support engineers. All staff at Customer Support and Sales sites will also receive initial or advanced training in environmental and safety management.

## **Ensuring consistent incident analysis**

ASML is firmly committed to investigating all incidents objectively and consistently, learning from each one and using what has been learnt to improve EHS performance. To this end, in 2004, we plan to implement the Tripod Beta system, a structured process of incident investigation and analysis that provides insight into the effectiveness of control mechanisms and latent failures, and lists the necessary remedial actions. The strength of Tripod Beta is that it identifies the latent failures in the organization that contribute to incidents, rather than focusing on immediate causes. This allows these failures and their causes to be addressed as efficiently as possible.

#### Cutting energy and water consumption and waste

We will build on the findings of our investigations to date into how to reduce energy and water consumption and waste by implementing those measures that have proved feasible. For this purpose, we will define key environmental performance indicators per site for 2005 to 2008.

## Meeting OHSAS 18001 standards

Company-wide, we will focus on bringing health and safety practices up to and in line with the requirements of OHSAS 18001 (or equivalent), continuing the project launched in 2003 to develop a single, worldwide ASML health and safety policy manual by the end of 2004, with the ultimate objective of starting the global certification in 2005.

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