SUSTAINABILITY

17

Report

CENTRIENT™
Pharmaceuticals

Centrient Pharmaceuticals
(formerly DSM Sinochem Pharmaceuticals)
Sustainability Report

SUSTAINABILITY

17

Report

CENTRIENT™ Pharmaceuticals

Centrient Pharmaceuticals
(formerly DSM Sinochem Pharmaceuticals)
Sustainability Report


4.0m

Contents

Letter from the CEO

Dear Reader,

At Centrient Pharmaceuticals (formerly DSM Sinochem Pharmaceuticals), our mission is to provide high-quality, reliable and sustainable active pharmaceutical ingredients and finished dosage forms for people in need of healthcare. We fulfil this important mission by continuously exploring innovative technologies that positively impact patient care and environmental sustainability.

Every day, around the globe, our products help millions of people fight life-threatening illness and lead healthier lives. With this comes a great responsibility. Our company values – Quality, Reliability and Sustainability – are deeply embedded within our organizational culture and our employees, and guide us in delivering this responsibility.

Quality beyond compliance

We work to secure patient safety, by driving quality to the next level. In particular, our world-class, differentiated, active pharmaceutical ingredients and finished dosage forms deliver tangible value to our customers - by providing high levels of purity, cost-efficient packaging, cost savings in the formulation steps, and favorable storage properties.

We ensure the quality, safety and efficacy of our products through strict regulatory compliance, established at every site. In addition, our good manufacturing practices meet the most stringent global standards, and are well-defined in our corporate policies on quality. All our manufacturing sites adhere to these policies for all products, ranging from intermediates to finished dosage forms.

In 2017, we successfully completed health authorities' inspections at our sites in Mexico, Europe, India and China. Additionally, all our manufacturing facilities are USFDA approved. Through numerous external audits, our sites have shown they meet the quality standards expected from our customers.

With 75 years of experience in antibiotics, we are known as a reliable and trusted long-term partner in the industry. We are fully committed to our focused portfolio and continuously invest in developments to enhance our business. Our leading technologies are protected by patents, meaning customers enjoy freedom to operate.

What's more, we safeguard the security of supply to our customers. Backward integration of our key intermediates provides us with control of, and transparency in, our manufacturing processes. Customers can rest assured that the origin and traceability of our products are secure. With numerous accredited manufacturing sites around the world meeting the highest local and international standards, customers can source product from our multiple locations, further minimizing any risk in their supply chain.

Forward integration into finished dosage forms

A key part of our strategy for the future is to provide a greater range of high-quality, reliable and sustainable finished dosage forms, and to make them available to more end-users in more countries. In 2017, we continued our company's growth in finished dosage forms, receiving 287 new marketing authorizations, bringing our total

number to 480. In particular, we received approval for our registration of generic Rosuvastatin and Atorvastatin finished dosage forms, set to launch in 2018.

In general, our Finished Dosage Forms (Drug Products) business is becoming increasingly well-established within the pharmaceutical landscape. Over the coming years, I expect this business unit to continue developing our forward integration in the value chain, significantly contributing to our goal of becoming a global leader in generics pharmaceuticals.

Driving sustainable growth

We strongly believe that our continued success is dependent on our ability to grow as a company sustainably, while addressing the environmental challenges in our markets. We are passionate in our pursuit of developing and delivering innovative active pharmaceutical ingredients and finished dosage forms that will improve the lives of people around the world. Concurrently, this endeavor is underpinned by our goal of ensuring the sustainability of our operations and growth.

To meet these goals we developed a sustainability strategy in 2017, which has three main pillars: (1) reducing our environmental impact, (2) improving human health and creating social impact, and (3) combatting antimicrobial resistance (AMR). This sustainability strategy sets out a clear path forward for reducing energy use, greenhouse gas emissions and production waste at our facilities, while improving our overall impact on society.

Our activities in 2017 firmly underline our commitment to this important strategy. For example, the new fermenter at our Delft site in the Netherlands enables us to meet the growing demand for environmentally friendly 7-ADCA, the key intermediate for cephalosporin APIs. Subsequent to becoming a member of the Pharmaceutical Supply Chain Initiative (PSCI) in 2016, we contributed to the development of the Pharmaceutical Supply Chain Initiative (PSCI) 2018-2020 Vision in 2017. We also undertook our first PSCI audit of an existing supplier, as well as developing a multi-year plan to audit all our key suppliers.

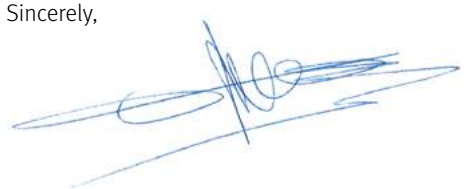
Our new sustainability strategy sets out a clear path for the future

We firmly believe in the need to look at the entire value chain, in order to create truly sustainable solutions. In line with our efforts to produce antibiotics responsibly and sustainably, we are continually increasing our focus on waste discharge during site audits of our suppliers and other third-parties we work with. To support these efforts, we developed an online supplier AMR questionnaire to engage our suppliers on the important topic of AMR. The Centrient Pharmaceuticals' Sustainability Self-Assessment Questionnaire for Suppliers helps to increase transparency and identify areas for further improvement towards responsible antibiotics production with our suppliers.

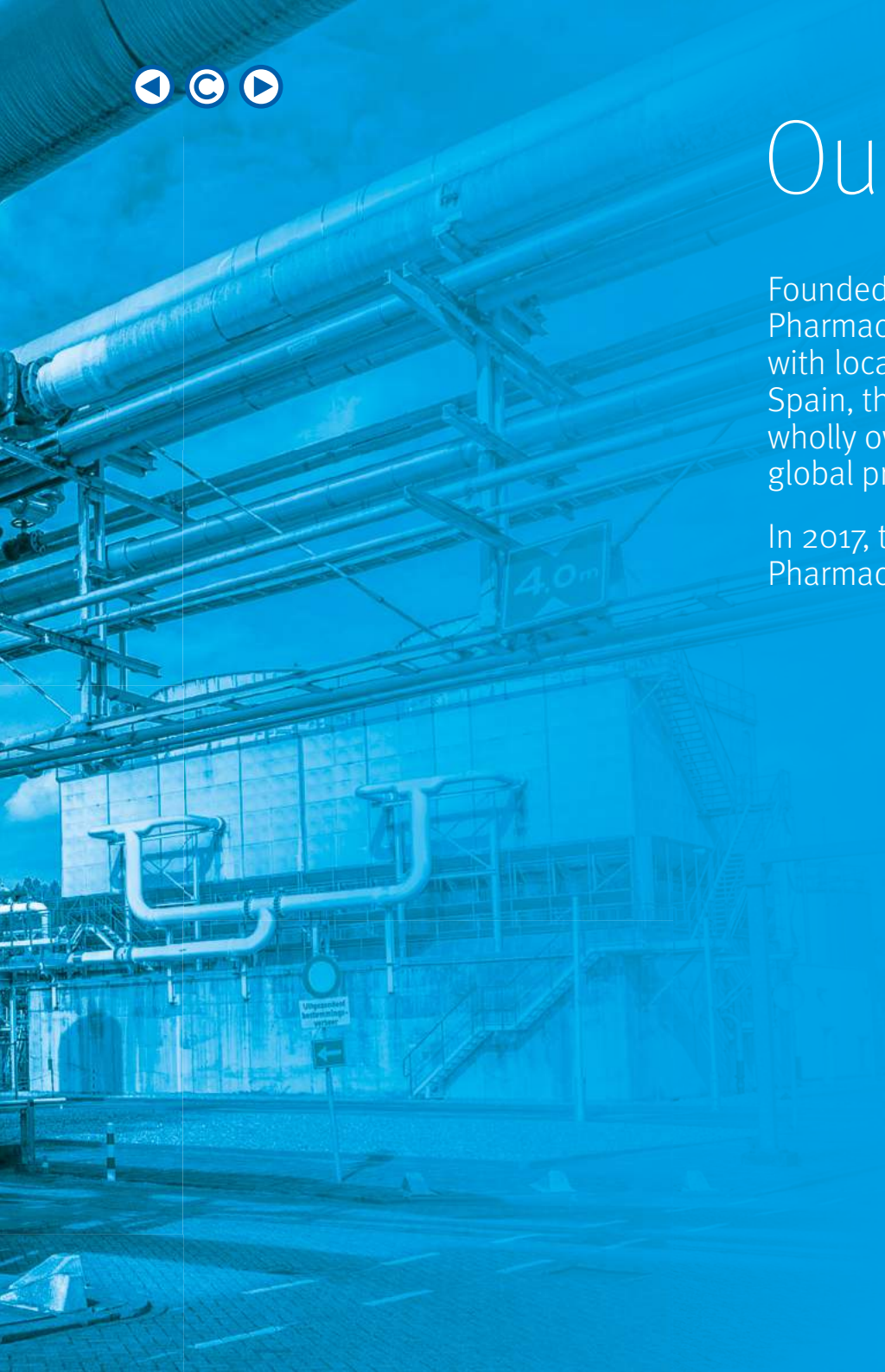
In the past year, we also widely engaged with stakeholders around the world to drive efforts in the battle against antimicrobial resistance. From hosting an industry event in New York during the Drug, Chemical and Associated Technologies (DCAT) Association week, to attending the Berlin Call to Action Meeting and the Green Pharmacy Conference, we made a significant global contribution to the discussion on how to tackle AMR. Furthermore, our position on the Board of the AMR Industry Alliance ensures our continued contribution to this crucial area of interest for years to come.

I'm incredibly proud of everything we achieved in 2017. Again this year, we have proven that we are fully capable of continued advancement, as well as setting the industry standard when it comes to quality, reliability and sustainability. Equally, I'm excited for the road ahead. In 2017, we charted a strategic path to move forward, together with our partners, and drive further sustainable growth in the years to come. I'm confident this shared journey will be a great success.

Sincerely,



Karl Rotthier
CEO, Centrient Pharmaceuticals



Our business

Founded in the Netherlands in 1869, Centrient Pharmaceuticals is today headquartered in Rotterdam, with locations in China, India, Egypt, the Netherlands, Spain, the USA and Mexico. Centrient Pharmaceuticals is wholly owned by Bain Capital Private Equity, a leading global private investment firm.

In 2017, the company operated as DSM Sinochem Pharmaceuticals.

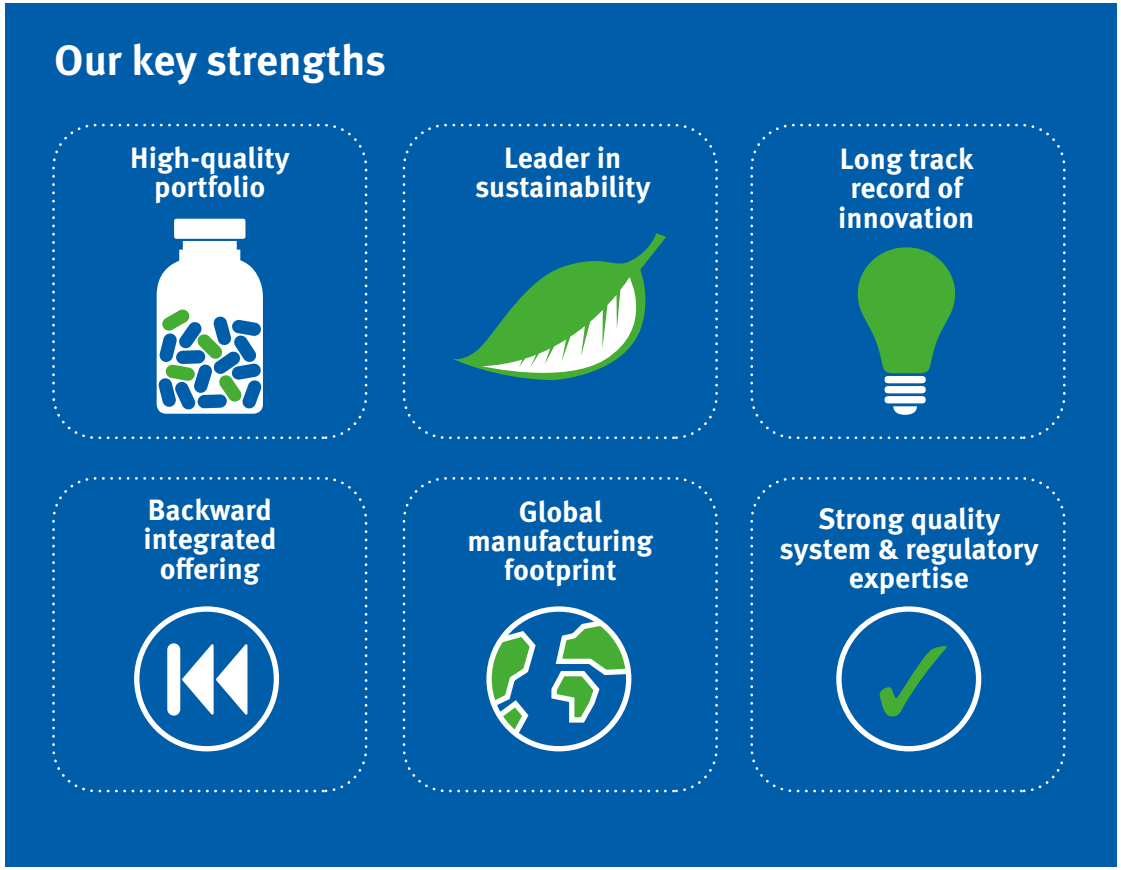
Our company at a glance

We are the global leader in sustainable anti-biotics, next-generation statins and anti-fungals. Our aim is to further grow our position in generic pharmaceuticals by building on our key strengths and continuing our forward integration into finished dosage forms.

Our mission

Our mission is to provide people in need of healthcare with high-quality, reliable products. To do this, we continuously explore innovative technologies that positively impact patient care and environmental sustainability.

Our key strengths



Our vision

We aspire to become the global leader in generic pharmaceuticals. To achieve this ambition, we are building on our strong foundation of leading technology and our heritage of sustainable, world-class operations. We apply cutting-edge science and the most economical, reliable, high-quality and sustainable manufacturing methods.

Our strategy

We aim to create value for our customers and shareholders by combining our key capabilities in technology and operations together with our global sales footprint.

Our customers

Our customers include the world's major pharmaceutical companies, as well as leading regional pharmaceutical companies on all continents. Seamless collaboration between all our regional business units means we are able to serve customers wherever they are located.

Our markets

Thanks to our global manufacturing footprint and regulatory coverage, we serve markets in all parts of the world. As a leading global pharma-house, we focus on highly regulated markets in Europe, the USA, Canada, Asia (e.g. South Korea, Japan and Australia), South Africa, as well as growth markets in Asia, Mexico, Latin America and the Middle East.

Quality. Reliability. Sustainability. Our promise

Quality. Reliability. Sustainability. Together, these three attributes form our brand promise and serve as a guiding compass for our business. Closely linked, they impact and enhance each other, and guide us in how we conduct ourselves.

We create increasingly sustainable, high-performing solutions for our partners. Living and breathing our brand promise makes sure we fulfil our responsibilities as a good corporate citizen, while at the same time giving our employees clear purpose and fulfilment in their work. We continuously strive to improve the quality of everything we do.

Quality

We help secure patient safety by driving quality to the next level. In particular, our world-class, differentiated, active pharmaceutical ingredients and finished dosage forms deliver value to our customers - by providing high levels of purity, cost-efficient packaging and favorable storage properties.

By driving quality to the next level, we help to secure patient safety

Our product quality is recognized and highly valued by our customers. This is driven by our continuous work to build excellence into our technologies and processes. Specifically, our proprietary enzymatic technology is world leading, while our outstanding manufacturing quality systems ensure consistent product performance, in line with customer expectations. Our efficient systems and tools support our main processes.

Equally, we support our key customers by implementing optimal products and processes for the introduction of new solutions, handling questions or complaints, and sharing applicable industry knowledge. We have a wide range of accreditations to warrant our global presence, and we go beyond essential compliance when it comes to our manufacturing and logistics standards.

Globally, we apply numerous internal Quality, Safety, Health and Environmental policies.

Our focus on quality also extends to human resources; we employ the highest-quality professionals. We devote attention to the recruitment of outstanding people, training, and continuous development. Our employees are recognized as world-class professionals, representing the company in prominent industry and functional leadership platforms. We proactively share our

expertise to advance our customers' businesses, and work to raise standards across the industry.

Reliability

With 75 years of experience in antibiotics, Centrient Pharmaceuticals is known as a trusted, long-term partner in the industry. We are committed to our focused portfolio and continuously invest in our business. Our technologies are protected by patents, meaning customers enjoy freedom to operate.

We strive to minimize environmental impact, enhance social impact and combat AMR

What's more, we safeguard the security of supply to our customers. Backward integration of our supply chains provides us with control of and transparency in our manufacturing process. In addition, we work with trusted suppliers with whom we have longstanding relationships. Customers can rest assured that the origin and traceability of our products are secured. With numerous accredited manufacturing sites around the world meeting the highest local and international standards, customers can source our products from multiple locations, further minimizing risks in their supply chain.

Centrient Pharmaceuticals agrees to service levels with our customers and adapts these where possible, to optimally meet an individual customer's needs. In collaboration with our customers, we proactively look for ways to further improve our service performance.

This proactive approach extends to communication with our stakeholders, whom we engage with in an open and transparent way.

Sustainability

Sustainability is at the heart of everything we do. With our leading technology and product stewardship approach, we minimize environmental impact, create positive social impact and actively combat antimicrobial resistance (AMR).

Our unique, patented enzymatic technology ensures an unmatched eco-friendly production process. Additionally, we reduce the environmental impact of our own production continuously, via improvements in our equipment and processes. We have defined targets and actively monitor the progress we are making, and we ask the same of our suppliers and partners.

Our contribution to health and our society is paramount. We have clear policies in place for our own employees to safeguard their health and wellbeing. We support local initiatives to improve the lives of people living in the communities and neighborhoods of our operations.

We take a leadership role in addressing the issue of environmental pollution from antibiotics production and its contribution to the significant global health threat of AMR. Through our Sustainable Antibiotics program, we ensure responsible production at our own sites, and actively encourage antibiotic manufacturers, as well as our partners in the supply chain, to buy, make and sell antibiotics responsibly. We engage in a number of industry-wide initiatives addressing sustainability, with a focus on AMR.

Our portfolio

Our active pharmaceutical ingredients portfolio
We are market leader in enzymatic beta-lactam APIs, with 500 individual national patented innovations in this field. We are pioneers in combining the most eco-friendly technologies and production processes for our sustainable antibiotic, anti-fungal and statin APIs.

Penicillin G
Penicillin G potassium
Penicillin G procaine
Penicillin G procaine sterile
Penicillin G benzathine sterile*

Beta-lactam Intermediates
6-aminopenicillanic acid (6-APA)
7-amino-deacetoxycephalosporanic acid (7-ADCA)

Semi-Synthetic Penicillins
Purimox® Powder (Amoxicillin Trihydrate, powder)
Purimox® Powder extra dry (Amoxicillin trihydrate, powder extra dry)
Purimox® Powder grade C (Amoxicillin trihydrate, powder)
Purimox® Powder grade E (Amoxicillin trihydrate, powder)
Purimox® Compacted DC (Amoxicillin trihydrate, compacted for direct compression)
Purimox® Compacted grade A (Amoxicillin trihydrate, compacted)
Purimox® Compacted grade A extra dry (Amoxicillin trihydrate, compacted extra dry)
Purimox® Compacted grade P (Amoxicillin trihydrate, compacted)
Purimox® Fine (Amoxicillin trihydrate, fine powder)
Purimox® HBD (Amoxicillin trihydrate, high bulk density)
Puricillin® Powder (Ampicillin trihydrate, powder)
Puricillin® Powder grade X (Ampicillin trihydrate, powder)
Puricillin® Compacted grade A (Ampicillin trihydrate, compacted)

Isoxazoles
Cloxacillin Sodium Compacted
Cloxacillin Sodium Powder
Dicloxacillin Sodium Compacted
Flucloxacillin Sodium Compacted
Flucloxacillin Sodium Powder
Oxacillin Sodium Monohydrate Compacted

= PureActives®

Semi-Synthetic Cephalosporins
Purilex® Compacted (Cephalexin monohydrate, compacted)
Purilex® Powder (Cephalexin monohydrate, powder)
Puridrox® Compacted (Cefadroxil monohydrate, compacted)
Puridrox® Powder (Cefadroxil monohydrate, powder)
Puridin® Compacted (Cefradine, compacted)
Puridin® Powder (Cefradine, powder)
Puriclor® Compacted (Cefaclor, compacted)
Puriclor® Powder (Cefaclor, powder)
Cefprozil Powder
Cefprozil Compacted

Statins
Atorvastatin (Atorvastatin calcium trihydrate, micronized)
Rosuvastatin (Rosuvastatin calcium)
Pitavastatin*

Anti-Fungals
Nystatin Powder
Nystatin Micronized
Nystatin Mycellium

* under development

Our finished dosage forms portfolio

We are also a business-to-business (B2B) provider of generic finished dosage forms. What sets us apart, however, is our backward integration and control of our supply chain.

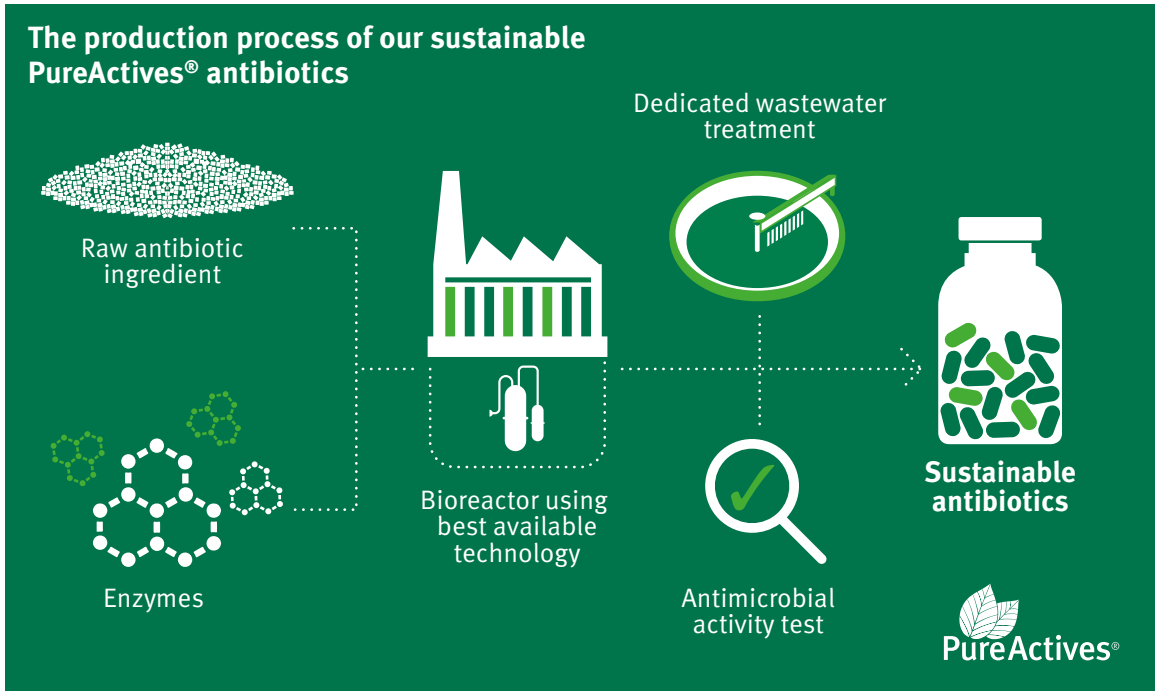
Our antibiotic and statin products are manufactured using our own high-quality PureActives® APIs. We also use high-quality APIs developed in-house for our anti-fungals. Our backward integration and control of our supply chain guarantee unique quality and performance in the finished dosage formulations. We do not compete with our marketing partners in their end markets.

Molecule	Dosage form	Strength	EU-CTD**	US-CTD	Climatic Zone IV
Beta-lactams					
Amoxicillin	Capsule, hard	250 mg | 500 mg	✔	–	–
	Dispersible tablet	500 mg | 750 mg 1,000 mg	✔	–	–
	Powder for oral suspension	125 mg / 5 ml | 250 mg / 5 ml 500 mg / 5 ml	✔	–	–
Amoxicillin + Clavulanic acid	Film-coated tablet	250 mg + 125 mg (2:1) 500 mg + 125 mg (4:1) 875 mg + 125 mg (7:1)	✔	–	ongoing
		500 mg + 62.5 mg (8:1)			–
	Powder for oral suspension	125 mg + 31.25 mg (4:1) / 5ml 250 mg + 62.5 mg (4:1) / 5ml 400 mg + 57 mg (7:1) / 5ml 600 mg + 42.9 mg (14:1) / 5ml	✔	–	✔
		200 mg + 28.5 mg (7:1) / 5ml	under development	–	–
		500 mg + 62.5 mg (8:1) / 5ml	✔	–	–
	Powder for oral suspension in sachet	500 mg + 125 mg (4:1) 875 mg + 125 mg (7:1) 1,000 mg + 125 mg (8:1)	✔	–	–
Statins					
Atorvastatin	Film-coated tablet	10 mg | 20 mg | 40 mg | 80 mg	✔	under development	ongoing
		30 mg | 60 mg	✔	–	–
Rosuvastatin	Film-coated tablet	5 mg | 10 mg | 20 mg | 40 mg	✔	–	✔
		15 mg | 30 mg	under development	–	–
Anti-Fungals					
Caspofungin	Powder for concentrate for solution for infusion	50 mg 70 mg	✔	–	✔

PureActives® – the enzymatic difference

Centrient Pharmaceuticals' enzymatic platform completely replaces the traditional 13-step antibiotic production process with natural processes that eliminate the use of solvents and other chemicals. In addition, the key enzymatic step in our statin production process further reduces our dependency on solvents and chemicals. We collectively market the Active Pharmaceutical Ingredients (APIs) and Finished Dosage Forms (FDFs) we manufacture using this green technology under the name PureActives®.

All PureActives® contribute to our brand promise of Quality. Reliability. Sustainability. In particular, a Life Cycle Assessment (LCA) has confirmed their superior green credentials compared to chemical production. As well as consuming fewer natural resources and using less energy, they also deliver increased yield and efficiencies in raw materials (see ECO+ on p. 43). Thanks to their high effectiveness, our PureActives® have enabled us to reduce our carbon footprint by 63% compared to the traditional chemical process. Strict quality control and a transparent backward-integrated value chain guarantee their quality, effectiveness and traceability.



63% | **carbon footprint reduction**

Where we are

Global mindset

Our global corporate staff provides our strong regional units with solid support. This setup allows us to act in a coordinated way on a global level, while keeping a bird's eye perspective that helps us to constantly improve our products and services.

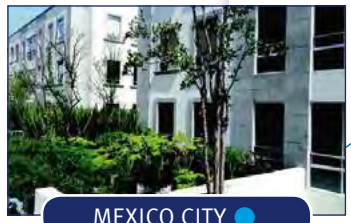
Local presence

Four regional units and one global unit for Drug Products (Finished Dosage Forms) are the cornerstones of our customer and supplier relationships. Together, they span the entire globe. Individually, they are close to you – our valued partners.

PARSIPPANY

DELFT

RAMOZ ARIZPE



MEXICO CITY

BARCELONA

CAIRO

- Head office
- Sales office
- Manufacturing site
- R&D site

* Office not shown in the picture

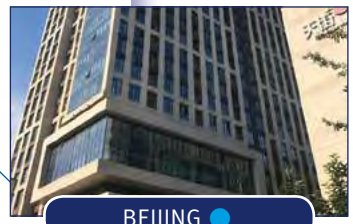
ROTTERDAM

TOANSA

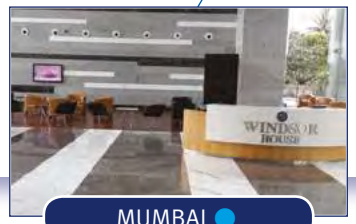
GURGAON

YUSHU

ZIBO



BEIJING



MUMBAI

BANGALORE*

Our history

Centrient Pharmaceuticals has had numerous milestones that substantiate our brand promise of Quality. Reliability. Sustainability.

19th CENTURY

1869 – Company is founded as the "Nederlandsche Gist- en Spiritusfabriek" (NG&SF) in Delft, the Netherlands.

1884 – NG&SF builds Agnetapark, the first workers' housing in the Netherlands (now a national heritage site).

1879 – First Dutch company to set up a works council and employee magazine.

20th CENTURY

1970s – Under the name "Gist Brocades", the company rises to become the world's No. 1 Penicillin G producer.

1940s – Production of Penicillin G (initially under the code name Bacinol) starts. Chemical-based SSPs and SSCs soon follow.

1990s – Global production and sales network achieved through acquisitions and joint ventures.

1983 – Construction starts of dedicated anaerobic digestion wastewater treatment facilities at Delft site.

1997 – In a joint venture, DSM and Gist Brocades develop the first industrial-scale enzymatic process for beta-lactam antibiotics production. Commercial production of cephalexin, a semi-synthetic cephalosporin, starts.

1998 – DSM acquires Gist Brocades. The newly formed leader in beta-lactam antibiotics is called DSM Anti-Infectives (DAI).

1869 | 1879 | 1884 | 1940S | 1970S | 1983 | 1990S | 1997 | 1998

21st CENTURY

2003 – The first enzymatically produced Amoxicllin, Purimox®, is commercially introduced to the world. It is the first member of the PureActives® family of "green" antibiotic APIs.

2014 – Statins produced at the new world-class statins plant in Toansa, India, using our proprietary enzymatic (bio)technology route and second-generation biofuels.

PureActives®

2014 –Launch of the our Sustainable Antibiotics Program to address the threat of antibiotic resistance and to ensure sustainable, reliable and clean production of our high-quality antibiotics.

2016 – Joining the Pharmaceutical Supply Chain Initiative.

PSCI
PHARMACEUTICAL SUPPLY CHAIN INITIATIVE

2016 – Signing of the Davos Declaration and acting as a driving force and signatory of the UN Industry Roadmap on AMR.

2016 – At all our sites routine AMA testing is implemented and no antimicrobial activity is detected in our effluents.

2016 – One of the first three companies in the world to offer generic Rosuvastatin in Europe, using our unique fully backward integrated process.

2003 | 2005 - 2011 | 2011 | 2012 | 2014 | 2015 | 2016 | 2017

2005-2011 – Global rollout of enzymatic technology for beta-lactam APIs to all sites.

2011 – In a joint venture, Sinochem of China acquires 50% of DAI from DSM to form DSM Sinochem Pharmaceuticals.

2012 – Introduction of the first enzymatically produced statin, Atorvastatin, to the world.

2012 – Introduction of the first drug product (finished dosage form), made exclusively using its own high-quality enzymatic PureActives® API.

2015 – Joining DSM in becoming member of Together for Sustainability, an industry initiative to standardize and share supplier sustainability assessments.

amr INDUSTRY ALLIANCE

2017 – Member of the Board in the newly set-up AMR Industry Alliance.

2017 – New fermenter for sustainable 7-ADCA production installed at our Delft site.

An accidental discovery that changed the world

At Centrient Pharmaceuticals, our core product range is the penicillin family of antibiotics. Although basic penicillin can only protect against a limited range of bacteria, its discovery was the starting point for more than a hundred other antibiotics that are highly effective against many different bacteria. Penicillin has laid the foundation for modern healthcare, making surgery, cancer treatments, organ transplants, and other major interventions possible. Yet it was discovered purely by accident.

Very few people in the developed world have not taken penicillin at some point in their lives. Before it was first discovered in 1928, you could wait to see whether an infection cleared up, or you could cut the infected area out. One in three people who had an operation or caught pneumonia did not survive. Things changed dramatically when penicillin became widely available just after World War II.

The surprising benefits of being untidy

As the story goes, Alexander Fleming, a bacteriologist at St. Mary's Hospital in London, came back from vacation in September 1928 to find a colleague had left Petri dishes containing staphylococcus bacteria out on his bench. When he looked at them under a microscope, he saw they had been contaminated by a mold called Penicillium notatum. What really surprised him was that the penicillium mold was inhibiting the growth of the staphylococci, even reducing their number. Fleming's discoveries were soon published in a scientific paper, but were largely ignored for a decade by the wider scientific community.

In the early 1940s, pathologist Howard Florey and the biochemist Ernst Chain built on Fleming's discovery, undertaking research that enabled the testing and production of the penicillin drug. In particular, Florey and Chain worked out how to mass produce the antibiotic in the vast quantities needed to save human lives. They did so just in time to save the lives of troops injured during the Normandy landings in 1944. Throughout history, the major killer in wars had been infection rather than battle injuries. In World War I, the death rate from bacterial pneumonia was 18 percent; by World War II, it fell to less than 1 percent.

Code name "Bacinol"

Meanwhile, in the Netherlands, under German occupation at the time, a group of Dutch scientists who specialized in yeast fermentation were working secretly and independently on a similar project, based on a small piece of key evidence provided by the Dutch physician Andries Querido.

This team worked for the Nederlandsche Gist- en Spiritusfabriek (NG&SF: Netherlands Yeast and Spirit Factory), which would eventually become DSM Sinochem Pharmaceuticals and is now known as Centrient Pharmaceuticals.

Under the code name "Bacinol", the scientists successfully developed an industrial fermentative process for making penicillin in large quantities. They benefited from the expertise that had been acquired since the company's founding in the nineteenth century, as well as from data in the Netherlands' extensive national collection of fungi. When the war ended in 1945, NG&SF was quickly able to scale up industrial production of penicillin, which was much needed in post-war Europe. By 1949, NG&SF had become one of the largest European producers of penicillin, exporting it across the world.

A significant and lasting impact

In 1945, Florey, Chain and Fleming shared the Nobel Prize for Medicine, in recognition of their development of penicillin. Since then, penicillin and other antibiotics have saved an estimated 200 million lives. A wide range of bacterial infections – from bacterial meningitis and pneumonia to strep throat and tuberculosis – are no longer considered life-threatening, thanks to antibiotics. What's more, antibiotics have played a key role in driving the sharp increase in global life expectancy in the second half of the twentieth century, which grew by between 20 and 30 years in most developed countries. Owing to their life-saving nature, 39 antibiotics are now listed in the World Health Organization's (WHO) "Essential Medicines List".

Review of business in 2017

Results

In 2017, our business performance was strong, despite challenging market circumstances in several parts of the world. In less-regulated markets, price pressure remained consistent during the first half of the year; however, this was mitigated through our continuous efforts to maximize both new product sales and higher-margin yields in our more regulated markets. In particular, we managed to improve our pricing premium against competitors through our enhanced value proposition.

In the second half of the year, price pressure diminished, driven in part by increased enforcement of governmental environmental regulations (particularly in China) and stricter manufacturing practices. An example of this is the "Air Pollution Prevention and Control Program" policy issued by the Chinese Ministry of Environmental Protection ("MEP") in February 2017. This policy ensured all volatile organic compound (VOC) emissions were in line with the national standard before winter began. Internally, this meant we further raised operational standards and made capital investments to ensure full compliance with the tightened local regulations. Externally, the policy affected the supply and demand dynamic, causing a global supply shortage, which resulted in an increased market price.

Sustainable Antibiotics

We are a strong advocate in the fight against AMR and are widely recognized as a leader in the responsible production of antibiotics. Our antibiotics make an essential contribution to people's health around the world – and, if we collectively control AMR, they will continue to do so in the future. In 2017, we also strongly enforced our Intellectual Property regarding sustainable antibiotics, leading to a successful license agreement and a number of litigation actions against infringing parties.

Operations

In 2017, we installed a new fermenter for 7-ADCA production at our site in Delft, the Netherlands, to meet the increasing demand for sustainably produced cephalosporins. Our production base in Yushu, China, which applies enzymatic fermentation technology to produce the intermediate 6-APA, ran at full capacity in 2017. Using our proprietary biotechnology, the multi-purpose production plant in Toansa, India, produced Atorvastatin and Rosuvastatin throughout 2017, enabling the company to meet the demand for high-quality products in the cardiovascular health market.

Most notably, in 2017, we received approval in South Korea for the registration of Cefaclor, produced at our facility in Zibo, China. Moreover, we received our first approval in the USA for our Puridrox® Drug Master File (DMF) for our Centrient Pharmaceuticals Spain site, in relation to an Abbreviated New Drug Application (ANDA) for one of our customers. Our Drug Products (Finished Dosage Forms) Regulatory Affairs group received as well approval for Atorvastatin and Rosuvastatin dossiers via the Decentralized Procedure in Europe.

Strong performance in challenging market circumstances

New Delft 7-ADCA fermenter installed in 2017

Our global Drug Products business unit made excellent progress, resulting in further forward integration into the value chain. Specifically, we obtained 287 marketing authorizations in Europe during 2017, giving us a global total of 480 marketing authorizations at the end of the year. The Drug Products (Finished Dosage Forms) business unit also continued to gain sales traction in 2017, with more and more customers launching products and applying dossiers coming from Centrient Pharmaceuticals.

How we manage Q.R.S.

Each day at Centrient Pharmaceuticals, we are guided by our brand promise of Quality, Reliability and Sustainability. We provide high-quality, reliable and sustainably produced active pharmaceutical ingredients and finished dosage forms for people in need of healthcare. By continuously exploring innovative technologies, we make a positive impact on patient care and environmental sustainability.

How we manage Quality. Reliability. Sustainability.

Quality

High quality of our products and services is an overall guiding principle and, next to Reliability and Sustainability, one of our three promises to customers. To make sure our products and manufacturing processes are as optimal and as sustainable as they can be, we have installed a global Quality Management System. This consists of a Quality Manual, containing the company's requirements related to all current Good Manufacturing Practices (cGMP), as well as global and local procedures, work instructions and standard forms.

Building on our unique skills in fermentation, synthesis and biotechnology, we provide active pharmaceutical ingredients and finished dosage forms based on our fully integrated global manufacturing capabilities, which meet the highest quality standards and sustainability criteria. On the API side, this is supported by our membership in the Pharmaceutical Supply Chain Initiative (PSCI). In Drug Products (Finished Dosage Forms), we audit all our drug product manufacturing partners against a set range of criteria, ranging from Safety, Health and Environment (SHE) to GMP compliance. Combining these standards with our unique technology platform allows us to provide the world with life-saving medicines in a sustainable and responsible way.

Quality and SHE are high priority topics covered in the monthly Executive Committee review meetings. The resulting actions and feedback are shared with the global and regional Quality functional teams.

Monitoring

To ensure our company is at all times in continuous compliance with recent legislation and regulatory guidelines, our Global Quality Assurance Department conducts regular quality assessments. All relevant procedures and practices are updated to take account of any changes in requirements. In addition, pre-defined quality targets (KPIs), visible leader-ship qualities, and adherence to internal and international GMPs are all subjected to regular audits, facilitated by the use of IT support tools, such as SAP, TrackWise and Electronic Document Management Systems. Understanding and awareness of quality requirements are internally tested periodically, using our Learning Pyramid.

Quality culture

Centrient Pharmaceuticals embraces a common culture, which facilitates the embedding and anchoring of a sustainable quality approach in what we do. The essence of this quality culture is encapsulated in our "Ten GMP Rules and Behaviors". We focus on these to create continuous awareness of quality matters through a variety of media, including regular online sessions for shared learning, printed leaflets on SHE and GMP topics, and monthly Quality and SHE newsletters. We also provide continuous training on quality matters at all levels.

In 2017, a Centrient Pharmaceuticals team drafted a training course on Sustainability, Quality, Environment, Safety and Health (SQUESH), which focused on behaviors needed to promote and extend the global focus on Quality, Sustainability and Reliability. The target audience for this training course is line managers and supervisors across our company. Pilot sessions and rollout of this training course are scheduled for Q3 2018.

Management support systems

We use a set of highly advanced electronic systems to facilitate the effectiveness of our management and operations.

- An SAP-based infrastructure supports standardized business processes, such as purchasing, production, order-to-cash handling, finance and control, and quality management for raw materials, intermediates as well as product release and distribution
- An Electronic Document Management System supports the management of our business requirements and legal and compliance documents
- TrackWise, the world's leading Quality Management Software (QMS), is used at all our locations to record quality-related matters such as complaints, deviations and audits
- We have several platforms in place for continuous improvement and sharing of best practices across our company. In particular, all Quality Managers can share the quality performance of their sites, as well as relevant news, best practices and hot topics, on our Quality Platform. Actions are defined and assigned as needed in a documented way, for periodic follow-up. Steered by tools such as the Quality Platform, we use dedicated campaigns like "Time Out for Quality" and "Time Out for Safety" to maintain awareness and drive continuous improvement.
- A purpose-built online system called "Centrient Pharmaceuticals Learning Pyramid" is used for planning and registering employee training
- In 2017, we issued a Global Quality Manual (GQM) to facilitate global alignment on all our quality processes.

Reliability

Reliability means ensuring our customers can count on us to deliver the high-quality products and innovative solutions they need at the right time and place, and in the right quality and quantity.

We produce our key intermediates in-house. This backward integration provides us with control of and transparency in our manufacturing process. Next to this, we work with trusted suppliers with whom we have longstanding reliable relationships. Customers can rest assured as to the origin and traceability of our products, as well as the sustainability with which they have been processed and manufactured.

Our company strives for regulatory approvals at all sites to create flexibility of supplies. For example, the plant in Toansa, India, has US FDA approval for our amoxicillin product and can serve as a back-up to supply from our site in Europe.

Our comprehensive set of Quality and Safety, Health and Environment (SHE) policies, which we apply globally – not only to ourselves but also to our manufacturing partners – ensures freedom to operate and trust in our products and services: Quality by Design (ICHQ8, ICH Q11) and Quality Risk Management (ICH Q9) processes are implemented across the entire lifecycle of our products. Our R&D teams ensure that the quality-critical attributes of our processes are well defined and transferred from development through to manufacturing, following our project management process. By strictly adhering to our Quality Management System during the complete lifecycle of our products – covering R&D, Manufacturing and Supply Chain – we can guarantee the highest reliability for our customers.

Sustainability

Equally, we actively pursue sustainability in the key areas of environmental quality, social responsibility and economic performance. Looking forward to the future, we believe you cannot achieve one without the other.

We are pioneers of the most eco-friendly technologies and production processes for sustainable APIs, such as our unique enzymatic technology used to manufacture our Sustainable Antibiotics, protected by 500 patented innovations in green technology.

Our Sustainable Antibiotics Program provides a comprehensive platform through which we address the serious global issue of antimicrobial resistance, and aim to increase the sustainability of our industry as a whole (see page 80).

Backward integration of our manufacturing process brings security of supply

Sustainability within the organization is represented by three distinct internal groups. The Sustainability Council, led by our CEO, shapes and directs our sustainability strategy. The Sustainability Board, represented by the global heads of our business units and functions, transforms the strategy into structured programs. Finally, our Regional Sustainability Organization, consisting of business unit sustainability champions, along with local representatives, support global leaders in implementing our sustainability programs. They also drive and review the progress made on KPIs, and report back on a monthly basis.

Continuous improvement

Over the years, we have engaged in various sustainability initiatives aimed at improving efficiency and compliance. These initiatives were largely project-based and technical in nature, with a short-term focus, and they mainly involved project managers and professionals in the relevant focus areas.

First in 2016, we embarked on a continuous improvement program aimed at changing the development culture. The program is designed to:

- Empower our organization to constantly evolve and improve
- Encourage people to strive for efficiency while maximizing value
- Continuously improve our culture

The program mainly focuses on creating a vision and direction for business unit management, aligned with Centrient Pharmaceuticals' 2020 vision. Manufacturing employees will be trained and fully empowered to identify and implement improvement opportunities, while site management supports and facilitates culture growth using a mindset and behavior improvement program.

In 2016, our site in Toansa, India, was selected to take part in a pilot program, which led to the identification and implementation of various efficiency improvement and emission reduction projects.

In 2017, the program was extended to other company sites. With full implementation in the coming years, it is expected to lead to a production cost savings of 1% year-on-year.

Living up to our promise of Quality

We pride ourselves on delivering the highest quality products. This not only requires the best quality in terms of resources and raw materials, but also high-quality manufacturing standards and procedures. To ensure compliance with both internal and external quality regulations and policies, we perform regular quality assessments at all our manufacturing facilities.

Our annual Global Quality Assurance of Good Manufacturing Practices (GMP) Audit Plan effectively assists in preparing our sites for continuous scrutiny by health authorities. As a pharmaceutical manufacturer, compliance with all relevant authorities' principles and guidelines is essential. Such compliance is evidenced by written approvals and GMP certificates.

The effectiveness of our internal GMP Audit Plans is evident with the outcome of several inspections that were performed by various health authorities in the course of 2017:

- Our Mexican plant in Ramos Arizpe received a GMP certificate from local authorities and satisfactorily passed a US FDA inspection, with no observations noted. This means the plant has obtained full authorization from all relevant regulatory agencies.
- Our plant in Zibo, China, was approved by the Ministry of Food and Drug Safety (MFDS) from South Korea.
- The Spanish health authorities granted approval to our site in Barcelona after inspection in July 2016.

- In India, our site in Toansa underwent inspections from the European Directorate for the Quality of Medicines & HealthCare (EDQM) and the Ministry of Industry and Trade (Minpromtorg), from the Russian Federation, and the site was granted GMP certificates from both agencies.
- Our Contract Manufacturing Organization (CMO) in Italy satisfactorily passed a US FDA inspection. As a result, all our sites and CMOs have the relevant regulatory approval to cover global access in highly regulated markets, such as the US, Brazil, the EU, Japan, Korea and Australia.

Sustainable supply chains

Centrient Pharmaceuticals applies backward-integrated technologies and manufacturing for many of its key materials, such as 6-APA, 7-ADCA and statin intermediates. This ensures that these essential are produced to our own high standards of Quality, Reliability and Sustainability. We also employ a dual-sourcing strategy and secure supply agreement, to make sure we continuously have economically viable and uninterrupted access to these needed materials.

Our Supplier Sustainability Program

To ensure our key suppliers conduct business in ways that align with our own values and vision regarding sustainability, we require they adhere to the terms of our Supplier Sustainability Program. This means that before we do business with them, suppliers need to officially agree to abide by our Supplier Code of Conduct and undergo an assessment to verify compliance. Both our Code of Conduct and the assessment cover matters such as sustainable procurement, environment, labor and fair business practices, as well as other sustainability criteria.

Together for Sustainability (TfS)

More specifically, our suppliers undergo an EcoVadis assessment, developed by the Together for Sustainability (TfS) initiative. This industry initiative, founded by six multinational chemical companies in 2011, developed and implemented a global audit program for assessing and improving sustainability practices within the supply chains of the chemical industry.

The results of all assessments and audits are shared among TfS member companies on the EcoVadis platform, which we joined in 2015. So far, TfS has carried out over 6,000 supplier assessments and more than 700 audits, with reports available on EcoVadis, performed by more than 300 qualified auditors.

As a PSCI member, we work with industry partners to make our supply chains more sustainable

In 2015 and 2016, EcoVadis assessments were carried out with 28 of our suppliers (15 initiated by our company), covering almost 70% of our third-party spend. In addition, we proactively attended TfS events together with our suppliers. One of our major suppliers, TUL in China, underwent a TfS assessment and audit in 2017, and in 2018, a number of additional suppliers are lined up for TfS assessments.

Pharmaceutical Supply Chain Initiative (PSCI)

At the end of 2016, we joined the Pharmaceutical Supply Chain Initiative (PSCI) organization, which aims to create better social, economic, health, safety and environmental outcomes for all parties involved in the pharmaceutical supply chain. The PSCI's responsible sourcing principles include assessment and audit of labor, ethics, environment, health and safety, and management systems.

A particular requirement of PSCI is that all full member companies execute and share five supplier audits reports with other member companies annually. In line with this protocol, we have created a plan that runs through 2021 for executing these audits, hiring third-party, PSCI-approved auditors. In 2017, one CMO in India was audited, and for 2018, five additional suppliers will be added.

In 2017, we actively participated in PSCI annual general meetings in London, UK and New Jersey, USA. Additionally, we have representatives on all working groups of the organization.

Supplier Antimicrobial Resistance (AMR) survey

In line with our efforts to produce antibiotics responsibly and sustainably, we are increasing our focus on waste discharge during site audits of our suppliers and other third-parties we work with. To support these efforts, we developed an online questionnaire to engage our suppliers on the important topic of AMR. This Sustainability Self-Assessment Questionnaire for Suppliers helps to increase transparency and identify areas for further improvement towards responsible antibiotics production with our suppliers.

The survey encompasses questions that focus on operations pertaining to waste generation, treatment and disposal, testing of residual antibiotics in waste, water balance, wastewater treatment plants, awareness programs on AMR and compliance. In November 2017, we ran a pilot survey with one of our European CMOs to test the ease-of-use and effectiveness of the questionnaire. The finalized survey encompassing the feedback from the pilot is scheduled to be launched in 2018.

Driving transparency through serialization

Ahead of the implementation of the EU Falsified Medicines Directive, which comes into effect in February 2019, pharmaceutical companies and their partners across the supply chain have been preparing for the introduction of packaging serialization requirements. In particular, all medicinal packaging will need a unique serial number, linking it to information about the product's origin, batch number and expiration date.

"Centrient Pharmaceuticals fully supports the introduction of serialization," says Robert-Jan van der Horst, Chief Information Officer. "This initiative will deliver improved brand protection and help tackle the issue of counterfeit drugs. According to the World Health Organization, up to 15% of all medicines circulating in developed countries, as well as 30 to 40% in developing countries, are falsified. With serialization, the entire supply chain – from manufacturer to pharmacist – will become fully transparent and traceable, so that pharmacists will be able to always verify the authenticity of a product before being dispensed to end-use consumers."

"Delivering reliable quality is a key pillar of a sustainable operation," says Robert-Jan. "As such, the objectives of serialization fit perfectly with our Sustainable Antibiotics program. This is an initiative through which we can address serious global issues related to the manufacturing and use of antibiotics, and work to increase the sustainability of our industry as a whole. Eliminating irresponsible and unsustainable manufacturing through serialization will help our industry be more sustainable and reliable."

While serialization will bring important benefits to the industry, its implementation will not be simple. "Introducing serialization is a major operation," says Robert-Jan. "It involves adapting software systems, manufacturing equipment, inspection equipment, communication networks, and messaging with government bodies or endpoint devices at the pharmacist. It's crucial our entire industry strives for full compliance as quickly as possible!"

What we offer

As one of the first generic pharmaceutical companies to have an IT system in place for serialization, Centrient Pharmaceuticals provides its customers and partners support for the challenges of implementing serialization, in order to meet the EU deadline of February 2019.

Specific support is offered via the creation of joint implementation project teams, the generation of unique and trackable serial numbers on behalf of customers, and compliance with aggregation requirements, as well as other future regulatory requirements.

ECO+ product and process design

Centrient Pharmaceuticals work to provide customers with competitive products that deliver the best biotechnology benefits possible – ECO+ is our solution for designing and developing them.

Launched in 2007, ECO+ is our program for the development of innovative products that have demonstrable ecological benefits, versus chemically produced alternatives. The ECO+ concept was pioneered by DSM, one of our co-owners, and makes an important contribution to the environmental aspect of our sustainability agenda.

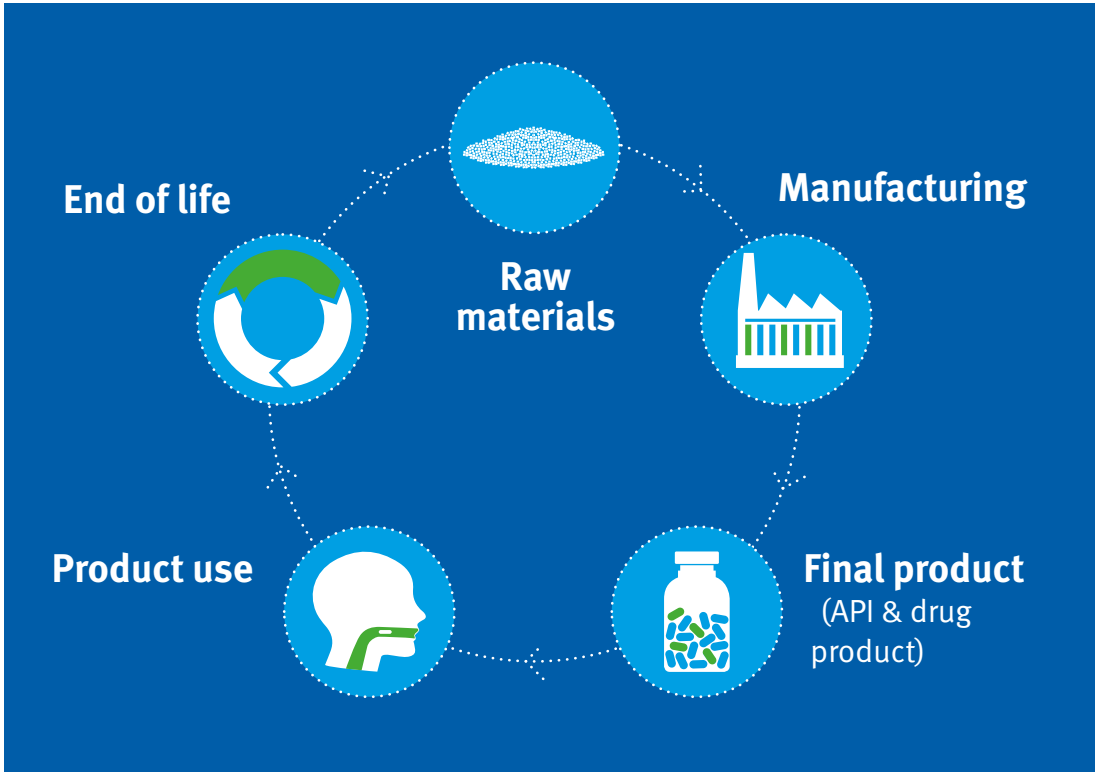
Benefits throughout the product life cycle

ECO+ benefits can be realized at any stage of a product's lifecycle, from raw materials through to manufacturing, potential re-use, and end-of-life disposal. They may include reduced use of natural resources, such as water or minerals (including metals), the reduction or valorization of waste, shelf-life preservation, yield improvements, energy savings, bio-based solutions, raw material efficiencies, and the elimination or removal of hazardous substances.

Life Cycle Assessment

The ECO+ framework uses a Life Cycle Assessment (LCA) methodology to measure the environmental benefits of each product. These calculations are based on ISO 14040, ISO 14044, and use best-in-class software. The main criterion is that ECO+ solutions must score significantly better on at least two of the three main categories of environmental impact: human health, ecosystem quality, and resource depletion. The score must also be better on the weighted sum of all three categories.

Product life cycle



ReCiPe for assessing impact

The ReCiPe methodology for environmental impact assessment was developed by a consortium of expert companies and institutions in order to harmonize life-cycle assessment indicators at the midpoint and endpoint level, and normalize them to the European reference value.

To develop the best ECO+ solutions possible, Centrient Pharmaceuticals' Marketing and Sales executives are aligned with researchers and developers in the program. At every stage of the value chain, our people work together with customers, suppliers, academia, NGOs and other stakeholders to determine which pharmaceutical products the market needs and wants most.

Regulatory Affairs: securing safe and compliant drugs

A key element of operating sustainably is ensuring global compliance with product and manufacturing regulations. Back in 2011, we began to incorporate finished dosage forms into our portfolio, in addition to producing active pharmaceutical ingredients (APIs). These new finished dosage forms needed to comply with stringent market regulations in order to become commercially available via our marketing and sales partners.

In 2017, we obtained more than 287 marketing authorizations in 26 countries

Our Regulatory Affairs team ensures that all of our products are approved for global sales by relevant regulatory authorities and consequently comply with the highest quality standards. In addition, the team plays an important part in helping to maintain and raise the quality of medicines around the world.

Raising quality standards through regulation

Before APIs or Finished Dosage Forms can be used in Europe, they need to have been granted regulatory approval in the form of a Certificate of Suitability (CEP) for APIs and marketing authorization for Finished Dosage Forms. This certificate, issued by the Certification of Substances Division of the European Directorate for the Quality of Medicines (EDQM), confirms that a given drug substance can be fully controlled by the standards (test methods and acceptance criteria) as displayed in the European Pharmacopoeia (Ph. Eur.). The procedures for gaining such approval can be quite time consuming, but when granted, the market is then open to both ourselves and our customers.

Setting the standard

We have contributed to many reference standards in the world's two leading pharmacopoeias: the European Pharmacopoeia (Ph. Eur.) and USP (the U.S. Pharmacopeia). We proposed reference standards for APIs like amoxicillin, ampicillin, nystatin, cephalexin, cefradine, and others. Many of our drug substances are now accepted as the official reference standards in these pharmacopoeias.

Raising standards through expert groups

At our company, one way we help to maintain and raise standards in pharmaceuticals internationally is by contributing to expert groups in the European Pharmacopoeia. We are a member of the expert group for antibiotics. This group establishes the minimum quality criteria required for an antibiotic to meet before it can be used on the European market. We also provide industry groups, such as Cefic (European Chemical Industry Council), with advice and feedback. Additionally, we work closely with APIC (the Active Pharmaceutical Ingredients Committee), one of the sector groups of Cefic. APIC represents the European bulk pharmaceutical industry, and several of our Regulatory Affairs and Quality managers are members of it. The organization regularly meets with regulatory authorities to discuss new draft guidelines on the quality of pharmaceuticals.

ICH expert groups

APIC is also represented in some of the working groups of ICH, the International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use. ICH's mission is to achieve greater harmonization worldwide, to ensure that safe, effective, and high-quality medicines are developed and registered in the most resource-efficient manner. To this end, it is drawing up new global quality guidelines. Centrient Pharmaceuticals contributes to the preparation of these guidelines via various APIC task forces.

Regulatory successes

In 2017, we celebrated a number of regulatory successes. We issued 10 new regulatory submissions for APIs and maintained a further 101. Most notably, we received approval for our registration of cefaclor of our Zibo site in South Korea. In addition, we received the first US approval of our Puridrox® DMF, for our Spain site, in relation to an Abbreviated New Drug Application of one of our customers. We submitted a Drug Master File (DMF) in the US for Purimox® for our Mexican site, and for cefprozil in Spain we submitted a CEP dossier. Finally, we received a GMP certificate from Russia for our APIs manufactured in Toansa. This was the first time that Russian inspectors had visited one of our API manufacturing facilities.

Our Drug Product Regulatory Affairs group received approval for Atorvastatin and Rosuvastatin dossiers via the Decentralized Procedure in Europe and was able to obtain more than 287 marketing authorizations in 2017 in 26 different countries.

Rosuvastatin finished dosage form: preparations for commercial launch

In 2016, we achieved our first milestone upon receiving CEP regulatory approval (Certificate of suitability to the monograph of the European Pharmacopoeia (Ph. Eur.)) for generic Rosuvastatin. This approval guaranteed that the production of our Rosuvastatin API, undertaken at our own facility in Toansa, India, follows a specific process outline and complies with the European quality standards as presented in the Ph. Eur. The production process of our API is unique, and involves a supply chain that is fully backward integrated.

The CEP regulatory approval used in the registration of our Rosuvastatin drug product, was received on October 11, 2017. Against this backdrop, a commercial launch of the Rosuvastatin drug product was set for early 2018. In addition, the launch of another statin drug product, Atorvastatin, was set to follow in June 2018. This meant 2017 was busy on both an operational and regulatory level. In the following paragraphs, Karin Bruno (International Regulatory Affairs Manager, Drug Products /Finished Dosage Forms) and Rajnish Chhabra (Quality Assurance and Regulatory Affairs, API) outline our preparations ahead of the commercial launch of these finished dosage forms.

Meeting diverse customer expectations

Creating a new pharmaceutical product is no simple task, but it is made more difficult if the manufacturer's customer base has a diverse set of specific demands. "To launch our API in the existing registration landscape, we first had to get our unique engineering capabilities aligned with our customer requirements," says Rajnish. "In particular, our customers had varying particle size distribution expectations. Adjustments in particle size may alter related properties such as shape, surface area and porosity, so getting it right is crucial for customer satisfaction."

"In essence, our operational processes needed to be extremely disciplined to cope with these wide-ranging demands. Through the dedicated efforts of talented people, hard work and careful operational controls, we've managed to successfully meet the wide range of particle size distribution requirements without compromising on quality or reliability."

Driving alignment on technology

Launching new finished dosage forms containing the API manufactured at Toansa crucially involved the forward integration of the existing API technology into the desired drug product technology. "Coordination ahead of the commercial launch deadlines was the key challenge of

2017," says Karin. "Specifically, we had to coordinate our teams in India with our colleagues in Europe, and also with our selected Contract Manufacturing Organization in Cyprus. What's more, it was a race against the clock, as we had to launch according to a defined time schedule."

"As with most projects involving complex coordination, good communication was the key to our eventual success. Both our Drug Product and API teams were able to align on the necessary actions, and discuss strategies to overcome particular operational challenges."

Further operational robustness ahead

While the task of preparing for commercial launch were overcome through hard work and disciplined coordination, further challenges lie ahead. "Our aim is to continue to make improvements to our unique process capabilities in Toansa by demonstrating even more operational robustness in product quality and stability," says Rajnish.

"To achieve this, we'll need to narrow our operational parameters and further optimize our processes," says Rajnish. "We have put in place lean-inspired methodology for creating a more effective business by eliminating wasteful practices and improving efficiency. This helped us to improve the robustness of our processes and we hope to continuously improve our product quality significantly. We're confident that these operational improvements will drive customer satisfaction even further!"

Marketing authorizations

In 2017, we received 287 new marketing authorizations, all of which were in Europe. These were the result of excellent teamwork between many internal functions, including Regulatory Affairs, R&D, Manufacturing and Marketing. Including these 287 new marketing authorizations, we had more than 480 marketing authorizations in total at the end of 2017. These marketing authorizations are particularly significant for our Drug Products business (Finished Dosage Forms), as they make it possible for our partners and customers to market the finished dosage forms manufactured and supplied by Centrient Pharmaceuticals.

Statins added to the Drug Product portfolio

After running a successful regulatory process in which the registration dossier of Rosuvastatin film-coated tablets of 5mg, 10mg, 20mg and 40mg was approved in a number of European countries, we were able to launch this product at the end of 2017.

In total, we have over 480 marketing authorizations

In addition, the Atorvastatin film-coated dossier, following the backward integration, has been approved via the Decentralized Procedure in Europe. During this procedure, we succeeded in adding two additional strengths, the 30mg and 60mg, which had never been registered by the originator. Our drug product Atorvastatin tablets can be supplied in six strengths from 10mg to 80mg, and in two types of packaging material, in order to meet the requirements of different customers across the European marketplace.

Additional services

Our Regulatory Affairs department also offers our customers additional services, such as assistance with their regulatory affairs strategy, operational support if changes need to be made, securing supply by adding more than one API supplier or Drug Product manufacturer, and facilitating expansion to new countries and markets.

New guidelines

Throughout 2017, we continued to work on implementing new sets of guidelines at our company, making good progress thanks to cooperation between the Regulatory Affairs, API and Drug Products (Finished Dosage Forms) teams. Multiple new final and draft guidelines have been reviewed and discussed internally. Two important ones to note are:

Elemental impurities. The ICH has made it mandatory for manufacturers to investigate their products for the presence of elemental impurities (such as heavy metals), not only as remainders of process agents, but also as pollutants (e.g., from water or reaction to the containing vessels). Full implementation, for both APIs and Finished Dosage Forms, was completed by the end of 2017, in accordance with the regulatory requirements in ICH countries.

Serialization. Another set of guidelines concerns serialization. This is the ability to track and trace a product throughout the supply chain, from manufacturer to patient. The purpose of these guidelines is to combat the falsifying (or counterfeiting) of drugs. Product packaging needs to be tamper-proof and bar-coded with all unique details per saleable unit. As the deadline for implementation of this process is 2017 in the USA and 2019 in the EU, we have already taken steps to establish a system that will assist our customers in being fully prepared.

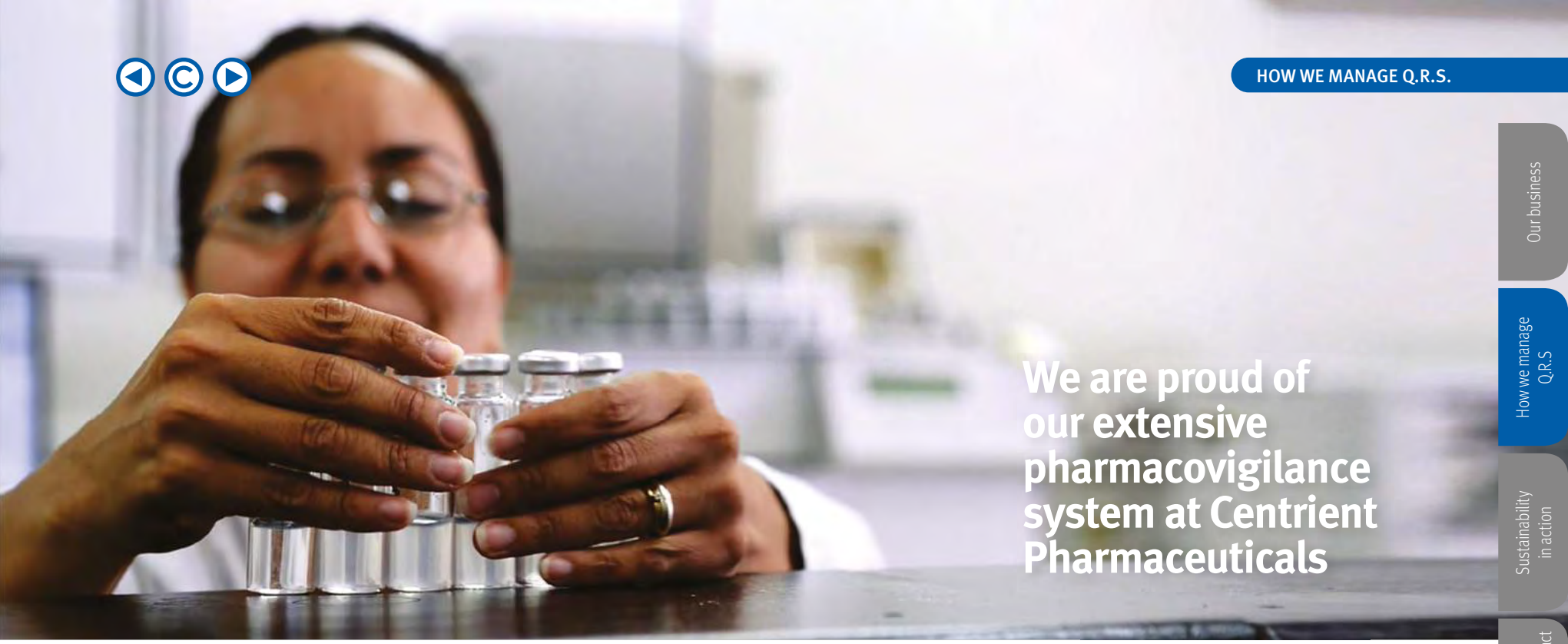
Success for cefaclor

In 2016, we were granted a Certification of Suitability to the monograph of the European Pharmacopoeia (CEP) for our generic cefaclor API. Cefaclor is a second-generation cephalosporin antibiotic used to treat pneumonia, meningitis, and other infections. Part of our PureActives® range of enzymatic APIs, cefaclor is marketed by Centrient Pharmaceuticals under the name Puriclor® and produced at our facility in Zibo, China. It is the first time that an API manufactured by our company in China has received a CEP. Puriclor® (cefaclor) is produced using our proprietary enzymatic technology that is both sustainable and environmentally friendly. As a result, no solvents are needed during production, leading to greater purity. A Good Manufacturing Practice (cGMP) inspection was undertaken at our Zibo site before approval for our cefaclor was concluded.

In 2017, we additionally received an approval to market cefaclor in South Korea, which had tightened their regulatory requirements.

Pharmacovigilance

When providing access to pharmaceutical products, safety for patients should be given the highest priority.



We are proud of our extensive pharmacovigilance system at Centrient Pharmaceuticals

For this reason, we have a pharmacovigilance system in place. Pharmacovigilance is defined by the World Health Organization (WHO) as "the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other medicine-related problem". We instruct our employees on the basics of pharmacovigilance, in order to ensure safer usage of those who use our medicines.

We provide the very latest drug information through implementation of Good Pharmacovigilance Practices (GPP), as issued by the European Medicines Agency, and by immediately adapting to new releases when necessary. This enables us to determine any potential safety issues that may arise from literature screening, clinical studies, or other market reports. Any relevant findings will subsequently be included in patient leaflets we produce.

In 2017, the Pharmacovigilance Risk Assessment Committee (PRAC) concluded, based on signal assessment from the EudraVigilance database and literature, to update the product information of penicillin with a new serious adverse reaction, drug reaction with eosinophilia and systemic symptoms (DRESS). We have successfully implemented this new 'very rare' side effect in the patient leaflet of all amoxicillin-containing finished dosage forms in cooperation with its customers.

Labeling

All Centrient Pharmaceuticals finished dosage forms are labeled in accordance with regulatory requirements, including those such as the guideline on Summary of Product Characteristics (SmPC) and the latest Quality Review of Documents (QRD) templates. We also follow the Global Harmonized System (GHS) and Regulations for Classification, Labeling and Packaging (CLP).

Material Safety Data Sheets

Centrient Pharmaceuticals provides Material Safety Data Sheets (MSDS) for all drug substances as required, and has systems in place to keep these MSDS and our labels up to date with all changes in regulations and substance properties. In addition, we regularly screen the communications of relevant authorities to remain up to date on new guidelines or regulations that could have an impact on the labeling of our products. The evaluation of these sources may result in the potential addition or amendment of a label warning, to ensure that all our customers are properly informed. In the event that updated safety information is required, we proactively inform our customers.

Clinical and non-clinical trials for drugs

To ensure effectiveness, our APIs need to be manufactured in a current Good Manufacturing Practices (cGMP)-controlled environment and undergo thorough testing before being made available for human or animal use. Our enzymatic molecules used in the production of our APIs themselves undergo extensive testing and clinical studies before being integrated into our products.

Animal testing

For our generic finished dosage forms, we refer to both preclinical data from the literature and to pre-clinical studies performed by the innovator. This data may have been partially based on studies on animal usage.

Clinical trials

We sponsor clinical trials, such as bioequivalence studies, and always adhere to the highest global standards, even when local requirements are less stringent. The conventions and regulatory guidelines that we act in accordance with include:

- The Declaration of Helsinki, developed by the World Medical Association, which sets out the ethical principles on the protection of clinical trial subjects
- The current International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) principles of Good Clinical Practices (GCP)
- Requirements of the countries in which studies take place
- Requirements of the country or region in which a study is submitted to obtain a marketing authorization, such as the ethical requirements of EU directives 2001/20/EC and 2005/28/EC.

We ensure that all facilities and contract research organizations (CROs) involved in conducting clinical studies meet the necessary qualifications. They, in turn, are responsible for verifying study protocols, and coordinating the required licenses from ethical committees or relevant authorities. We retain an active monitoring and coordinating role throughout the clinical trial trajectory.

Patient privacy

With regard to patient privacy and the security norms of patient data generated from clinical trials, we fully respect and comply with the Declaration of Helsinki, the Good Pharmacovigilance Practice, Good Clinical Practices (GCPs) stipulated by the ICH, along with other applicable regulatory requirements. As a clinical study sponsor, we work only with CROs that are GCP qualified and regularly audited by our Quality Assurance team. The confidentiality of patient data during and after a clinical trial is clearly stipulated in the study protocol of each clinical trial.

Ready to respond

If issues arise, Centrient Pharmaceuticals has measures in place to ensure an immediate, effective response.

Product recall procedure

In the unlikely event that a recall situation should arise, written procedures are in place that specify responsibilities and necessary actions. Our policies clearly define who should be involved in evaluating the information, how a recall should be initiated, and who should be informed.

As part of our recall policy, we address the following, together with our marketing partners:

- The depth of recall (defined by the material's degree of hazard and the extent of distribution)
- Whether a public warning is necessary based upon potential health risks
- When the situation is potentially serious or life-threatening enough to inform local, national and/or international authorities and seek their advice
- To what level and how often recall effectiveness checks are to be performed.

When our API has already been converted into a drug product and distributed, the recall and safe disposal of the recalled material will be carried out in close cooperation with the relevant customer, wholesaler or distributor.

Emergency situations

All our sites have Emergency Response Programs (ERPs) in place, designed to deal with emergency situations. These programs cover the health and safety of our people, and any possible impact on local communities and the public at large. Our programs are regularly tested in mock drills.

We have comprehensive response plans in place, should emergencies arise

The micro-organisms we use in the production processes of our APIs are generally considered safe. In some laboratories where we may use higher-risk micro-organisms, there are dedicated permits and special requirements for their use and management, of which we are fully compliant and regularly audited. In the event of a global pandemic, we have comprehensive local response plans and a global coordination structure in place at each of our production facilities. These plans are regularly reviewed and updated.

Sustainability in action

Sustainability is an integral part of our everyday business operations, strategic actions, and decision making. Driven by our ability to create sustainable innovations, we aim to continuously provide better solutions for our society and for the planet. Moreover, to keep antibiotics available and effective, now and for generations to come, we need to take, use and make them responsibly.

Our sustainability strategy

Our sustainability strategy

At Centrient Pharmaceuticals, our continued success is dependent on our ability to grow in a sustainable way and to address the landscape changes of the markets in which we operate. In particular, we have a passionate commitment to develop and deliver active pharmaceutical ingredients and finished dosage forms that improve people's lives, but we know that the successful pursuit of this mission is also underpinned by ensuring environmental sustainability.

To meet these goals, in 2017, we developed a sustainability strategy, which has three main pillars: (1) reducing our environmental impact, (2) improving human health and social impact, and (3) combatting antimicrobial resistance (AMR).

Reducing our environmental impact

As a responsible company, we work hard to drive process efficiency, minimize waste and reduce our energy consumption. Our ultimate goal is to make our entire value chain more energy efficient and less wasteful. Between 2008 and 2017, our efforts to reduce environmental impacts from our operations have resulted in significant efficiency improvements in energy and water consumption, CO_2 and Chemical Oxygen Demand (COD) emissions and reduction of hazardous waste.

Improving human health and social impact

We have a long history of ensuring we have a positive wider social impact. For example, the company from which

Reducing environmental impact	Improving human health and social impact	Combatting further spread of AMR
Reduce impact of operations, specifically: • CO_2 emissions • VOC emissions • COD emissions • Water consumption • Energy consumption • Hazardous waste reduction	Improve human health by increasing access to our medicines	Prevent further rise of AMR through responsible production
Follow stringent guidelines for supplier qualification and sustainable procurement practices	Continue to uphold human rights in our own operations	Assist partners by leveraging Centrient Pharmaceuticals sustainable technologies and know-how
Be recognized for sustainability achievements in selected sustainability rankings	Engage employees on sustainability	Take leadership stance on AMR with specific environmental focus
Integrate sustainability into company processes	Execute local social responsibility activities	Support decision makers on improving AMR standards and policies

Centrient Pharmaceuticals originated, the "Nederlandsche Gist- en Spritusfabriek", was the first company in the Netherlands to set up a works council, and also build social housing for its workers. In the twenty-first century, our main social responsibility involves the commitment to provide people with safe medicines, compliant with all regulations and continuously available to keep them healthy. In addition, we are committed to nurturing its employees and creating a safe working environment.

Combatting the further spread of AMR

As a leading manufacturer of active pharmaceutical ingredients and finished dosage forms, Centrient Pharmaceuticals is strongly committed to the fight against antimicrobial resistance, which is one of the biggest threats to global public health today. In particular, our Sustainable Antibiotics program, launched in 2014, is aimed at promoting the responsible manufacturing and use of antibiotics. As part of this program, we developed and implemented both dedicated wastewater treatment facilities at all our production sites and an antimicrobial activity (AMA) test. In addition, our company has addressed AMR by actively raising the profile of the issue both within the industry and the entire value chain.

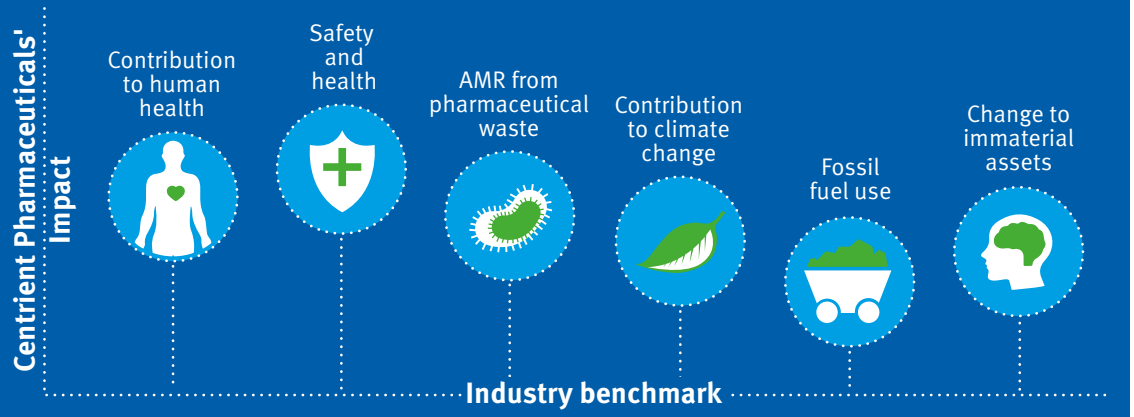
Success in the future can only come via sustainable growth

In the table on the left, you can see a breakdown of our specific goals for each of our three sustainability strategy pillars:

Evaluating our wider impact

Highlights of our sustainability leadership position

True price evaluated our sustainability performance compared to industry peers and highlighted the most important leadership positions



True Price™

In 2017, we engaged True Price – a social enterprise that helps organizations to quantify, value, and improve environmental and social impact – to support us by assessing our wider impact on society. In order to do so, True Price assessed the external costs and benefits of our antibiotic production, and provided a comparison between our costs to society against a benchmark representing unsustainable practices.

Specifically, True Price calculated the total impact of Purimox®, our most important enzymatically produced amoxicillin, across six areas of wider impact – human, natural, social, financial, manufactured and intellectual – and concluded that our company creates "considerable value to society", above all through our contributions to human health.

More widely, True Price evaluated the impact of our activities as a whole, offering generally positive assessments. Compared to our competitors, Centrient Pharmaceuticals is successful in minimizing our pharmaceutical pollution and combating the further spread of AMR. True Price's analysis also identified key areas where we could look to optimize our total impact, if it achieved a "business-as-ideal" scenario, which included extending the availability of antibiotics in developing countries and further developing the use of green energy.

We have used the results of the analysis to inform and define our wider sustainability strategy across the three pillars of (1) reducing environmental impact, (2) improving human health and social impact, and (3) combating the further spread of AMR. As the True Price analysis notes, the successful execution of this strategy will help to strengthen our position on sustainability in the coming years.

"Centrient Pharmaceuticals has done impressive work by making a first assessment of its integrated profit and loss – exploring the cost and benefits it creates not just for shareholders, but also for society. They have shown great leadership as they are, to my knowledge, one of the first multinational pharma companies that has done such an exercise."
– Michel Scholte, Director, True Price

Our key achievements in 2017

Sustainability through Excellence in Manufacturing workshops in India (STEM)

In partnership with the Indian Institute of Technology (IIT), we organized four "Sustainability through Excellence in Manufacturing" (STEM) workshops in 2017, one each in Dubai, Vietnam, Korea and Indonesia. Each workshop involved approximately 60 participants, ranging from local regulators to technical teams across Manufacturing, Research & Development, Regulatory Affairs, Quality Control & Assurance and Purchasing from many of the leading pharmaceutical companies in these countries.

The objectives of the workshops were to provide attendees training on advanced pharmaceutical manufacturing practices, and to encourage responsible antibiotic manufacturing. The workshops focused on the cost-benefit analysis of affordability and quality, by showcasing quality-by-design techniques, process analytical techniques and scale up and down models developed with the support of the IIT. Centrient Pharmaceuticals will work further with customers in each of these markets on new product developments, by providing access to technical facilities.

CPhI Worldwide

CPhI is one of the premier trade events in the year for the pharmaceutical industry, and brings together a wide range of stakeholders from across the total supply chain – from APIs and raw materials to manufacturing, packaging, drug product providers and customers. Between October 24 and 26, 2017, over 2,500 exhibitors from 150 countries came together in Frankfurt, Germany.

As part of this program, we hosted a customer event at the Senckenberg Natural History Museum, which featured a presentation by guest speaker, Damiano de Felice from the Access to Medicine Foundation. With the event, we underlined the importance of a holistic approach to sustainability, including our solutions on responsible production, serialization, intellectual property protection and reliable supply. This theme was visualized in our booth design through a unique life-sized waterfall animation (linking to our clean wastewater) and lifelike grass on the floor, through to our customer gift of environmentally friendly reusable water bottles.

New fermenter in Delft

On December 7, 2017, we officially opened our new fermenter at our Delft site for the production of sustainable 7-ADCA, the key intermediate for cephalosporin APIs. The sustainable process for the production of 7-ADCA was first pioneered by our company in the early 2000s. To date, this process, based on proprietary technology, remains the only combined fermentative and enzymatic route for manufacturing 7-ADCA worldwide.

Centrient Pharmaceuticals' investment in the new fermenting facilities underlines our commitment to sustainable manufacturing and our efforts to meet our customers' growing demand for sustainable antibiotics. "Unlike today's industry-common practice, in which penicillin and chemical processes are used that require large volumes of solvents, our process is sustainable and environmentally friendly," says Frans Vlaar, Business Unit Director Europe/America and AMEA. "It results in a higher product quality for 7-ADCA and a reduction of the product's carbon footprint."

"It is highly encouraging to see that our customers increasingly recognize the benefits linked to our 7-ADCA product and manufacturing process. Thanks to the state-of-the-art techniques and processes that we apply at our site in Delft, we are able to keep pace with customer demand." – Frans Vlaar, Business Unit Director Europe, America and AMEA

PSCI participation

Since 2016, we have been an active member of the Pharmaceutical Supply Chain Initiative (PSCI), which is a supply-chain platform promoting responsible supply-chain principles with emphasis on labor, ethics, environment, health & safety and management systems. In October 2017, we contributed to the development of the PSCI vision 2018–2020 document at the Annual General Meeting in New Jersey, USA. In 2017, we also conducted our first PSCI audit of an existing supplier and developed a multi-year plan to audit all key suppliers. In addition, Centrient Pharmaceuticals is currently in the process of developing a new supplier qualification tool, based on the PSCI protocol.

2017: Towards sustainable supply chains

"In my opinion, 2017 will be remembered as a key year in our company's history," says Alba Tiley, Global Sustainable Antibiotics Director. "Over the course of 12 months – through various partnerships, alliances and initiatives – we laid some important foundations to effectively tackle the key sustainability issues that affect our industry, including environmental impact, access to pharmaceuticals, appropriate use of antibiotics, and the wider impact of our supply chains. Together with our industry peers and partners across the value chain, we are now in a good position to move forward with passion, and make a real difference to people's lives across the world. Over the next few years, I'm confident that we can help shape our industry into a more conscientious and sustainable force for good."

Addressing our environmental responsibility

In 2017, we built on the positive momentum of previous years by driving several positive changes – at an external, internal and operational level – that addressed our environmental responsibility as a sustainability leader within our industry. "In particular, the AMR Industry Alliance has been an important promoter of wider environmental awareness within our industry," says Alba. "It has created broad industry momentum and facilitated collaboration between public and private sectors. For example, we are currently working with independent technical experts to establish science-driven, risk-based targets for discharge concentrations of antibiotics and good practice methods to reduce the environmental impact of manufacturing discharges. We're proud to play an active role within the AMR Industry Alliance."

Closer to home, we have also addressed our own environmental impact, reducing our overall energy consumption and reviewing our manufacturing processes. "Our new sustainability strategy sets out a clear path forward and – as part of this strategy – we will reduce our VOC, CO_2 and COD emissions, as well as limit energy and water consumption," says Alba. "As our strategy outlines, we intend to achieve sustainability by integrating the concept into process design."

Sustainable supply chains

"Our vision is not only to improve the sustainability of our own operations, but to help make our entire value chain as sustainable as possible – from the raw materials all the way to the finished product. To this end, we are collaborating with partners at various steps along the chain, and helping to drive awareness of sustainability criteria in sourcing decisions, including the issue of AMR, rather than just price and quality criteria."

"Moving forward, we will continue to review our supply chains to assess good practice in controlling releases of antibiotics into the environment," says Alba. "It's critical that we work with stakeholders to develop a practical mechanism to transparently demonstrate that our supply chains meet high standards. Specifically, we've been encouraging adoption of the Common Manufacturing Antibiotic Discharge Framework. This framework provides a methodology and set of minimum requirements needed to conduct a site-risk evaluation of both macro and micro controls in our supply chains. Furthermore, we need to help strengthen the link between the AMR Industry Alliance and the PSCI, who audits suppliers and has the ability to follow up. Indeed, our industry as a whole, needs to build an open database of audited suppliers, which will help improve the overall quality of pharmaceutical suppliers. As the saying goes, 'unity makes strength'!"

A fine line between access and excess

"Another key issue that we're working on is the improvement of access to pharmaceuticals in developing countries. Balancing access to pharmaceuticals with appropriate use is not easy to achieve: we don't want to irresponsibly drive an oversupply of drugs that could exacerbate antimicrobial resistance, but it's vital that these life-saving medicines are widely available and affordable. At the moment, 700,000 people die each year as a result of AMR, while an estimated 5.7 million people die each year from treatable infectious diseases. To tackle both sides of this issue effectively, we want the right patient to receive the right drug at the right dose in the right formulation at the right duration for the right pathogen and site of infection."

"In 2017, we put in place key elements that will help us achieve this vision. The newly founded AMR Industry Alliance is an important platform where the key players

in our industry can work together on a level playing field to address both issues of the access to, and excess of, pharmaceuticals across the world. Together, we will work with international bodies, governments and other stakeholders to identify and address specific access to, market sustainability of and supply bottlenecks for existing antibiotics, diagnostics and vaccines, and develop innovative financing and procurement mechanisms to resolve them."

Driving a global mindset change

"At a different level, I think that the best way to drive our industry forward into a more sustainable future is to foster a global mindset change through education and better understanding. For too long, we've taken antibiotics and other pharmaceuticals for granted; a lot of us have not been fully conscious of the radical benefits these products provide. And yet there's a very real risk that a lot of antibiotics could become much less effective unless people become more aware of the issues involved and use antibiotics responsibly."

"As a key stakeholder in global healthcare, the pharmaceutical industry has a strong responsibility to operate sustainably, inform consumers of our challenges, and work constructively towards improving people's lives. Currently, our industry has a real opportunity to restore trust. In 2017, we made important progress on key issues, and our company showed commitment to establishing the wider industry conditions in which we can positively impact patient care and environmental sustainability. This makes me very proud."

Alba Tiley, Global Sustainable Antibiotics Director

Innovation as a key driver

For nearly 150 years, our scientists have driven the technological innovation of pharmaceutical and specialty chemical production. From becoming one of the first companies in the world to industrially produce penicillin in the 1940s, to developing the first large-scale enzymatic process for beta-lactam antibiotics in the 1990s, and creating innovative formulations for generic pharmaceuticals in the 2010s, our scientists have long applied their knowledge and technical expertise to the task of making the world a better place.

In 2017, we are in a strong strategic position thanks to our dedication to innovative technology and the pursuit of sustainable growth. Specifically, compared to other companies in our industry, we have lower manufacturing costs thanks to the innovation of our key processes and materials. Furthermore, our full backward integration in all core intermediates of the value chain enables us to ensure security of supplies and high quality of products. Our product portfolio is also wide ranging, covering sustainable antibiotics, next-generation statins and anti-fungals.

Nowadays, we not only apply our biotechnological skills to developing new products, but increasingly to developing more sustainable ways of making our products. These include using natural fermentation and enzymatic conversion rather than chemical solvents, economizing on the use of energy, resources and other raw materials, and minimizing our impact on the environment.

Development underpinned by global R&D

As we continue to evolve from exclusively an API manufacturer to a global pharmaceutical generics company, our R&D team and innovation pipeline will play a key role in further enabling our vision and strategy. In particular, our technological capabilities will help to drive leadership in quality, cost, reliability, output and product development, as well as continuing to improve the operational efficiency of our processes, the sustainability of our antibiotic solutions, and delivery of intellectual property.

To achieve these aims and drive forward with innovation, our company will continue to leverage its global scale and multi-national presence. As our processes and operations are standardized across the world, key learnings and developments from one site are highly relevant to other sites. Best innovation practices in Mexico, for example, are shared with teams in India and the Netherlands, and vice versa. Equally, innovation will be a key element in meeting local customer demand and servicing regional market requirements. Moving forward, this “think-global, act-local” approach will be key to ensuring our continued successful development.

Centrient Pharmaceuticals has effective governance in translating R&D programs to commercial scale through regional Technology Development Labs (TDLs). These TDLs develop the processes and support local sites in effective implementation. This structure supports the troubleshooting and cost reduction programs at specific manufacturing sites.

Expanding our product offering

In line with customer demand and shifts in the wider pharmaceutical landscape, we are also rapidly expanding our drug product portfolio through the forward integration of our active pharmaceutical ingredients (APIs). Since 2012, we have developed nine finished dosage forms, which are now commercially available across the world. In 2017, we made preparations to commercially launch our Rosuvastatin and Atorvastatin finished dosage forms by forward integrating our manufacturing facilities in Toansa, India (see page 36). In 2017, we also executed stability studies and submitted the registration dossier for cefprozil, which is expected to be approved in 2019.

Moving forward, we will continue to expand our API product portfolio through our enzymatic platform. In particular, our statin production involves one key enzymatic step, which reduces our dependency on solvents and other chemicals. In 2017, we worked on the development of several exciting new statin products, including Pitavastatin, which is believed to have fewer side-effects than other statin products, and is particularly effective in increasing “good” cholesterol. Statin products, which are commonly prescribed to lower “bad” cholesterol and increase “good” cholesterol, are among the world’s top-selling drugs.

Improved efficiencies for current APIs

To drive our competitive advantage and industry leadership, our innovation efforts must also be directed at improving the manufacturing efficiencies in our current API portfolio. In particular, we have already put in place innovative process technology aimed at maximizing our obtainable output – through de-bottlenecking and improving operational efficiency – as well as lowering our energy consumption and environmental impact.

Specifically, thanks to the use of innovative compacting technology, amoxicillin tablets, optionally including

clavulanic acid, can now be made faster and more sustainably using our Purimox® Compacted Directly Compressible (DC) grade API. In particular, through our ingenuity there's no longer need for the energy-intensive drying step. Instead, dry mixing with the excipients takes place, after which the final mixture can be compressed directly into tablets. This saves time, energy and space, making the production process as a whole a lot more sustainable.

Recovery of Rosuvastatin waste products

Our innovation efforts are not only directed at broadening our product portfolio and improving our current API technology, but also at improving the efficiency of our processes and limiting our environmental impact. In 2017, we continued developing innovative ways to recover the waste solvents from the Rosuvastatin and Atorvastatin manufacturing process at our facilities in Toansa, India. Thanks to these efforts, six of the seven waste solvents involved in the manufacturing process of these statins – methanol, acetonitrile, 2-methyltetrahydrofuran, isopropyl alcohol, hexane, and cyclohexane – can now be successfully recycled.

The new recovery capabilities not only limit waste products and raw material consumption, but also make the operational process itself more efficient. Moving forward, our R&D efforts will focus on improving the recovery of methanol and developing a recycling process for the last waste solvent, n-methyl-2-pyrrolidone.

Ensuring freedom to operate for our customers

Over time, our ambition to continuously improve and aim of providing sustained value to society have resulted in strong technological innovation. Specifically, we are now in a strong intellectual property position, with over 400 individual patents in close to 80 patent families, underlying the innovative power of our company.

"Like all our proprietary solutions, our unique enzymatic technology is protected by patents," says Jim DeYonker, Head of IP. "At Centrient Pharmaceuticals, we believe all patents should be respected and, equally, we actively enforce ours. Patent enforcement is important because, by working with us, our customers benefit from a freedom to operate. For example, our customers can be sure of reliable delivery of our products without unexpected customs or import delays due to possible patent infringement. This guarantees that they meet their own customers' needs and avoid stock outs or missed tender obligations, which can be very costly."

In 2017, our company was involved in two legal defences of our intellectual property. In March 2017, we filed a lawsuit against Sinopharm Weiqida Pharmaceutical Co. for infringing the patent on amoxicillin trihydrate having a low free water content and processes for the manufacture thereof. Through this lawsuit, we sought an injunction to prevent the infringing manufacture, use, importation and sale of Weiqida's amoxicillin active pharmaceutical ingredient in the Netherlands and India, as well as any drug product that utilizes the active pharmaceutical ingredient. In May of the same year, the High Court of Delhi, India, granted an import injunction against Weiqida for this amoxicillin trihydrate product.

In addition, in March 2017, our company and Sandoz, a division of Novartis, announced the execution of a definitive agreement licensing of our intellectual property assets for the manufacture of beta lactam antibiotics. The license agreement provides Sandoz a non-exclusive, worldwide license to certain patents, and grants freedom to operate, to develop and to commercialize its various beta lactam products. The agreement also allows for the production of new enzymes for the sustainable manufacture of amoxicillin.


SINOCHEM
DSM
DSM Sinochem Pharmaceuticals
CERTIFICADO
DE ADOPCIÓN

Reducing our environmental impact

We are dedicated to limiting our environmental footprint and protecting the world around us. Every day, we work to reduce energy use, greenhouse gas emissions, and production waste at our facilities. Much of our innovation effort is directed at creating new solutions that minimize our environmental impact. Equally, we are committed to supporting our partners throughout the supply chain in their efforts to improve their own environmental impact.

Sustainability as a growth driver

We are convinced that sustainability, in its broadest sense, can be a sound and successful growth driver. By working sustainably, we safeguard not only the quality and reliability of our products, our businesses and our brand, but also the well-being of the planet and all those who live on it.

Monitoring progress on our Sustainability Roadmap 2020

Internally, our efforts to offset environmental impact have been established in an ambitious roadmap for the period 2010–2020. Our progress along this path is monitored annually. Centrient Pharmaceuticals' Sustainability Roadmap 2020 includes targets for Key Performance Indicators (KPIs), which we are working towards, by implementing sustainability projects and initiatives in the following areas:

- Energy efficiency and reducing harmful emissions
- Water efficiency and smarter water usage
- Antimicrobial activity testing and control in our waste streams.

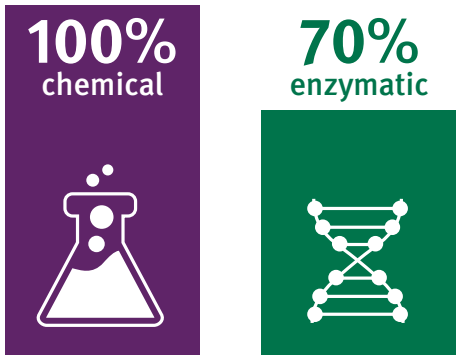
83% of our net sales come from ECO+ products

The enzymatic difference

Our new projects and initiatives are based largely on the implementation of new technologies. One of our major

long-term projects of this type involves replacing chemical synthesis, wherever possible, by enzymatic bio-catalysis processes, which are entirely water-based. For example, since the 1990s, we have consistently worked – with great success – to replace our chemical processes with enzymatic antibiotic intermediates and APIs. Life Cycle Assessment (LCA) has confirmed that the environmental performance of our enzymatic products is superior to that of chemical products: specifically, upgrading to enzymatic processes reduces the carbon footprint of these products by an average of almost 30% and in some cases up to 65%.

Average % of carbon footprint of products



Enzymatic processes reduce the carbon footprint of antibiotic intermediates and APIs by an average of 30%.

Progress in 2017

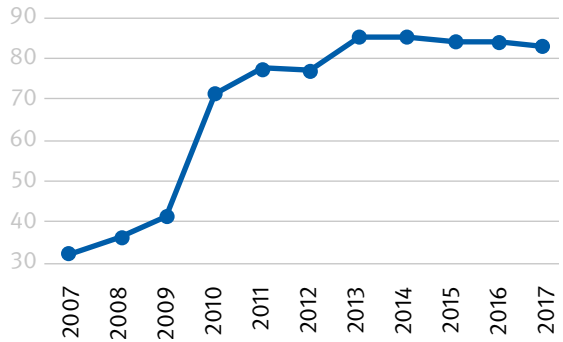
Detailed information on progress made on specific environmental KPIs can be found on page 57.

Our green alternative: ECO+

The ECO+ program is a part of our ongoing drive to provide the market with greener products. We assess the green credentials of individual products using LCA. Such assessments clearly show that ECO+ products are associated with lower consumption of natural resources and energy use, compared to their chemically produced alternatives. They also enjoy a higher yield and greater raw materials efficiency. These factors benefit society at large, as they respond to major global issues, such as climate change, resource scarcity, human health and the quality of the ecosystem. Nearly all our products have undergone LCA.

Our environmentally friendly enzymatic bio-catalysis processes eliminate polluting chemicals

% Eco+ running business net sales 2007-2017



Sales of ECO+ products as a percentage of net sales in 2017

In 2017, our sustainable ECO+ products accounted for 83% of net sales, maintaining the trend set in the previous year. In absolute terms, the total sales of ECO+ products increased. However, due to fluctuations in the market and continued demand for chemically produced semi-synthetic penicillin (SSP) with a bigger environmental footprint), the volume of ECO+ products sold as a percentage of the total portfolio decreased slightly. Our customers who have traditionally sought chemically produced SSPs are now in the process of switching to those produced enzymatically, which takes time due to registration procedures, but will have a positive influence on results in the longer term.

Environmental monitoring approach

Centrient Pharmaceuticals is a rapidly growing company, with production sites around the world. We classify our sites into two types:

Type I sites are well-established, mature sites, with regular production cycles. They are monitored against our Sustainability Roadmap 2020 targets, and their performance is summarized in this report.

Type II sites are new (or relatively new) sites. They are monitored separately from Type I sites, as they cannot yet reasonably be expected to perform to the level specified in the plant design specifications, and their inclusion would skew the monitoring of progress against targets. Once production at a Type II site conforms to plant design specifications, the site is reclassified as Type I for the purposes of monitoring performance.

In 2017, our sites were classified as follows:

Type I
- Delft, The Netherlands
- Barcelona, Spain
- Ramos Arizpe, Mexico
- Toansa, India
- Zibo South, China
- Zibo North, China[1]
- Yushu, China[1]

Type II
- Toansa-Taraang, India

[1] Categorized as Type 1 in 2015

The Toansa-Taraang plant in India is a multi-product plant and its operations are still undergoing optimization and standardization. It therefore remains classified as a Type II site.

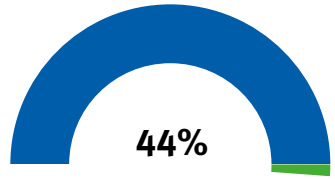
Environmental monitoring targets

Our Sustainability Roadmap 2020 defines key targets for Type I sites. This roadmap and the progress made against these targets are reviewed each year. Currently, the main targets for 2020 are to reduce total energy and water usage (for production corrected figures) by the percentages shown under “Efficiency improvements by year end 2017”.

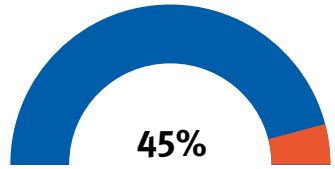
We make continuous progress on reducing our environmental impact

The significance of the environmental impact of our manufacturing operations has been underlined in the materiality assessment report by True Price (see page 46). Using the insights provided by this report, we are in a transition phase of redefining our environmental parameters and targets. We expect to finish this exercise by the end of 2018. Until the release of these new targets, we will continue to monitor our current 2020 targets.

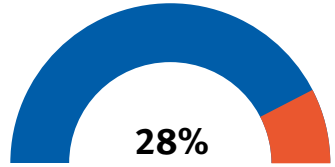
Performance against targets by end of 2017



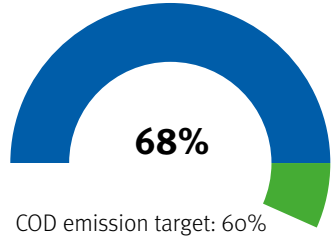
Energy consumption target: 43%
Achieved: 44%



CO_2 emission target: 49%
Achieved: 45%



Water consumption target: 33%
Achieved: 28%



COD emission target: 60%
Achieved: 68%

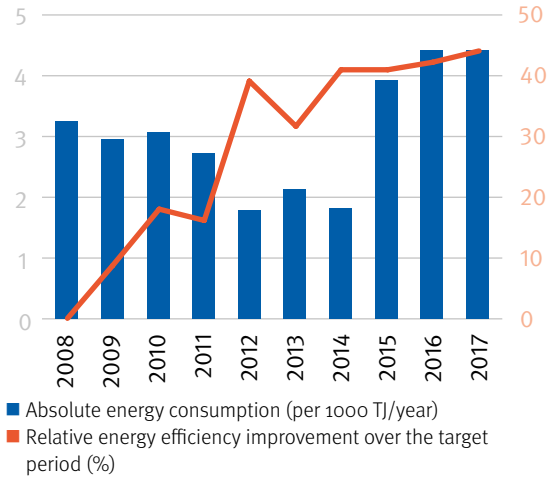
Energy consumption

In 2017, we improved our energy efficiency by 2% compared to 2016, thanks to process optimizations, capacity improvement projects and improved efficiencies in production processes at our various sites. Optimization projects included initiatives such as a third cooling tower project in Yushu, as well as improvements in air compressors, chillers' performance, and steam and condensation systems.

Our Yushu and Zibo North sites were reclassified as Type I sites in 2015. This had a significant effect on our KPI performance. The high peaks in absolute figures in 2015 and 2016 were mainly due to the reclassification of Yushu, which has a high production capacity, and therefore high energy consumption.

Energy consumption

Type I sites (including Yushu and Zibo North from 2015)



Our energy savings between 2008 and 2017 were largely due to our success in increasing the proportion of our products made using our enzymatic technology platform. Important contributions were also made by implementing various energy-saving projects and energy-efficient technologies. These included improving fermentation processes, using higher-efficiency air compressors, gas economizers and chillers, making better use of boilers, and installing additional energy meters for better monitoring and identification of improvement areas.

Recovering waste heat in India

In 2017, we replaced the old steam condensation system at our Toansa plant with a flash steam recovery system. This has resulted in reducing the use of fuel oil to heat water in the boiler feed, and in the first year of use has reduced the consumption of fuel oil by 150 tonnes/year. This is equivalent to 5.6 terajoules (TJ) n energy savings per year.

Similarly, we installed heat recovery units on all screw air compressors at our Taraang plant to minimize the quantity of fuel oil needed to heat boiler feed water. This has already allowed us energy savings of nearly 2 TJ/year by reducing fuel oil use.

Energy savings programs

The energy audits we conducted at our production sites in 2016 have helped us to identify where peaks of energy use ("hot spots") occur within the manufacturing process, and where opportunities exist to reduce energy

consumption. Some of these "low-hanging fruit" projects that stemmed from this audit were implemented in 2017 and contributed to modest energy savings. Projects with higher returns are being studied for their feasibility.

Additionally, we are investing in renewable technologies and recycling projects that help us to further reduce our energy and water consumption. At our Delft site, we generate biogas from co-products that would otherwise be wasted, and at our Toansa site, we recycle wastewater for reuse in the horticultural sector.

Emissions to air and water

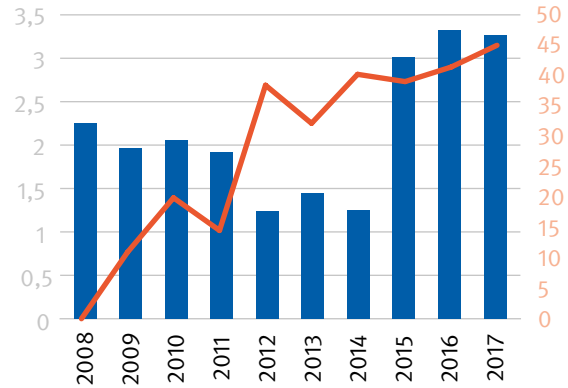
Emissions to air

CO_2 emissions

The amount of CO_2 (energy-related greenhouse gases) that we emit into the air is directly related to the amount of energy we consume at our production sites around the world. Our plant at Yushu, China, accounts for 54% of total CO_2 emissions across all sites. The relative significance of Yushu in overall CO_2 emissions is reflected in the chart below.

Since 2008, we have managed to reduce CO_2 emissions by 45% (up from 41% in 2016). This further reduction in CO_2 emissions has been driven by our successful efforts to implement energy-saving projects, and an increase in the proportion of products we make using our enzymatic platform.

CO_2 emissions
Type I sites (including Yushu and Zibo North from 2015)



- Absolute Greenhouse Gases (per 100,000 T/year)
- Relative CO_2 emissions efficiency improvement over the target period (%)

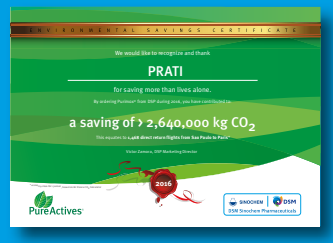
CO_2 certificates to our dedicated customers

In 2017, we presented an Environmental Savings Certificate to each member of a select group of Chinese customers. Each certificate demonstrates how much CO_2 they kept out of the atmosphere by purchasing from our company in 2017. These certificates make our customers more aware of the tangible benefits of our enzymatically produced APIs, as well as their own impact on the environment, by using us as their supplier.

Collectively, a total of 37,500,000 kg of CO_2 was saved. This is equivalent to the CO_2 produced by 30,222 direct return flights from Beijing to Paris.

37,000,500 kg CO_2=

184,000
return flights from Beijing to Paris

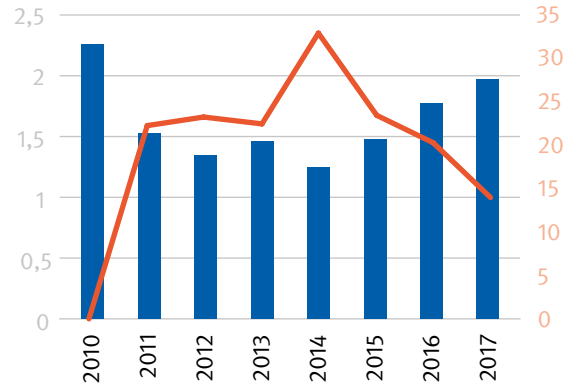


VOC emissions

The emission of Volatile Organic Compounds (VOCs) refers to the release of organic chemicals into the surrounding air. The organic chemicals that we presently use in our production processes are acetone, methanol, butanol, butylacetate, methylenechloride, isopropylalcohol, ethylacetate, hexane and cyclohexane. We have been setting targets for reducing VOC emissions since the late 1990s, based on five-year plans. This explains why they are tracked separately from the 2010–2020 targets defined in our Sustainability Roadmap 2020.

Our VOC emission levels are currently almost five times lower than they were in the year 2000, when we began

VOC emissions
Type I sites (including Yushu and Zibo North from 2015)



- Absolute VOC emissions (per 1,000 T/year)
- Relative VOC emissions efficiency improvement over the target period (%)

monitoring. They are also 20% lower than they were in 2010. The latter reduction is mainly due to the introduction of our enzymatic production process at Ramos Arizpe, Mexico, and at Zibo South, China, in 2009.

Operations at the fermentation site in Mexico were temporarily stopped in 2014 and restarted in 2015, giving rise to the volatility visible in the chart. The increase in VOC emissions in 2017 (compared to 2016) was mainly due to a relative increase in demand for chemically produced products in 2016-2017, and issues faced during the solvent recovery process. These factors resulted in a decline of 6% in relative efficiency from 2016 to 2017.

In the coming years, we will take major steps to address these issues. Where feasible, we will gradually convert the majority of our production lines to the enzymatic process. In addition, at our production site in Zibo, we are running a project to further reduce VOC emissions in line with local government requirements. This way, together with process improvements at our sites in Toansa, India, and Ramos Arizpe, Mexico, we expect to improve our efficiency in terms of VOC emissions during the course of 2018-2020.

Emissions to water

Water consumption

In 2017, our Yushu site, in China, reduced its water consumption by 18% compared to 2016. In total, this is about 265,000,000 liters of water. Major projects that contributed to these savings were the recovery of fermentation process water to feed the water cooling system, improving the efficiency of cooling towers to reduce evaporation of water, improving the steam condensation system and reducing soft water consumption in the boilers.

COD

Chemical Oxygen Demand (COD) is an indirect measure of the quantity of organic compounds in water. Our current COD emissions are 15 times lower than they were when we first started monitoring in 2000. Since 2010 alone, they have dropped by 68%. Our COD emission target for 2020 is 60%; however, 2017 saw this target met and further exceeded by 8%.

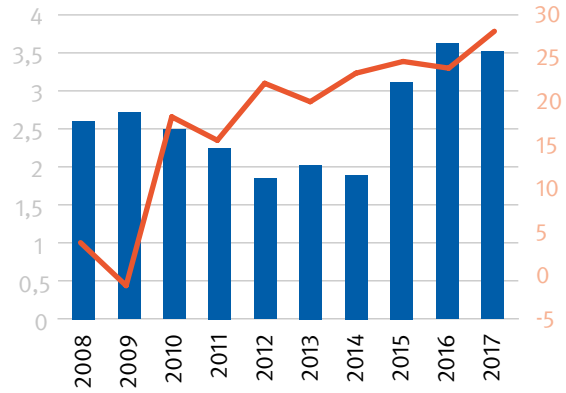
Most of this improvement was achieved by changing several of our production processes from chemical to enzymatic technology, and by implementing some targeted COD reduction projects. One of these reduction projects involved implementing more effective management of our wastewater treatment plant (WWTP) at our Delft site in the Netherlands. This made a useful contribution to reducing our COD emissions throughout 2010-2017.

Water consumption

Since 2008, the water efficiency at our Type I production sites has increased by 28%. Compared to 2016, we have improved our efficiency by 5%. Our improvement in water consumption is largely due to the optimization of production processes, such as the installation and improvements of reverse osmosis at our Yushu site, China, as well as process optimization at our Mexico site.

Water consumption

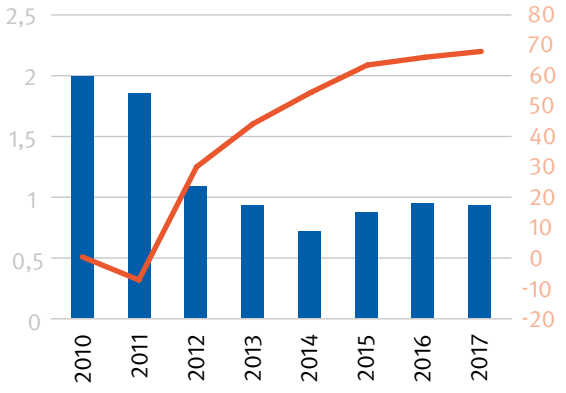
Type I sites (including Yushu and Zibo North from 2015)



- Absolute water consumption (per million m³/year)
- Relative water consumption efficiency improvement over the target period (%)

COD emissions

Type I sites (including Yushu and Zibo North from 2015)



- Absolute COD emissions (per 1,000 T/year)
- Relative COD emissions efficiency improvement (over the target period (%)

Wastewater treatment and discharge

Water is an essential raw material that is required in large quantities for the production of antibiotics. In order to discharge the resulting effluent water without harming the environment, the streams have to be thoroughly cleaned.

A breeding ground for resistance

Centrient Pharmaceuticals treats wastewater in dedicated wastewater treatment plants (WWTPs) before it leaves the site, but in the wider antibiotic production industry this is not always the case. It is common practice to send untreated wastewater streams to municipal or other common treatment facilities. Here, it is mixed with other industrial and household waste in a combined pool of pollutants. Recent studies show that such pollutant pools seriously encourage the emergence and spread of antibiotic resistance. Places where bacteria from the environment meet human pathogenic bacteria – as well as normal human flora bacteria that do not cause disease – are an ideal breeding ground for resistance. Resistant bacteria have been detected in high numbers in treatment plants that receive effluent waste streams from several sources.

Know your waste

"All our wastewater treatment plants are custom-designed to suit the production process in question, the products being made, and considering the location and effluent requirement of the factory," says Laura Blasco, Centrient Pharmaceuticals Corporate Technology & Manufacturing Advisor. "This precision approach, reflecting our professional R&D background as a company, is based on the principle of 'know your waste', and on mastery of the specific skills required to operate continuously. In this way, we ensure that we are always compliant with the most stringent regulations and guidelines."

Pioneering wastewater treatment

We were one of the first antibiotic producers to invest in its own state-of-the-art water treatment plant in the 1980s. Over the decades, we have continued to invest in such facilities in other countries as well. Today, all of our production sites have their own dedicated treatment facilities that effectively treat our wastewater. All wastewater (which makes up at least 80% of the waste) undergoes carefully executed pre-treatment, biological treatment and post-treatment before it leaves the site.

Testing for antimicrobial activity

As part of our Sustainable Antibiotics Program, we have also implemented methodologies to detect remaining antibiotic activity in our wastewater. This way, we make sure none of our operations add to the growing threat of antimicrobial resistance (AMR). We have developed an easy-to-use test to detect the presence of antimicrobial activity in effluent. We have carried out this test at all of our sites since September 2016, and we confirm a constant purity level of less than 50 parts per billion antimicrobial activity (equivalent to 50mg per 1,000 liters, based on Penicillin G).

We are also working to implement technical solutions to remove antimicrobial activity in any waste stream leaving our manufacturing sites.

Removing organic compounds

The quality of our wastewater is also measured in terms of chemical oxygen demand (COD), an indirect way of determining how much organic matter is still in the water. Since 2010, our COD figure has fallen by 68% globally (see page 60), which means that in 2017, we exceeded our emission target of 60% by 8%.

Improving human health and social impact

Safeguarding individuals and their health is at the heart of what we do. Indeed, we have a special duty to the people whose lives we impact on a daily basis – namely, our employees and the general public who live in the communities in which we operate. Our promise to these diverse groups is two-fold: we aim to foster their development, performance and personal satisfaction, while also ensuring their health and safety in the community.

Strengthening our common culture

People are central to our vision, mission, and success. That is why our vision for our people is designed to ensure that we continue to build a high-performance workforce, by positively shaping the lives and careers of our employees – empowering them to achieve their full potential. Equally, we believe that the best way to achieve our business goals is to guarantee that our people are not only well equipped to deliver their best performance, but that they are also recognized and rewarded appropriately for doing so. Our talent management practices, coupled with our employee growth and development opportunities, ensure inclusive growth for both the organization and its people.

The guiding beacons for us, all which run deeply in our value system, are our Culture Pillars – (1) External Orientation, (2) Accountability for Performance, (3) Collaboration with Speed, and (4) Inclusion and Diversity. As shown in the box on the right, these four pillars are the cornerstones of our overall organization strategy. They are built into the fabric of who we are at Centrient Pharmaceuticals.

In building a high performance workforce, we help our employees excel

Over the years, we have undertaken several initiatives to instil the true spirit of the Culture Pillars in our employees. Through various activities, experiential learning and reinforcement we have continuously endeavoured to enable our employees to embrace these culture pillars in their day to day actions.

Our main Culture Pillars

External Orientation
The pace of change today means that, more than ever, we need to be aware of and responsive to what is happening in our society: emerging needs, social trends and developing concerns.

Accountability for Performance
We believe we can make a significant contribution to solving some of the world's most pressing challenges. We are keen to share responsibility for improving our world, while learning from our mistakes.

Collaboration with Speed
In today's highly connected world, collaboration and speed are important competitive advantages. That is why we encourage teamwork and networking, both inside and outside the company.

Inclusion and Diversity
We acknowledge that working together in varied and balanced groups enables us to reach better decisions, deliver more remarkable innovations, and interact in more productive ways.

Culture Weeks

In 2017, we organized two Culture Weeks, with a focus on building consciousness of Intellectual Property Protection (IPP) and how they can be safeguarded through our Culture Pillars. We celebrated the first Culture Week on Accountability and Collaboration for IPP from June 26th to 30th 2017 and the second on External Orientation and Inclusion & Diversity for IPP from November 20th to 24th 2017.

During these weeks, the business units organized various activities and events to encourage employees to talk about their Intellectual Property Protection experiences. Some of the initiatives included reinforcement of key messages through posters and webchat messages, sessions and town halls across locations, and a global quiz which encouraged learning and involvement across all business units. Our Culture Weeks enjoyed enthusiastic and overwhelming participation from employees across all locations.

Strengthening the succession pipeline

In 2017, a robust global succession planning exercise was conducted for 79 essential positions by our executive committee. This was one of the most critical talent management initiatives at our company that helps to safeguard the continuity of our talent pipeline.

In particular, the exercise helped to ensure talent risks are proactively addressed by developing, hiring or redeploying relevant resources. As a part of the succession planning exercise, immediate, medium- and long-term successors for key positions were identified. These potential successors are now being supported in their development toward future roles with the help of a personalized individual development plan.

Annual Development Planner

Our AMEA business unit launched an Annual Development Planner for its employees. With this important tool, employees can build the competencies required not only for their current position, but also be equipped for the roles of tomorrow. Specifically, the planner offers a detailed description of the various development initiatives planned for a particular year, along with the scheduled timelines, based on the particular competencies required to succeed in respective employee roles. Suggested training programs and workshops are identified for specified employees, and this information is shared with them directly.

"Bridge": A quarterly periodical in China

In order to foster improved employee communication, our production site in Yushu, China, has launched a quarterly periodical, "Bridge", for all local employees. Similar to the MLA business unit's quarterly magazine "Avances", "Bridge" updates employees on recent developments within the business unit, facilitates a greater understanding of our common culture, and outlines the progress made by the business unit in achieving key organization goals. As well, articles on professional development, personal health, six sigma and data validity have been published over the last year.

At Yushu, "Bridge" is supplemented by the well-known Chinese social media app Tencent WeChat, on which 600 employees are active. This app enables the relay of real-time information on different employee activities, new participant notifications, employee updates, branding and promotion of ongoing employee events, as well as the reinforcement of our common culture pillars. Together with

Bridge - our quarterly magazine for employees in Yushu, China.

"Bridge", Tencent WeChat fosters internal communication and alignment on our common cultural program.

Centrient Pharmaceuticals: One big family

As part of our wider responsibility to our employees, and to further drive the development of a better workplace, we support the wellbeing not only of our employees, but also of their families. In 2017, we organized several initiatives to foster an improved work culture by helping our employees' families.

For example, to help better manage their work-life balance, the MLA business unit organized a two-week summer camp in Ramos Arizpe, Mexico, for the children and grandchildren of its employees. The aim of the summer camp was to assist employees in taking care of their children during summer holidays, while they remained at work. The two-week camp included fun activities and learning opportunities, and the initiative as a whole received both enthusiastic participation from the children and excellent feedback from employees.

This same inclusive spirit was also demonstrated at other locations around the world. At our production base in Yushu, China, for example, we celebrated Children's Day on June 1, 2017, during which various entertaining events and competitions were organized. Furthermore, our AMEA business unit organized various social events for employees, including a dedicated family day, an annual festival and a kite festival. All these initiatives served to foster an inclusive and welcoming culture, and drive the spirit of the four pillars of our culture.

HR automation project in AMEA

In early 2016, the AMEA business unit launched People Space, an automated HR platform for selected employees. This platform has enabled the automation of the entire employee lifecycle and includes features such as an automated performance management process, a performance improvement plan, and a monthly leave and attendance tracking system. In 2017, the benefits of People Space – such as the ease of data accessibility, the elimination of hardcopy processes, and the more timely and efficient execution of key HR processes – were appreciated by AMEA employees, 100% of which have now adopted the platform. In this way, the HR automation project has driven alignment within AMEA and made important HR-related processes easier for our employees.

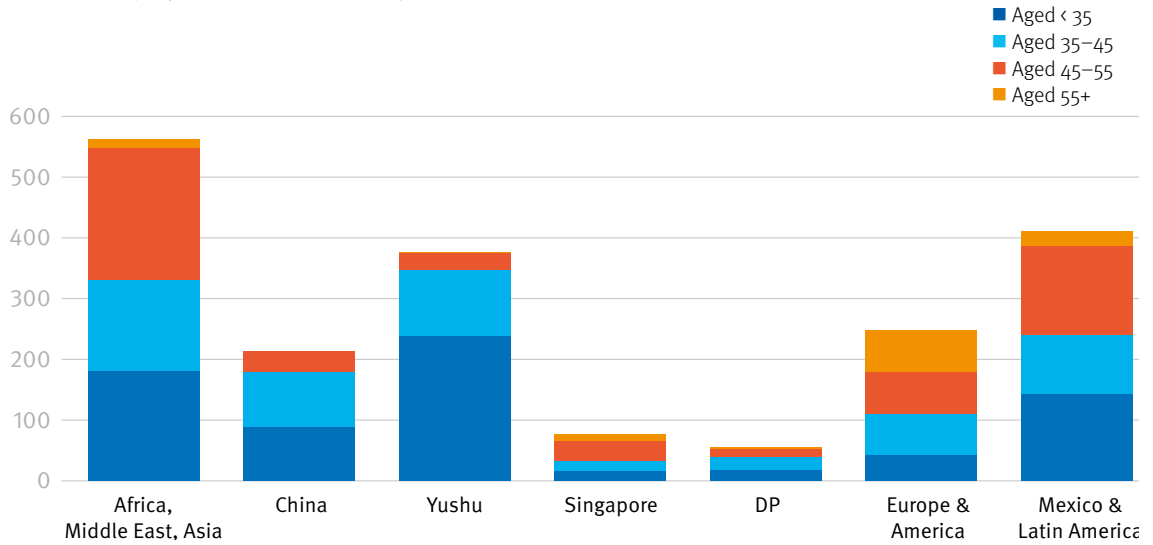
Who works at Centrient Pharmaceuticals?

At year-end 2017 as DSM Sinochem Pharmaceuticals, the company employed **1,945** people globally.

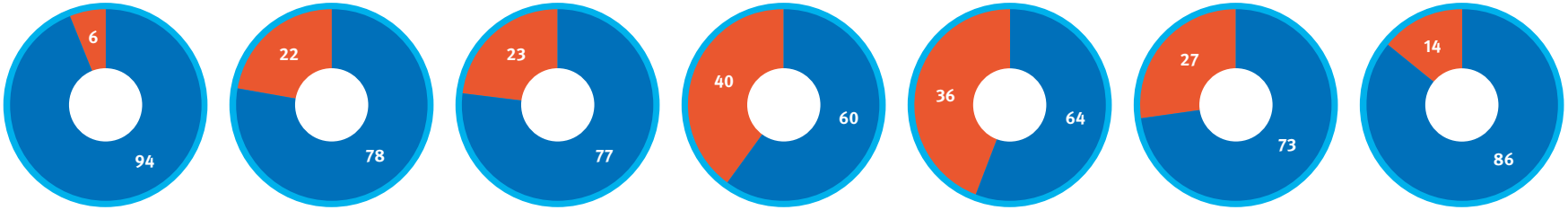
Women accounted for just over **19%** of the total.

People under the age of 35 accounted for around **37%** of the total.

Number of employees according to age per region



Percentage and number of employees according to gender per region



Africa, Middle East, Asia
562 employees

China
214 employees

Yushu
376 employees

Singapore
78 employees

Drug Products
55 employees

Europe & America
248 employees

Mexico & Latin America
412 employees

Driving forward with new colleagues

In 2017, a total of 377 new colleagues joined our teams around the world. Below some of these colleagues outline what attracted them to our company.

Rohan Dheman, Senior Legal Counsel, AMEA
"Joining the company has certainly been a great move for my career. Centrient Pharmaceuticals offers excellent opportunities for development and career growth. The work environment is stimulating, which, coupled with the performance-driven culture, certainly makes Centrient Pharmaceuticals one of the great places to work for young high achievers."

Jorge de la Garza, Communications Specialist, MLA
"I was first attracted to the company because of the great commitment to sustainable production and because our people are genuinely concerned with driving awareness around the proper use of antibiotics."

Neha Singh, Organizational Development Manager, AMEA
"I was first told about the company by a friend who spoke highly of our culture, our people and the work ethic within the company. After starting here, I found out for myself that everything I'd heard was true. What really stands out for me is that we focus so strongly on sustainability and safety. Our company's core values are certainly aligned with mine!"

Xing-yong Yang, Finance Manager, China
"For me, Centrient Pharmaceuticals' 'human side' was a key reason for wanting to work here. Our company is people oriented, employees respect each other and – of course – all business activities are undertaken with a high level of respect for proper process and safety."

Aayush Gupta, Internal Control and Risk Management Manager, AMEA
"Respect and regard for an individual is key to who we are at Centrient Pharmaceuticals. Consequently, safety and sustainability are embedded in the core of our organization, and we take care to provide the very highest-quality products through our strong focus on supply chain reliability."

Employee Engagement Survey

Held annually, our Employee Engagement Survey provides all staff the opportunity to voice their opinion, as well as highlight areas of both strengths and concerns. As such, the survey is an essential tool to monitoring our culture, people and development.

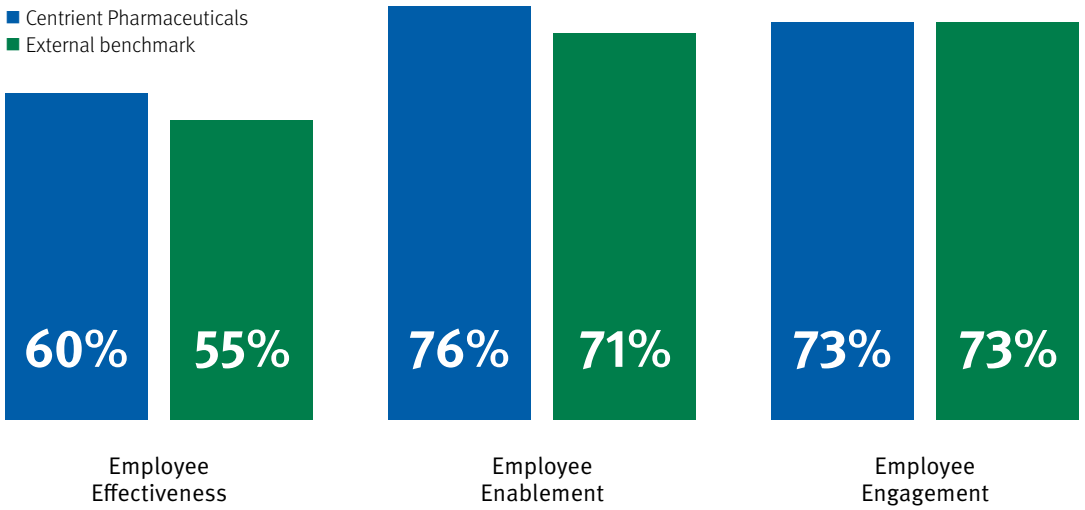
To assist us further in this process of discovery and improvement, in early 2017 we engaged the Korn Ferry Hay Group, a world leader in people consulting. The outcome was our own custom-made Employee Engagement Survey, "ECHO – Every Colleague Has an Opinion", which we conducted globally between May 15 and June 20, 2017. The survey received a response rate of 97%, confirming our belief that our employees are strongly connected to the company, and are keen to deliver their feedback.

Overall, the survey showed that – driven by our focus on Quality, Reliability and Sustainability – we are an employer of choice in the pharmaceutical industry, and that our employee engagement has improved compared to our 2014 benchmark. What's more, compared to the industry benchmark, we outperformed on Employee Engagement (employees' enthusiasm for their work and directing it towards organizational success) at 73%, Employee Enablement (support employees receive from the organization to perform at their full potential) at 76% and Employee Effectiveness (correlation between Employee Engagement and Enablement) at 60%.

EVERY COLLEAGUE ECHO HAS an OPINION
Employee Engagement Survey 2017

Beyond Employee Engagement, Enablement, and Effectiveness, the survey also measured the company on 15 other key measures, in all of which we are the pharma industry leaders. In particular, we score significantly higher than the industry norm in Performance Management (11% higher than external benchmark) and Training (12% higher than external benchmark). Across all the categories, we received the highest scores in Safety (91%), and Quality and Customer Focus (89%).

ECHO 2017 at a glance



Safety and health

Safety, Health and Environment (SHE) are a continuous focus for us at all times. By always striving to do better through various programs and continuous efforts to influence employee behavior, we expect to reach our ultimate aim of (naturally safe) zero injuries.

Our Safety, Health, and Environmental (SHE) requirements, best-practices and policies are implemented globally at all our operations, business unit and site level.

Creating an injury-free environment

Ensuring the highest safety standards across our global operations has always been a top priority. We work to maintain and strengthen our safety culture and behavior through various projects, grouped under one management program with the slogan “Together, we make Centrient Pharmaceuticals injury-free!”.

To achieve our mission of an injury-free company, our management program is based on three pillars: Process Safety, Life-Saving Rules & Behavior, and Time Out for Safety. We continuously share information internally about incidents and near-misses at our sites to improve safety. We also remain alert for learning opportunities about best practices outside our company. In this way, we are creating a living culture around safety awareness, with a continuous focus on improvement.

Life-Saving Rules

After launching in 2011, Life-Saving Rules (LSR) at our company have become part of our daily work routine

Centrient Pharmaceuticals’ Life-Saving Rules

I No drugs at work, smoking only in designated areas and no alcohol at work

II If required, always work with a valid permit

III Test the quality of the internal atmosphere before entering a confined space

IV Lock out, tag out and try out before starting work on machines or equipment

V Obtain authorization before line-breaking

VI Obtain authorization before overriding or disabling safety-critical equipment

VII Protect yourself against a fall when working at a height

VIII Do not enter a danger zone where objects can fall

IX Comply with management of change when required

X Follow your journey management plan

XI Wear your seatbelt in all vehicles

XII Drive responsibly and comply with local laws. Do not use your mobile phone while driving (not even hands-free), and do not exceed speed limits. Avoid drinking and driving, always respecting legal limits.

on the production floor. All employees are expected to follow these regulations at all times when onsite, and we conduct regular training to reinforce the importance of these Life-Saving Rules.

Performance in 2017

A safety program and monitoring of associated recordable injuries in all our operations has been in place since 2001, when we operated as DSM Anti-Infectives. Although there was an improvement in comparison to 2016, we unfortunately did not meet our safety performance targets in 2017.

As seen in the graph, our best safety performance was in 2011. In that year, six people were injured at work, compared to 47 in 2001, when we first started our safety program. We are continuously making efforts to improve our performance, and our Total Recordable Injury (TRI) rate has been decreasing since 2014. However, we have not yet managed to reduce the current benchmark score of 2011.

With eight injuries in 2017, our major safety index, the TRI rate, improved from 0.35 to 0.30. As in 2016, hand injuries remained the major cause of the incidents (six out of eight, or 75%). We launched new campaigns in 2017 focusing on preventing these types of injuries at all our sites. These included messages from management, poster displays, and discussions on risk assessment and effectiveness control.

In addition to addressing these recordable incidents, we also focused on near misses. This is because even incidents that do not involve any injury may still serve as important leading indicators of an accident "waiting to happen" – including an accident with serious consequences. We believe that monitoring leading indicators like this will ultimately enable us to improve our safety performance framework as a whole. The number of "higher potential" near misses in 2017, nine, was a 35% drop from the 14 recorded in 2016.

A continuous focus on SHE (Safety, Health & Environment)
SHE remains a continuous focus for us at Centrient Pharmaceuticals. We always work to do better through various activities and programs around SHE. With these programs and continued efforts to influence employee behavior, we strive to reach our ultimate aim of zero injuries.

Hand safety campaigns

Hand safety remains a focus at all our production sites, and special campaigns were launched to increase awareness on the shop floor. The program included a message from management ("Care for each other"), poster displays, and discussions on risk assessment and control effectiveness.

QESH 2.0

In Q4 2017, a program called QESH 2.0 (Quality, Environment, Safety and Health) was launched at our production

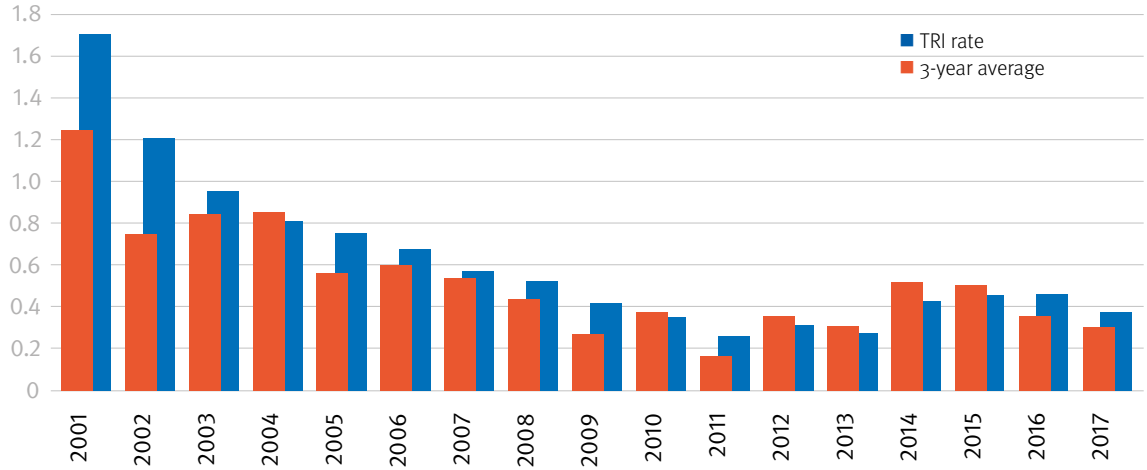
sites in Europe and America. This initiative was founded after a series of roundtable sessions with both external contractors and our own employees, in which it was agreed that our "speaking-up culture" needs to be improved and more attention needs to be paid to our day-to-day activities.

Safety, Health and Environment remains a continuous focus

QESH 2.0 has two basic parts. The first one is to observe operators' and contractors' awareness of Safety, Health, Quality, Environment while working. The observation team consists of operators themselves, a management team representative and a SHE professional. The team evaluates all related procedures and risk analyses relating to the task while it is being performed. In particular, the team challenges the operators on safety, health, quality of our product, and respect for the environment. In regard to behavior, the way the task is executed is discussed, and there are questions such as "Do you always use the prescribed safety precautions?" and "Do you always use the manual or correct procedure?". After the observation is completed, a best practice is defined for the task.

The second part of the QESH 2.0 program is that every quarter, a colleague is nominated for displaying outstanding performance in one of the QESH areas. The assessment criteria include pro-active measures, inspiration, and exemplary behavior. Nominees are selected by the operations, maintenance, logistics and office teams, promoting discussions on desired behavior within the various teams. The pictures at the left show the observation team on the shop floor, as well as the first award ceremony.

TRI rate with regard to our own employees and contractors, regular and 3-year averages



Time out for quality and safety

Launched in 2014, "Time Out for Safety!" continues to be a key program. In 2015, building on the success of the program, we extended our focus by including Quality as a focal point.

In 2016, the Safety and Quality discipline teams continued working together to influence employee awareness and behavior, promoting the concept of "Time Out" every time employees undertake a potentially risky job.

In 2017, the concept was extended to all offices, and an awareness poster campaign was launched to remind employees about Safety. Additionally, a newsletter, called "Time Out for Quality and Safety", is released every six weeks to all our employees, and includes an awareness bulletin with inspiring messages from our management about local events, practices and learnings from incidents.

Process safety

With a full-time global process safety expert on board since 2016, we continued to improve on our process safety in all our manufacturing facilities. In 2017, our first Process Safety Life Cycle (PSLC) specialized training was conducted for the Delft team. This four-day training program was developed in cooperation with an external process safety expert. The program yielded favorable participation and response. In the coming years, we intend to extend this program to our other production sites as well.

Leveraging local strengths

The company approach to health and wellness is primarily developed and run on a regional basis and at site level. This encourages our regions to develop local programs that are designed to meet their specific needs and better aligned with local habits and culture. However, certain health-related regulations and requirements are implemented across the whole of the company.

Health Risk Assessments

Implementing Health Risk Assessments is mandatory at all our production plants. These assessments provide the crucial basis for adequate control of a wide range of possible exposure situations. For Centrient Pharmaceuticals, it is also extremely important to ensure our employees are physically well, so health checks are also mandatory for all.

Local health programs address factors in specific workplaces that could be detrimental to employees' physical well-being. They may also include lifestyle improvement monitoring and healthy living promotional activities. Examples of these efforts include increasing the availability of healthy food options in canteens and conducting on-site or off-site exercise programs to encourage employees to improve their fitness levels.

Ready for emergencies

All our sites have Emergency Response Programs (ERPs) in place, designed to deal with calamities and emergency situations, such as fires and other potential incidents. They ensure the health and safety of our employees and minimize any possible impact on local communities and the public at large. These programs are regularly tested and trained in mock drills.

Legal compliance and whistleblower policy

At Centrient Pharmaceuticals, we aim to deliver complete transparency and integrity. To that end, since 2013, we have a whistleblower procedure called "Centrient Alert". This procedure enables employees to report any concerns they may have about misconduct, and to do so with full confidentiality.

We ensure compliance with all relevant laws and regulations

"Centrient Alert" is just one of the measures in place to ensure that we always act in strict compliance with all relevant laws and regulations, along with our own requirements and Code of Business Conduct. We closely monitor compliance on a daily basis. Outside our company, the media, our business contacts and the investment world all contribute to this ongoing monitoring as well.

A door you can always knock on

Within our company, compliance is continuously monitored through ongoing analysis, department meetings, consultative meetings, operational audits, complaint procedures and our ongoing appraisal systems. Despite this monitoring, unacceptable conduct may sometimes still occur. When it does, often the first people to notice are our employees.

In accordance with our values, rule violations are generally discussed openly via the appropriate designated channels – initially, directly with the persons involved, and subsequently, if necessary, with the management of the unit involved. In certain circumstances, an individual employee may not feel comfortable with this route, and prefer to report concerns to an independent company officer, or via the online incident reporting system on our intranet. This is possible through the "Centrient Alert" program.

Contributing to people's lives

As a responsible corporate citizen, it's our duty to contribute to the sustainable development of the communities in which we operate. We add value to people's lives by providing ongoing economic, social and environmental benefits. We continuously undertake new initiatives to improve the lives of our fellow citizens.

Solar lights in India

In 2017, 35 solar-powered street lights were installed in villages close to Toansa and Bholewal, in India. We not only obtained the lights, but also installed them at strategic locations to ensure that a maximum number of citizens could benefit from this initiative. Since these lights store the energy of the sun and convert it to electricity, they have zero carbon emissions.

The solar light initiative has also had a positive social impact as well as its environmental impact. The new lights operate independently from the village utility grid, and require less maintenance than conventional street lights. This results in reduced operation costs. In addition, as the new solar lights do not have external wires, so the risk of electrical accidents is also minimized.

Supporting educational infrastructure

By supporting educational initiatives throughout the world, we not only contribute to the immediate wellbeing of communities, but also creates ideal conditions for future development. In particular, the company is committed to ensuring that children in our local communities have ample opportunities to receive a good education. In line with our commitment, we have undertaken initiatives at the Government Middle School in Toansa, where we have sponsored the renovation of the playground and assembly area, and provided infrastructure for clean drinking water. We have also distributed educational equipment – including school uniforms, shoes, school bags and stationery – to disadvantaged families in the area.

Health-related initiatives in India

At Centrient Pharmaceuticals, we believe that healthy communities are the backbone of strong, sustainable societies. We aim to improve societal health and make a meaningful difference to society. As part of our holistic approach towards Corporate Social Responsibility (CSR), our AMEA business unit provides the communities surrounding our production facilities in Toansa and Bholewal, India, with dispensary medical facilities and weekly medical clinics, which are organized by our medical officers. In 2017, more than 1,900 locals benefited from these medical check-up clinics. Ongoing talks on better hygiene and women's health were also organized in nearby villages.

Summer camp for the children of our staff in Mexico

Our AMEA team has also been a significant contributor in the Clean India Campaign. We have installed 240 free bio-toilets in nearby villages. In addition, as part of an ongoing long-term project, the local team pays for the electricity required to power water pumps that supply clean drinking water to local communities.

Women's Day celebrations

Promoting women's rights and gender equality are key priorities within our "People" vision. In MLA, a conference focusing on empowerment was organized for all female employees. This was the first time such a conference was held in the plant. On March 8, 2017, Women's Day was also celebrated in AMEA with an engaging session on experience sharing and a "women-achievers"-themed quiz competition. A self defense workshop was also organized for our local female staff.

Earth Day celebrations

Every year on April 22nd , we celebrate Earth Day. This global event aims to encourage action and awareness around the sustainability of our environment. By attending various local activities at our different locations, employees can make individual commitments to reducing their ecological footprint at work and at home. In 2017, our MLA colleagues visited various schools to promote awareness of Earth Day, conducted tree-planting exercises, and undertook environmental and energy conservation awareness initiatives.

Similar activities were also undertaken by our colleagues in India. Approximately 150 students participated in Earth Day activities at Government High School, Gahun, with 23 students participating in a drawing competition on the theme of the environment. Talks or recited poems about the environment were delivered by 12 students, and our colleagues also discussed AMR awareness. Students then planted trees to mark Earth Day, and were provided with sustainability-themed gifts as well.

"Call 911" campaign in Mexico

Centrient Pharmaceuticals MLA supported the civil protection institution by distributing more than 3,000 fridge magnets for their "Call 911 in case of emergency" campaign to schools and the general community. This campaign was aimed at creating awareness of the emergency response actions among the citizens.

UNICEF give-a-day scheme

In 2017, the EA business unit launched a very unique campaign in collaboration with UNICEF, whereby employees were encouraged to donate one or more of their unused leave days to support causes related to healthcare, education or provision of clean drinking water. An amount equivalent to the average net value of a leave day in the Netherlands was donated to UNICEF. Employees could indicate the number of leave hours they wanted to donate, and could even choose the cause where they wanted UNICEF to spend their donation.

The average net value of one unused day of leave for an employee in the Netherlands is equivalent to 140 vaccinations, school supplies for 16 children, or sufficient therapeutic nutrition for two severely malnourished children.

Combatting the further spread of AMR

Antimicrobial resistance (AMR) is one of the biggest health threats humanity is facing today. Without action being taken, a post-antibiotic era will become reality. At Centrient Pharmaceuticals, we are committed to combating the further spread of AMR. Under the umbrella of our Sustainable Antibiotics program, we have been promoting the responsible manufacture and use of antibiotics since 2014.

Antimicrobial resistance and sustainable antibiotics

One of the biggest health threats

Like all life forms, bacteria and pathogens are able to adapt and evolve in response to the pressure of natural selection. Those that survive exposure to a medicine that would normally kill them or stop their growth, develop resistant genes. Bacteria can multiply fast and exchange genes, which can lead to the emergence of "superbugs" – bacteria that are difficult or even impossible to treat with existing antibiotics. As society currently lacks newly developed drugs to fight these superbugs, the damaging effects of antimicrobial resistance (AMR) are already manifesting themselves across the world.

Conservative estimates contained in the Review on AMR already put the global number of deaths due to AMR at 700,000 per year. The Review goes on to predict that without urgent action, a staggering 10 million people will be killed annually by resistant bacteria by the year 2050. This makes AMR the biggest threat facing humanity today.

Industry pollution under-estimated

AMR is a natural phenomenon, but it is accelerated and spread by human behavior, such as the misuse of antibiotics, poor sanitation, insufficient measures to prevent and control infection, pharmaceutical pollution of the environment, international travel and the food trade. A drug-resistant bacterium that was found in 2014 in India has since been identified in more than 70 countries worldwide. Reports indicate that increasing numbers of travellers return home with superbugs in their digestive systems.

Any use of antimicrobials, no matter how appropriate or conservative, contributes to the development of resistance. However widespread unnecessary and excessive use makes the problem worse. For example, overuse and misuse of antibiotics, sometimes of inferior quality, is facilitated in many countries by the fact that they are available over the counter and without prescription. At the same time, prescribing practices vary

If we fail to act now, the post-antibiotic era will become a reality sooner.

Environmental pollution from antibiotic waste is one of the key causes of AMR.

hugely between countries, even from doctor to doctor. Unavailability of certain antibiotic classes, diagnostics or vaccines also contributes to AMR.

A second major cause of AMR is the excessive use of antibiotics as a general prophylactic in animal feed, including its use in fish farming. There are circumstances where antibiotics are required in agriculture and aquaculture – to maintain animal welfare and food security. However, much of their global use is not for treating sick animals, but for prevention and as a growth stimulator. This has led to retention of antibiotics in food, the release of antibiotics into the environment, and the spread of drug-resistant bacteria.

The third key reason for the rapid spread of AMR is antibiotics pollution associated with ingredient manufacturing. Some concentrations of antibiotics found in surface and ground waters close to factories (mainly in China and India, which are responsible for 80 to 90% of all antimicrobial production) are thousands or even 10,000 times higher than normal, creating hotspots for resistant bacteria. Until recently, this cause of AMR was severely underestimated.

Now or never

The AMR Review indicates that the human and economic toll of antimicrobial resistance could potentially spiral out of control, if left unchecked. Drug-resistant infections could cause up to 10 million deaths a year, while costing the global GDP a cumulative $100 trillion every year. Among other infections, multi-drug-resistant-tuberculosis could continue to spread in low- and middle-income countries, thus becoming one of the world's most deadly infections.

In 2017, the Access to Medicine Foundation made preparations to publish its first independent assessment of pharmaceutical action. In particular, they utilize the AMR Benchmark methodology, which underlines the pressing need for assertive and collaborative action to tackle the global threat of AMR:

"Drug resistance is on the increase and can spread fast. But if action is taken now, the threat can be contained… Coordination, commitment and collaboration are key, from political leaders and policymakers to doctors, farmers and pharmaceutical executives. In recent years, the international community and the private sector have swung their collective weight behind efforts to contain AMR – these commitments now need to lead to real action, with progress toward set targets being publicly monitored."

Our Sustainable Antibiotics Program

The aim of our Sustainable Antibiotics Program is to promote the responsible manufacture and use of antibiotics. Launched in 2014, it was established to help us define our position in what was then seen as one of our business continuity risks: drug resistance that could lead to a situation whereby our products would become ineffective.

During this process, we came to the conclusion that – as a leading manufacturer of responsibly made antibiotics – we needed to play a key role in the important global fight against AMR, particularly in reducing the negative effects of production - the antibiotic active waste we generate while producing these drugs. At that time, we had already implemented enzymatic technology, which has the smallest carbon footprint for production, and we were already operating dedicated wastewater treatment plants at manufacturing sites as an integral part of our operations. However, we determined that we also had to assess their effectiveness. Consequently, we developed and implemented our own antimicrobial activity test.

We're committed to playing a leading role in the global fight against AMR

In addition, we have taken on a high-profile campaigning role in the fight against AMR by calling on both the industry and the entire value chain to act responsibly and stop buying, using or selling irresponsibly made antibiotics.

Centrient Pharmaceuticals was one of the first to develop an antimicrobial activity test for regular monitoring of wastewater.

AMR and the wider world

While awareness and action against the challenge of AMR grew considerably on a global level in the last decade, in 2017, the profile of this issue was raised even higher, with AMR topping agendas at the G7 and G20 Summits, the World Health Assembly and the World Economic Forum. Public and private organizations have come together to address the AMR threat, and several key global initiatives and partnerships have been launched.

Foundation of AMR Industry Alliance

In January 2016, over 100 companies and trade associations, including our company, signed the Davos Declaration, calling for collective action to create a sustainable and predictable market for antibiotics, vaccines and diagnostics, as well as enhancing conservation of new and existing treatments. It also called for coordinated action to improve infection prevention, hygiene, stewardship and conservation measures.

In September 2016, at the UN High Level Meeting on AMR, 13 of these life science companies – including Centrient Pharmaceuticals – agreed to a set of specific commitments on AMR, which were called the Industry Roadmap for Progress on Combating Antimicrobial Resistance. The Roadmap included four areas of commitment, pertaining to research and science, appropriate use, access, and finally manufacturing and the environment.

Following these events in May 2017, the AMR Industry Alliance was formed, combining these earlier initiatives at the G20 Health Conference. This diverse coalition of over 100 life sciences companies and associations

"Our ambition is to create the positive momentum that will incentivize other companies to join and become involved in global efforts and local action."

– Thomas Cueni, AMR Industry Alliance

was established to advise, drive and monitor industry progress, as well as ensure collective delivery on the Davos and Industry Roadmap commitments.

The foundation of the AMR Industry Alliance represented the first time that life sciences companies have joined together in working toward a common goal of tackling and contributing to overcoming AMR. Moreover, Alliance members have agreed to report jointly and share information on their progress in responding to the AMR emergency in four key areas: R&D, appropriate use, access to treatment, and reducing the impact of manufacturing on the environment. To guide this unique venture, the Alliance has reached out to a distinguished group of external experts on AMR from around the world to listen and learn from them.

Development of the AMR Benchmark

In August 2017, the Access to Medicine Foundation published the methodology for its 2018 Antimicrobial Resistance Benchmark. This was the first independently developed framework for evaluating how pharmaceutical companies are taking action to limit AMR. The framework was developed through consultation with stakeholders and experts working on AMR to build consensus on the priorities for pharmaceutical companies regarding AMR.

The AMR Benchmark addresses the growing need for consensus on the responsibilities of each stakeholder engaged in addressing AMR, as well as the need for new, independent tools for tracking progress. The Access to Medicine Foundation was well positioned to develop the Benchmark, having earlier helped to create various industry metrics related to public health.

In particular, the goal of the Benchmark is to incentivize pharmaceutical companies to implement effective actions for tackling the problem of AMR, by highlighting industry best practices and publicly recognizing those companies that are taking the right actions. Equally, the Benchmark drives industry peers to adopt innovative approaches and

good practices. It will also uncover obstacles to deeper company engagement in global efforts to limit AMR.

Topping the United Nations' agenda

The current impact and future development of the pharmaceutical industry faced intense scrutiny from the United Nations (UN) in 2017. Challenges including antimicrobial resistance, access to pharmaceuticals, drug shortages, and counterfeit drugs were all addressed by various bodies within the UN.

In March 2017, the UN Secretary-General announced the establishment of an Interagency Coordination Group (IACG) to provide practical guidance in the global fight against AMR. Deputy Secretary-General Amina Mohammed stated: "As we enter the era of sustainable development, I'd like to emphasize that antimicrobial resistance really does pose a formidable threat to the attainment of the Sustainable Development Goals (SDGs), particularly in our developing countries. Many UN agencies will need to engage in this fight, as will other international organizations, non-governmental organizations, civil society, and critically, the general public."

In addition, the Frontiers Report, which was published by the UN Environment Programme in December 2017, highlighted antimicrobial resistance as one of the key emerging issues of global environmental concern. In particular, the report underlined the harmful effects of releasing sub-lethal levels of various antibiotic compounds in effluents from households, hospitals and in agricultural run-off as driving bacterial evolution and accelerating the emergence of more resistant strains.

EU action on AMR

In June 2017, the European Commission adopted the EU One Health Action Plan against AMR, following up on the previous 2011-2016 Action Plan and the European Commission Roadmap. This action plan focuses on the One Health approach, which recognizes that human and animal health are interconnected and that disease transmission between animals and humans must be tackled. It also encompasses the environment, another link between humans and animals and a potential source of new resistant microorganisms.

The new One Health Action Plan against AMR will support the EU and its member states in delivering innovative, effective and sustainable responses to AMR. It will do so by strategically reinforcing the research agenda on AMR, and by enabling the EU to actively promote global action and play a leading role in the fight against AMR.

Environmental measures in China

Air pollution prevention and control program in 2+26 cities

In February 2017, China's Ministry of Environmental Protection issued an air pollution prevention and control program in the two municipalities Beijing, Tianjin and 26 other regional cities in the provinces Hebei, Shanxi, Shandong and Henan. The policy aimed to reduce air pollution through greater environmental measures and required Volatile Organic Compounds (VOCs) emissions in key cities, ensuring full compliance with the national standard in all industries before the end of October 2017 during the winter heating period.

Industries with a heavy environmental burden such as steel, electrolytic aluminium, carbon, power plants, pesticides and APIs had to either reduce or stop production in order to comply. This was a clear step forward for the Chinese government toward more environmentally friendly "green" manufacturing.

Since this program, drug product customers have been ranking reliability and sustainability second only to quality as the most important criteria for determining supplier selection. The tightening of environmental controls fundamentally changed the industry's cost structure across the whole value chain along with capacity consolidation. In particular, companies operating in China are reporting that substantial investments are required to upgrade facilities.

Key events in 2017

Hosting industry event during DCAT Week

In March 2017, six months after the launch of the Industry Roadmap for Progress on Combating Antimicrobial Resistance (AMR), we hosted an event that provided a platform for dialogue on the further implementation, challenges and first successes of the Roadmap. The event took place during the Drug, Chemical & Associated Technologies Association (DCAT) annual forum, bringing together the pharmaceutical industry in New York City, USA. Many of the organizations that have played a leading role in the fight against AMR were invited.

His Excellency Ambassador Juan José Gómez-Camacho, Permanent Representative of Mexico to the United Nations, was a keynote speaker at the event. Ambassador Gómez-Camacho facilitated consultations and the setup of the Political Declaration of the High-Level Meeting of the UN General Assembly on AMR, as adopted in September 2016. Additional keynotes were given by Jayasree K. Iyer (Executive Director, Access to Medicine Foundation), Steve Brooks (Vice President EHS, Pfizer), Ramanan Laxminarayan (Director, CDDEP), and Dr. Nata Menabde (Executive Director, WHO Office at the United Nations).

2017 China/EU Pharmaceutical Industry Forum

On May 17, 2017, our Chief Strategy Officer Fangbin Lu highlighted the importance of sustainability and called for action from our Chinese peers at the 2017 China/EU Pharmaceutical Industry Forum during API China. Co-organized by CPIA (China Pharmaceutical Industry Association) and EFPIA (European Federation of Pharmaceutical Industry Association), the event featured “Pharmaceuticals in the Environment” as the first topic on the agenda.

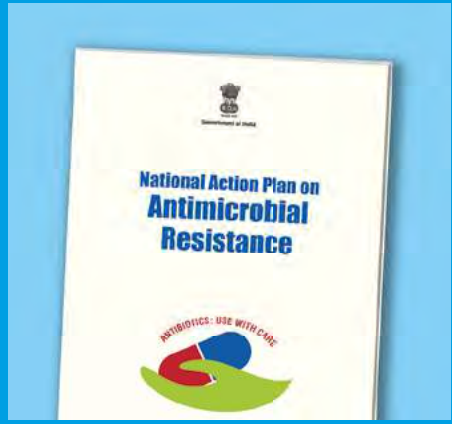
Growing pressure in India

In 2017, the Indian government not only recognized antimicrobial resistance as a problem that warrants attention, but also accepted that tackling AMR goes beyond just controlling overconsumption and misuse of antibiotics. From the top down, there has been a heightened awareness that containing AMR requires a multi-stakeholder approach.

On April 18, 2017, after much inter-ministerial deliberation spearheaded by the National Centre for Disease Control (NCDC), the Indian Ministry of Health & Family Welfare officially launched the National Action Plan on AMR (NAP-AMR) based on the One Health approach, which takes into account the recommendations made by our company on reducing the environmental impact of antibiotic production. On that same day, 11 ministries came together to sign the Delhi Declaration on AMR.

On August 24 and 25 of that same year, a National Consultation to Operationalise Action Plan for AMR Containment was organized by the NCDC and the WHO, showcasing their intent to translate the strategic national plan into on-ground action. Our best practices on clean production were shared by the Director of NCDC in the opening presentation.

Additionally, in September 2017, the Central Pollution Control Board organized its first stakeholder consultation on one of the key aspects of the National Action Plan: development of antimicrobial residue standards for pharmaceutical industrial effluent. Should the government’s momentum on drafting standards continue, India may well be the first country to have in place antibiotic standards for industrial effluent.



World Nobel Prize Laureate Summit

The World Nobel Prize Laureate Summit (WNPLS) is a high-profile annual event that brings together the world's most eminent scientists to organize and improve collaborative efforts, as well as inspire a new generation of young students and scientists. In September 2017, the fourth Nobel Prize Laureate Summit and International Bio-pharma Forum was held in Guiyang City, China.

Our call to action at the World Nobel Prize Laureate Summit in China

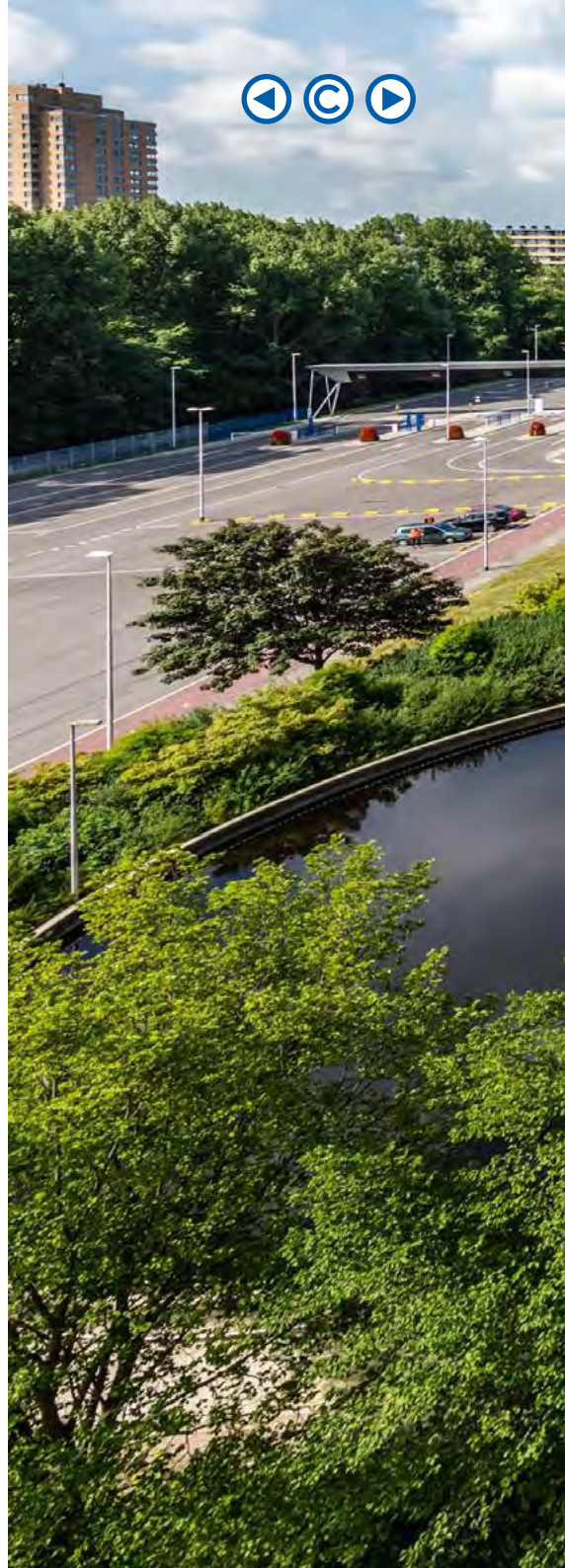
During this prestigious event, Roger Gong, our Marketing & Sales Director BU China, gave a presentation on sustainable antibiotics. Roger shared the need for responsible production of antibiotics, the steps that we have implemented, and called for action to improve industry standards across the total value chain. The two-day event brought together representatives in the pharma industry, including authorities (CFDA, Ministry of Health, and Ministry of Industry and Information Technology), associations (e.g. CPIA), investors, and local and international pharma companies.

Berlin Call to Action expert meeting

In October of 2017, we attended a multilateral environmental AMR meeting organized by the US CDC, Welcome Trust, the UK, Ghanaian and Thai governments, and the UN Foundation in Berlin, in the capacity of thought leader. The event supported the work of the Antimicrobial Resistance Inter-Agency Coordination Group (IACG). The environmental angle was recognized as part of the agenda and the key outcomes from the conference are being used as inputs for policy drafting.

Green Pharmacy Conference

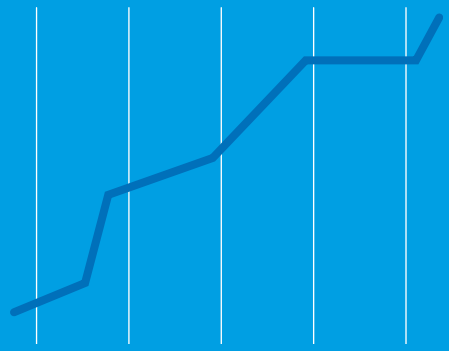
Also in October of that year our company participated in the Green Pharmacy Conference in Utrecht, the Netherlands. The conference was attended by multiple stakeholders from the Dutch Ministry of Infrastructure and Environment, as well as healthcare providers, scientists, and members of the pharmaceutical industry. We presented our Sustainable Antibiotics program and highlighted the issue of irresponsible antibiotics manufacturing and our commitment to fighting AMR.



2017 Sustainability Highlights

Reducing environmental impact

Solid progress on our environmental monitoring targets



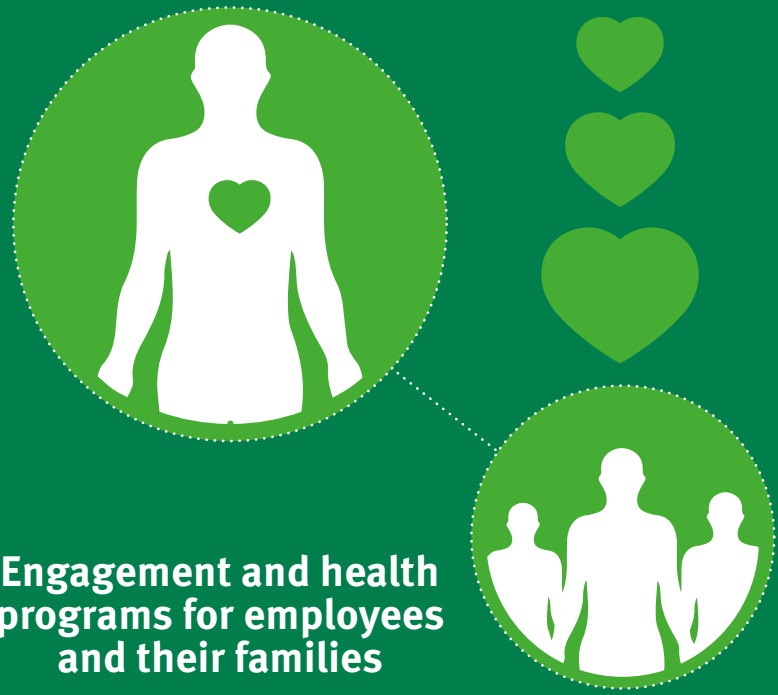
83% of net sales from Eco+ products

New Delft fermenter for environmentally friendly 7-ADCA

Active member of PSCI

Improving social impact and human health

Medical and educational community programs in Mexico and India



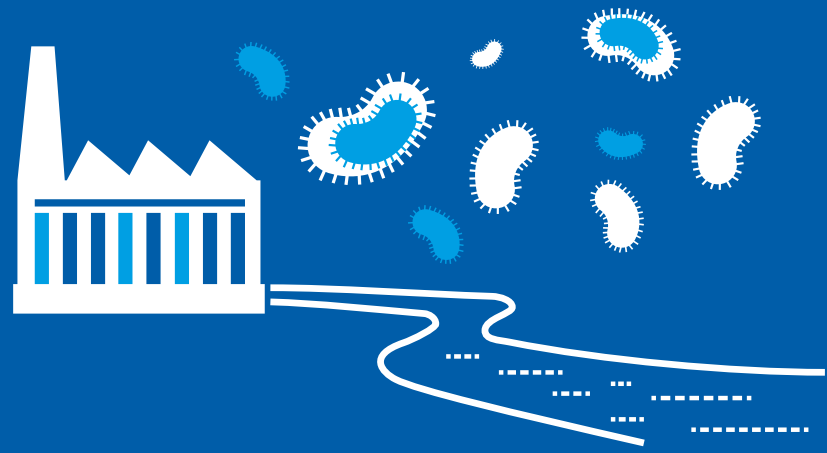
Engagement and health programs for employees and their families

Combatting the further spread of antimicrobial resistance (AMR)

amr INDUSTRY ALLIANCE

Board member of the AMR industry alliance

Multi-stakeholder engagement on responsible antibiotic production



4 **Sustainability Through Excellence in Manufacturing workshops in Asia**

STEM

Hosted AMR event at DCAT week

Centrient Pharmaceuticals Supplier AMR survey

Active participant in National Action Plan development (India)

For its sustainability reporting, Centrient Pharmaceuticals uses an approach inspired by GRI standardized guidelines and performance indicators.

For more information, please visit
www.centrient.com
email: **info@centrient.com** or contact us at one of the addresses below:

Rotterdam (HQ)
sales@centrient.com

Asia Pacific/Middle East/Africa
Gurgaon-122002, India
sales.amea@centrient.com

China
Beijing, P.R. China **sales.china@centrient.com**

Europe/America
Delft, The Netherlands **sales.ea@centrient.com**

Mexico/Latin America
Ramos Arizpe, Mexico **sales.mla@centrient.com**

Drug Products (Finished Dosage Forms)
Delft, The Netherlands **licensing@centrient.com**

Contact information

For questions, feedback or more information, please contact

Alice Beijersbergen, Global Communications
Centrient Pharmaceuticals
Weena 800
3014 DA Rotterdam
The Netherlands
info@centrient.com
www.centrient.com

Produced by Centrient Pharmaceuticals Global Communications

Editor-in-chief and coordinator
Alice Beijersbergen

Editorial team
Milena Ruszkowska,
Geoff Vokes

Copywriting
Baxter Lawley Communications

Graphic design
Annette Toeter

Photos:
Centrient Pharmaceuticals Netherlands BV, Shutterstock and iStock