
Chem Trend
Release Innovation™
2018
Responsibility.
Sustainability Report
a brand of
FREUDENBERG

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LETTER FROM THE CORPORATE STEERING COMMITTEE

Chem-Trend was based on the concepts of sustainability, even before the concepts were collectively known by that term. A trip through our archives revealed that one of our advertisements from 1963 promoted our innovative water-based technology for die casters. Since being founded in 1960, we have always held firm to the belief that sustainability is not merely a corporate mandate, but rather a compass guiding how business should be conducted.

Now a global organization, we deliver value-adding, process chemical specialty solutions around the world. We remain committed to doing business with the highest of ethics and making responsible choices that reflect a long-term perspective. Our approach to sustainability is further reinforced by our parent company, the Freudenberg Group, and its Guiding Principles that include commitments to: providing value for customers; innovation; leadership; encouraging the well-being and development of our people; corporate and personal responsibility; and a long-term orientation with a focus on sustainable business practices and solutions.

We aspire to not only minimize our impact, or footprint, on the environment, but also to leverage our expertise and product technology to maximize our customers' sustainability – which becomes our handprint – through improving their production efficiency, reducing their environmental impact and minimizing their use of harmful chemicals.

In the pages that follow, we share with you our approach to delivering on our commitment to sustainability through our advanced technology, environmentally conscious products and a laser focus on efficiency. We integrate this approach at every level and every location of the company throughout the world.

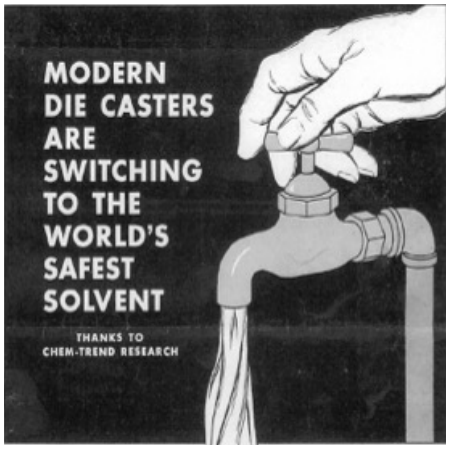
From our inception, our deep-rooted values have been in sync with the same future-focused commitment that is so vital to sustainability. We are proud to carry these beliefs from our heritage through to our tomorrows.

"From our inception, our deep-rooted values have been in sync with the same future-focused commitment that is so vital to sustainability. We are proud to carry these beliefs from our heritage through to our tomorrows."

A HISTORY OF RESPONSIBILITY

01

Sustainability is a natural part of the Chem-Trend philosophy, and it has been since our founding in 1960. This was before the term “sustainability” had even been coined. Throughout our history, we have remained firmly committed to developing technologies that support our customers’ desire for better efficiency and more sustainable manufacturing — all while continuously focusing on the sustainability of our own operations.



Chem-Trend creates the first water-based die lubricant

1963

THE FIRST WATER-BASED DIE LUBRICANT

When we were just getting started in the early 1960s, oil-based lubricants were common practice in high-pressure die casting operations. While these lubricants functioned well enough, they presented serious issues when it came to Health, Safety, and Environmental (HSE) factors. These materials often filled facilities with black soot and smoke, creating major challenges to facility cleanliness and, more importantly, worker health. The residue left behind by these lubricants coated the floors of the facilities, causing slip-and-fall risks. Due to the high temperatures used in some high-pressure casting operations, fire was also a risk due to the levels of oily residue.

Chem-Trend developed the first commercially viable water-based die lubricants.

Chem-Trend saw an opportunity to address these problems by developing the first commercially viable water-based die lubricants — something many had viewed as impossible. Our water-based die lubricants eliminated many of the significant HSE problems found in high-pressure die casting facilities. The approach reduced fire risks, reduced the risks of slips and falls, and reduced health risks by removing the smoke and soot. An added bonus was a more environmentally sound lubricant, replacing oil with water.

SEMI-PERMANENT RELEASE AGENTS

Up to the late 1970s, the traditional process for molding rubber components was to apply a mold release every molding cycle. While this process generally worked, it was extremely inefficient, resulting in high product usage and a need to frequently clean the molding equipment.

Chem-Trend develops its line of semi-permanent release agents, revolutionizing the rubber molding process.

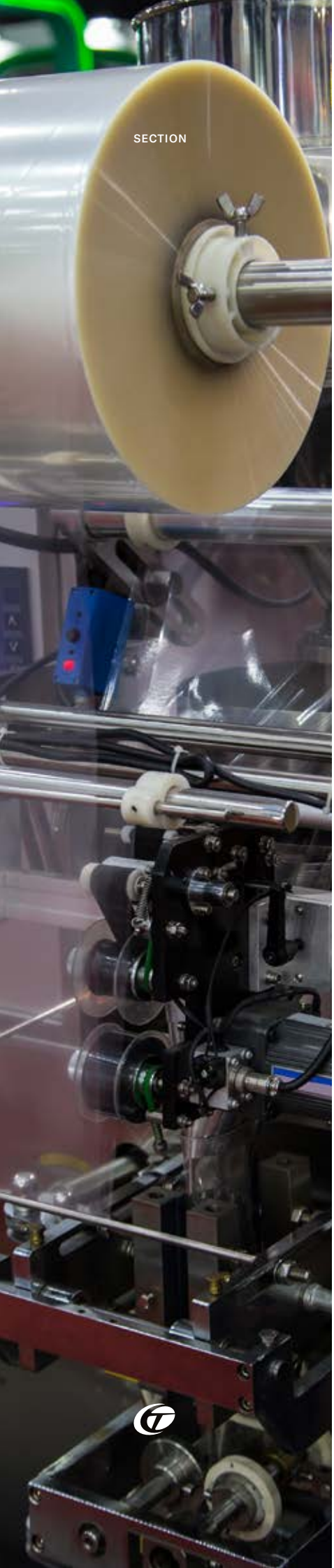
1978

In 1978, we revolutionized the way many rubber parts were molded by developing the first commercially successful line of semi-permanent release agents for rubber molding applications. These products allowed molders to apply the release agent once for multiple cycles. This innovation reduced cycle times and how often molds needed to be cleaned, saving significant time and resources by improving productivity and reducing waste.

HAPs AND VOC-FREE PRODUCTS

HAPs (Hazardous Air Pollutants) and VOCs (Volatile Organic Compounds) are found in solvent-based release agents used in many molding operations. They are especially prevalent when molding within the polyurethane and composites industries. People have known about HAPs for decades, but in recent years, governmental authorities around the world have been taking steps to reduce emissions to improve overall air quality.

Over the years, we have worked to address the problems caused by HAPs and VOCs by deploying a much broader portfolio of water-based release agent products, versus the traditional solvent-based products found in the polyurethane and composites molding segment. We were proud to introduce multiple water-based products for the composites industry, including a full water-based release system (cleaner, primer, sealer, and release agent). Additionally, we have tackled the significant challenge of reducing VOCs in polyurethane molding processes by developing several “hybrid” release agent products that combine both water- and solvent-based technologies. These reduced-VOC hybrid products perform at levels equal to, or better than, traditional solvent-only products, all while being gentler on the environment.



Sustainability is simply a part of who we are. It is part of our culture, manifesting itself in every innovation and in the decisions that we make.

It is in Chem-Trend's DNA to focus on the productivity of our customers. Enhancing their productivity is how we add value. Greater productivity and reduced waste are cornerstones of sustainability, leading to a reduction in energy consumption, a reduction in resource consumption, and a reduced burden on the environment.

A PART OF SOMETHING GREATER

02

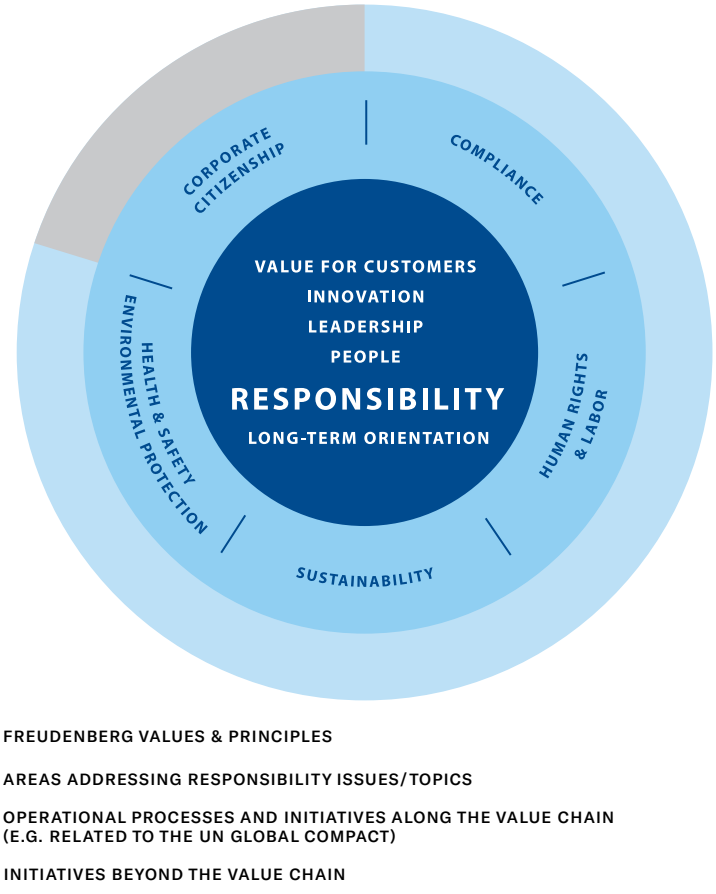
Chem-Trend is a proud member of the Freudenberg Group, a parent company that places significant importance on the principle of Responsibility. As one of our six Guiding Principles, it's a key element in protecting the environment and acting as a responsible corporate citizen.

Sustainability is one of the five addressed areas of the Freudenberg Responsibility Framework:

1. Compliance
2. Standards of Human Rights and Labor
3. Health & Safety, Environmental Protection
4. Sustainability
5. Corporate Citizenship

As part of its commitment to protecting the environment, Freudenberg has been part of the UN Global Compact since 2014.

F-1
Freudenberg Responsibility Framework

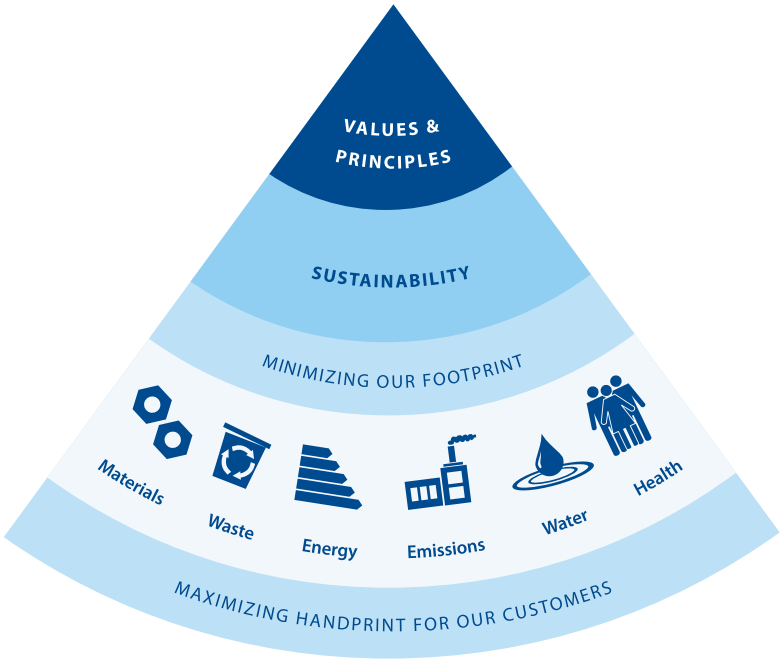


As part of the Freudenberg Group, Chem-Trend is not alone in its very positive and proactive approach to sustainability.

AREAS OF FOCUS

Freudenberg has identified six areas of focus for measuring sustainability: materials, waste, energy, emissions, water, and health. Within these six areas, Freudenberg has identified three specific areas with the greatest potential for improving its operations. These areas – material efficiency, energy efficiency, and CO_2 emissions – are tracked across the group, including here at Chem-Trend.

F-2
Freudenberg Sustainability Target Model



Materials

In our own operations, we continually look for ways to utilize more environmentally responsible materials. In addition, we source materials locally and establish processes to operate near where the end product will be used. We focus on how we can improve our customers' efficiency and processes, reduce their cycle times and waste, and improve HSE aspects of their facilities.

Waste

Our systems center on only producing products in precisely the required quantity and time frame, so as to not create waste. Our products are designed to reduce or eliminate the production of scrap parts while extending the time between necessary cleanings.

Energy

The energy required within our operations is relatively low when compared with other industrial organizations, yet we strive to reduce this level even further through active measures and equipment upgrades. Our customers enjoy reduced energy consumption through the greater efficiencies provided by our products.

Emissions

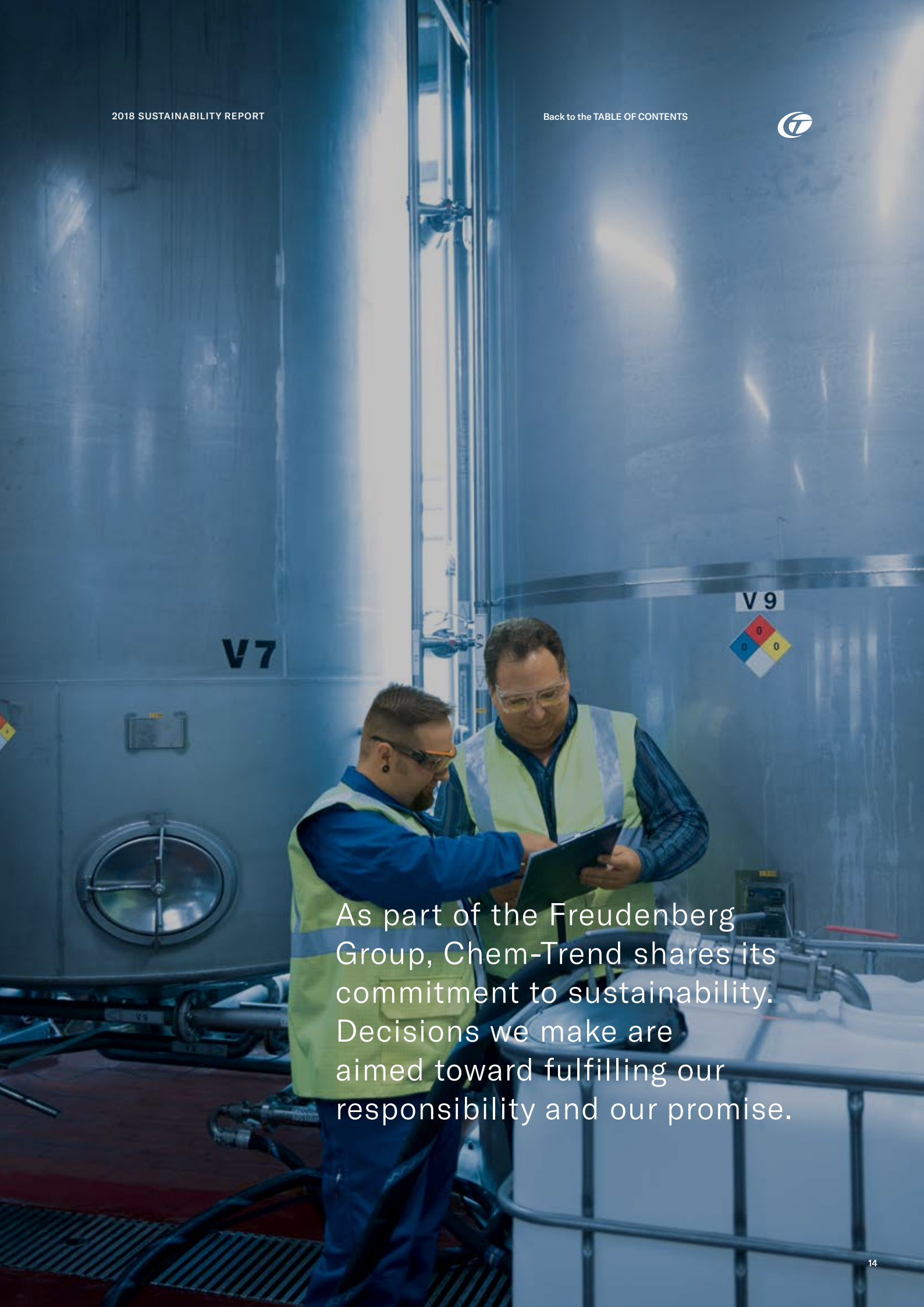
Within our own facilities, and at those of our customers, emissions are reduced through the increased focus on water-based technologies, productivity improvements, and increased use of energy-efficient equipment and processes. This extends to how we source raw materials and supply our products to customers.

Water

In our own facilities, our focus is on reducing water usage and waste water. This is done through thoughtful examination of processes and facilities management. At our customers' facilities, we provide products that require less frequent cleaning operations, potentially further reducing their water consumption.

Health

Our well-ingrained health and safety culture is at the forefront of all our activities, and our initiatives have been recognized repeatedly by various industry groups. Our continued development activities have improved health and safety across industries by providing products that are both safer to use and reduce risks to worker health.



As part of the Freudenberg Group, Chem-Trend shares its commitment to sustainability. Decisions we make are aimed toward fulfilling our responsibility and our promise.

SUSTAINABILITY ACTIONS

03

Over the years, Chem-Trend has done some pretty amazing things to improve our own sustainability actions, as well as those of our customers. Our work is two-fold: to minimize our footprint and maximize our handprint.

WHAT IS FOOTPRINT?

Chem-Trend's footprint relates to the direct impact that our operations have in regard to sustainability.

WHAT IS HANDPRINT?

Chem-Trend's handprint relates to how our products and services help our customers be more sustainable.

Chem-Trend has developed specific areas of focus for improvement based on our particular operations. These areas – emissions, waste, water usage, and recycled materials – are all tracked on an annual basis. KPIs have been established to keep the organization vigilant in its quest to improve.

F-3
Chem-Trend's KPIs
The Dimensions of Sustainability

FOOTPRINT KPIs	2012	2013	2014	2015	2016	2017	2018 - 2020 Target Average
GHG (CO_2) emissions, kilos per 1,000 liters of total production volume	94.9	94.1	100.9	94.7	90.3	89.2	≤ 90
Waste generation as a % of total production volume	5.3	4.8	4.8	4.6	4.3	4.2	≤ 4.0
Water (non-product) usage as a % of total production volume	243	173	151	150	138	109	≤ 99
Amount of material recycled, kilos per 1,000 liters of total production volume	5.6	5.5	8.2	8.9	8.0	8.3	≥ 9.0

MINIMIZING OUR FOOTPRINT

Our footprint relates directly to our operations around the globe: our facilities, our offices, the safety of our people, the raw materials we use, the waste we create, and the logistics we leverage to get materials and supplies to and from our facilities to our customers. In essence, our footprint is how our business activity impacts people and the planet.

At Chem-Trend, we take a very proactive approach to minimizing our sustainability footprint. Our global sustainability team's strong culture of responsibility drives us to continually look for ways to improve our own operations and our effect on the environment.

Caring About Water

We have taken measures in our facilities around the world to help reduce our use of water and discharge of waste water. For example, we have:

- Redesigned landscaping to make use of native species that require less water
- Installed water sensors for irrigation systems
- Installed water-chiller systems to reduce the amount of water required to cool mixing vats
- Implemented rainwater-harvesting systems for watering landscaping
- Utilized a waste water treatment system to reduce waste water

The impact of these efforts has been tremendous:

- A 42% reduction in daily water usage at one facility, saving millions of gallons annually
- An 85% reduction in waste water at one facility, eliminating 55 tons of waste water annually

Reducing Energy Consumption

Chem-Trend continually focuses on sustainability when investing in building new facilities and updating our existing facilities. For example:

- Increased use of LED, T5 fluorescent, and metal halide lighting, along with dimmer switches and automatic motion-sensor on/off switches in both new construction and upgrades to existing facilities
- High-efficiency insulated windows have been used in new construction in Brazil, and old windows have been replaced in facilities in the U.S. with higher UV-rated windows to better regulate building temperature and improve energy usage
- High-speed automatic doors have been installed on large openings in shipping/receiving areas to reduce heat loss
- An increased number of windows and translucent ceiling panels have been included in new construction to make greater use of natural light
- An updated Heating Ventilation Air Conditioning (HVAC) control system was installed in an office area in the U.S., reducing energy consumption

While it is difficult to quantify the effects of many of these actions, there are many indications of their positive effects:

- Changing the lighting systems in a single facility in the U.S. is expected to equate to an annual reduction of 10,000 kWh
- Updating of the HVAC control system in a single facility resulted in a 5% reduction in energy usage

Ways to Minimize our Footprint

There are many ways for us to minimize our footprint across each sustainability dimension, starting with basic things like:

- Promoting more recycling
- Conducting an energy assessment and finding ways to reduce usage
- Continuing to shift toward local sourcing of raw materials and local production
- Finding and using safer materials
- Reducing waste

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FCS-CT Sustainability Strategy
The Sustainability Matrix - Footprint

	FOOTPRINT		
	Sourcing	**Production**	**Transport**
Materials	Raw material and supplier selection	Higher yields, pass rates, and material utilization	Local Sourcing
Waste		Recycle; Reduction of waste and scrap	
Energy		Assessment; Energy use and efficiency	
Emissions	Local sourcing	Reduced VOCs; Reduced emissions	Local Production
Water	Municipal water	Less Consumption; Reduced discharge	
Health	Safer materials, products, and processes	Safer materials, products, and processes	

MAXIMIZING OUR HANDPRINT

Along with the internal, or footprint, KPIs, we are keen to actively enhance the sustainability of our customers, or handprint. To facilitate this, we created our own Sustainability Scorecard, which we use to determine if newly developed products will contribute to overall sustainability goals. This scorecard looks at both angles of the process. It weighs the benefits of enhanced product performance and safety for our customers with the potential environmental impact of our own production operations. If aspects of the new product are not positive, then we will not invest in its development.

Chem-Trend is also keen to make sure it actively enhances the sustainability of its customers, or handprint.

Our handprint is how our work positively affects our customers' HSE efforts, how we can improve their efficiency, reduce their waste, and reduce their emissions. Put simply, it's how we impact the environment through our customers' activity.

Chem-Trend has always been very customer-centric. Addressing our handprint is central to our approach. We continually work toward ways to improve how our products and their usage positively impact our customers' operations, allowing for reductions in their own footprint.

Recently, we achieved a significant positive handprint with a major global automotive supplier. While the initial objective was to find a lower-cost solution for their polyurethane molding process, Chem-Trend was able to meet and exceed this objective, providing them extensive handprint benefits:

- Eliminated 100% of the VOCs from the process

- Reduced the amount of release agent required for the task, thus reducing the environmental impacts of shipping material to the customer
- Extended the time necessary between mold cleanings, making them more efficient, reducing chemicals and waste, and helping them to reduce their own sustainability footprint

A wood composite producer was faced with an environment/housekeeping problem stemming from the application of a release agent. We were able to develop a product that addressed their needs and provided additional handprint benefits:

- Eliminated smoke during production, improving the working environment and diminishing potential negative impacts on worker health
- Reduced release agent overspray and increased product and energy efficiency, thus reducing waste and energy consumption
- Reduced the amount of post-operation sanding necessary, further reducing energy consumption and waste

A composites component producer for the aviation industry was looking for a more time-efficient process for returning molds to service after cleaning. We were able to provide solutions to this challenge, all while expanding handprint benefits:

- Completely eliminated HAPs from the molding process and reduced VOC emissions
- Eliminated oven-curing steps, greatly reducing energy consumption
- Entirely eliminated a specific product used in their process, reducing waste and the transportation of said product
- Increased number of cycles between required mold cleanings, improving efficiency and reducing waste

Ways We Maximize our Handprint

There are many ways for us to maximize our handprint to aid our customers across each of the different sustainability dimensions. We can help them with things like:

- Making product and/or process changes, allowing them to meet regulatory requirements
- Productivity improvements that translate to greater energy efficiency and reduced waste
- Using more environmentally responsible products

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FCS-CT Sustainability Strategy
The Sustainability Matrix - Handprint

	HANDPRINT	
	Use	**End-of-life**
Materials	Compliance with regulations; Application efficiency	Recyclable materials
Waste	Reduced scrap and cleaner molds; Better product utilization	Package recycling; Waste disposal
Energy	Improved productivity	
Emissions	More good parts per hour; Reduced VOCs	
Water	Biodegradable and environmentally responsible products	
Health	Safer products	

THE BOLD ROAD AHEAD

04

At Chem-Trend, we work every day to improve sustainability across all our touchpoints. We continue to enhance our footprint and handprint around the globe.

In our development laboratories, we always seek ways to make our customers more efficient while utilizing increasingly environmentally responsible chemistries and processes. In our own facilities, we look for ways to reduce energy, emissions, and waste while keeping our employees and communities safe and healthy.

Looking forward, we will implement several significant projects to address our own footprint, including:

- Installing solar panels to generate renewable energy
- Expanding the usage of more environmentally responsible chemicals in products
- Continuing to update existing facilities to be more energy efficient
- Reducing waste

Regarding our handprint with customers, we will continue to advance our ability to act as a sustainability enabler through multiple projects, including:

- Introducing more water-based products and reducing industry dependence on solvents
- Creating higher release performance and more durable products
- Utilizing more recyclable packaging
- Developing products that avoid the use of hazardous chemicals

In the coming years, we expect to reduce our own impact on the environment and provide our customers with a greater array of products that will further impact our positive influence on sustainability.

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