Responsible Care

Commitment to operational excellence drives progress

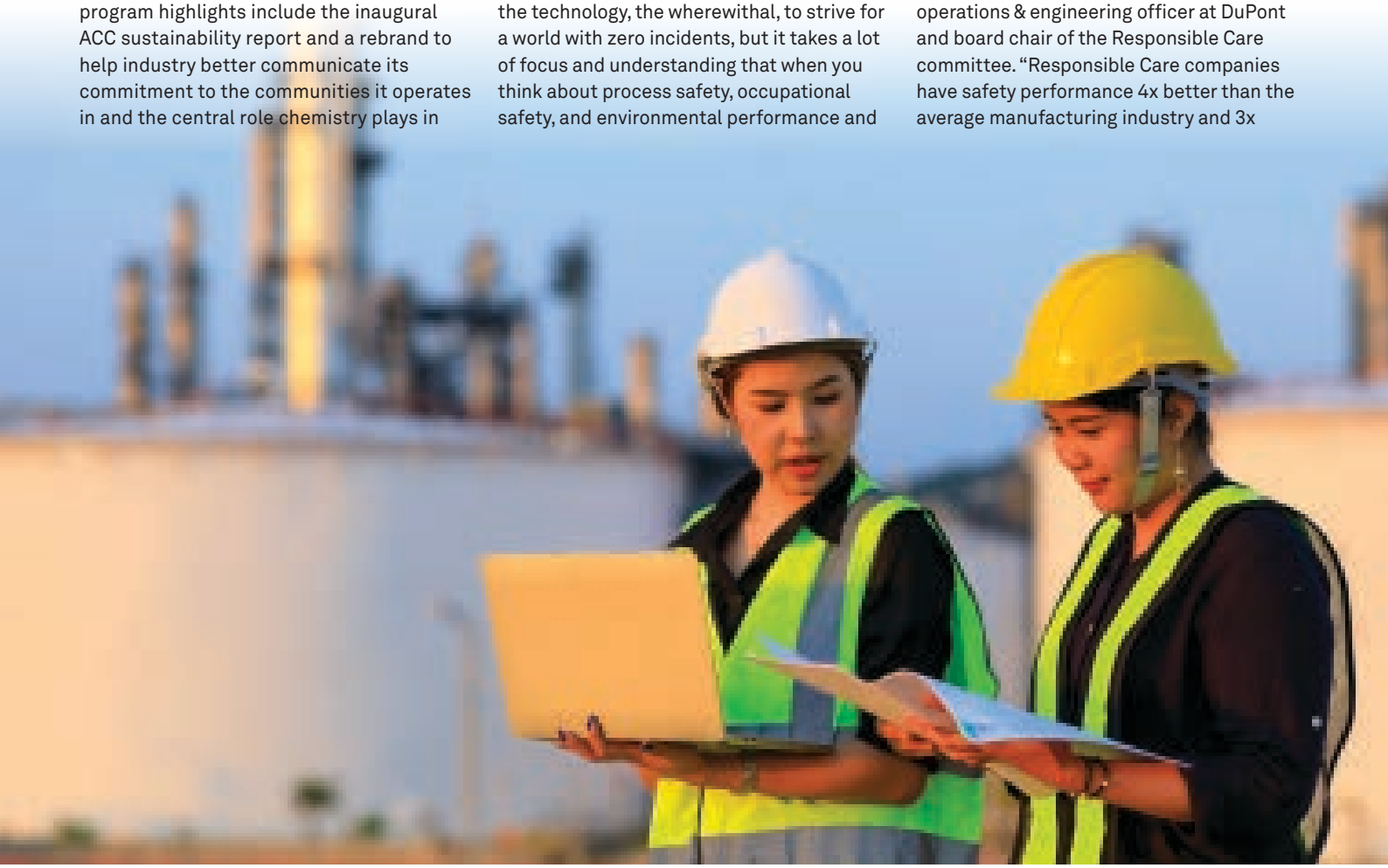
Responsible Care continues to be industry's blueprint for creating and maintaining an operational culture with safety and sustainability at its center. New AI-based tools promise to drive safety performance even higher, while ACC's first sustainability report and a brand refresh will help already-robust community education and engagement.

Rebecca Coons

The chemical industry's relentless focus on safety — a culture fostered and guided by American Chemistry Council's (ACC) signature Responsible Care program — drove a "phenomenal" safety record for 2023 and shows no signs of slowing. In the pursuit of 100% incident-free operations, ACC is leveraging AI tools to help chemical makers eke out further health and safety gains. Other recent program highlights include the inaugural ACC sustainability report and a rebrand to help industry better communicate its commitment to the communities it operates in and the central role chemistry plays in enabling the green economy.

"Responsible Care, at its heart, is informing ownership transparency, commitment and continuous improvement," said Erin Kane, president and CEO of AdvanSix Inc. and chair of ACC's board. "When you run a company in the business of chemistry, you learn pretty quickly that you have to have it as part of your culture. Safety is everyone's job, and by extension, Responsible Care is everyone's job." Kane added that operational excellence is a "forever pursuit ... We have the technology, the wherewithal, to strive for a world with zero incidents, but it takes a lot of focus and understanding that when you think about process safety, occupational safety, and environmental performance and sustainability, they're not independent. They're inextricably linked concepts."

Recent updates to Responsible Care's Process Safety Code include more action-oriented terminology and enhanced clarity for plant operators and auditors, and the program's culture of diligence and "safety being everyone's job" is evident in industry's leading health and safety performance. "Responsible Care companies had our best year ever from a total recordable injury rate perspective," said Daryl Roberts, chief operations & engineering officer at DuPont and board chair of the Responsible Care committee. "Responsible Care companies have safety performance 4x better than the average manufacturing industry and 3x



better than the overall chemical industry, including companies not included in the ACC." Safety improvements were seen across all three company size categories. "ACC is doing a good job of pushing out best-in-class techniques for improvement across the organization, and we're seeing those used across the entire enterprise," he added.

There were also zero contractor or employee fatalities last year, a safety record Roberts described as "phenomenal." Tier 2 process safety events are down 11% over the last two years and Tier 1 events are 19% lower over the same period. There were also zero high-severity events in 2023. "It's clear that we are driving things in the right direction," Roberts said.

Some of these gains can be attributed to a Progressive Achievement Program ACC started three years ago to provide additional resources to member companies that were lagging when it came to improving process safety performance. "Last year's numbers show that 65% of the companies in this program showed improvement over the three years, and over 70% of the companies involved have improved," Roberts added.

Another driver of 2023's safety performance is simply the culture of continuous improvement fostered by the Responsible Care program. "When an industry already has a solid health and safety record, there is a risk that they put things on cruise control, in a sense," said Tara Henriksen, managing director of Responsible Care at ACC. "I'm so pleased to work for an industry that doesn't do that. With Responsible Care, we're always trying to find the next level of success."

Looking ahead, ACC expects AI to emerge as a new driver of health and safety performance gains. Using data in an effective way has already helped ACC and member companies focus on the right areas to drive process safety gains even further, and AI will accelerate these efforts. "We all recognize that those who fail to understand AI and integrate it into their systems will be left behind," Roberts said.

ACC recently launched two new AI-based tools to enhance health and safety performance. The first, called Data Insights, is designed to enhance the use and analysis of environmental, health and safety performance data already reported under Responsible Care. It also brings in large public data sets from organizations like the Occupational Safety and Health Administration and Department of Transportation. "The objective is to provide our members with the ability to, on-demand, analyze these large data sets," Henriksen said. "It really gives operators the ability to dynamically visualize and analyze industry-wide metrics."

Data Insights will allow individual companies to evaluate the risk of events like electrical failures and pipe fatigue using data beyond their own. Or a company might look at its own data to track a certain type of injury, but by looking at data from many sites, can determine if the issue is specific to their operations, Henriksen said. "The tool can also be used to identify common threads between process safety incidences and injuries, possibly revealing an opportunity to introduce an initiative industry-wide to address it."

REBRAND: New tagline and visual cue "next iteration" of Responsible Care program.

The second AI tool, utilizing natural language processing (NLP) technology, aims to support the development and review of standard operating procedures (SOPs) in the industry.

"Written procedures are often complex, being written by engineers," Kane pointed out. "By using AI and natural language processing, we can quickly analyze SOPs with 100-plus steps for clarity." While the tool is in its initial stages of use, Kane said they expect it will continue to learn and grow as it is utilized by industry.

Henriksen doesn't think NLP will replace a human reviewer anytime soon, but by evaluating SOPs against a set of given criteria, it is able to flag where SOP language is unclear. "You don't want any ambiguity with SOPs, but some are 500 pages long," making it difficult for human reviewers to identify those most in need of attention in a timely manner. NLP can also help create efficiencies by condensing SOPs down to concise, actionable steps. "Data shows that inaccurate or unclear SOPs are a contributing cause to process safety incidences," she adds. "We anticipate it will have a significant impact on the chemical industry's process safety performance."

The future benefits of AI to process safety will also be amplified by new ways to collect data. For example, wearable devices built into personal protective equipment could provide exposure data in real time. DuPont is also putting devices on rotating equipment to update maintenance systems and send data to the cloud, Roberts said. "Third parties are looking at that data and using it to predict failures. Being able to predict when a piece of equipment fails prevents releases and injury and helps control costs."

Responsible rebrand

Another update to the Responsible Care program is a light rebrand, which ACC hopes will clarify its mission, as the program is set to become more widely leveraged in ACC's overall chemical industry reputation efforts.

"We wanted to make sure the brand was fit for purpose and ready for the mass market," said Mitchell Toomey, ACC's vice president of sustainability and Responsible Care. The rebrand includes a modernized graphic as a visual cue that the program is "maturing and on its next iteration."

One of the strategy shifts that spurred the rebrand came from stakeholder feedback that underscored the importance of community education and engagement. "They told us they were more interested in hearing about what we're doing than what we're committed to doing," Roberts said. "So, we're going out into the communities and talking about the actions we are taking to make their communities safer, and we are engaged in local schools, elementary through high school, supporting STEM initiatives."

ACC also selected a new tagline for the program: Driving Safety and Sustainability. "It's ironic that the original tagline, 'Our Commitment to Sustainability,' didn't include the word 'safety,' the original mandate of Responsible Care," Toomey said. "We figured the time was right to bring them together. "

ACC formally brought safety and sustainability together in Responsible Care when it added several mandatory sustainability metrics to the program two years ago. The metrics are not an exhaustive picture of industry's wide-ranging sustainability programs, but rather cover five critical areas — climate, water, air, sustainable chemistry and circularity — identified by industry input. Earlier this year, ACC published its first sustainability report using this and historically collected

Responsible Care data. "[The report] helps us demonstrate that the Responsible Care system is the legitimate repository for our sustainability metrics alongside the other safety metrics that we have been providing for some time," Henriksen said.

Toomey said the report also ensures there is a document that shows the state of industry's progress. "I think it surprises a lot of folks when they realize how much is actually happening. The dramatic operational improvements and the investments our members have been making are showing up in the data," Toomey said.

Highlights from the report include an 8% drop in greenhouse gas intensity, 43% drop in sulfur oxide emissions and 18% drop in nitrogen oxide emissions by Responsible Care companies since 2017.

"I feel like we're in a bit of a midpoint in sustainability, with efforts moving from design to action," Toomey added. "We've got high capital investment projects that are delivered and operational. We're not at the end of the road, and we can't get to net-zero immediately. But we're no longer in the speculation phase; we're in the build phase."

The sustainability report and Responsible Care rebranding support ACC's community education and engagement efforts. Member companies operate about 225 official community advisory panels and many more informal groups, with a goal of ensuring that the communities they operate in understand how rigorous safety procedures are and how deep industry's sustainability commitment is under Responsible Care.

ACC hopes such engagement can also illustrate the value chemistry brings to the table for the green economy, Toomey said. "We are a vital, mission-critical supplier of chemistries for sustainable technologies such as batteries and wind turbines. We want to make sure we are visible and the public knows what we do and that we do it safely."

Kane believes a company's own workforce is also a powerful tool for engagement and advocacy for the industry in that regard. "They can be our greatest ambassadors—they live in the same communities, breathe the same air, and drink the same water. It can't just be the company president telling the story."

Awareness of the vital role chemistry plays in green products can also help industry grapple with talent shortages by attracting younger generations that prioritize careers that create positive change in the world.

"Our industry, like many other STEM industries, is desperate for a pipeline of talent in this country," Toomey said. In 2020, ACC launched the Future of STEM Scholars Initiative in partnership with the American Institute of Chemical Engineers, Chemours and the HBCU Week Foundation, a program to provide scholarships to students pursuing STEM degrees at historically black colleges and universities (HBCUs). "We need this amazing generation of students, who have a really clear sense of purpose and motivation, to be interested in chemistry. We have to show them the vital role we're playing in sustainability." ■