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The Dow Chemical Company: The Inseparability of Safety and Business Success—Epilogue 2005–2012

Environmental Health & Safety: The Results

It was January 2012, and The Dow Chemical Company, a \$60 billion multinational corporation, was seven years into its 2015 Sustainability Goals program. This new set of 10-year goals was not intended to duplicate the success of Dow's 2005 environmental, health, and safety (EH&S) goals, but to surpass them by addressing an even broader, more significant set of world challenges.

The 2015 Sustainability Goals program would provide a framework for Dow to demonstrate good corporate citizenship through the cultivation of stronger, safer communities and by offering solutions that would make lasting, positive improvements in the world. At the same time, it would enable leadership to sharply focus on a "Drive to Zero" effort to continuously drive down injury and illness rates (IIR) and loss of primary containment (LOPC) incidents to the ultimate goal of zero.

Andrew Liveris, CEO of Dow, reflected on the company's progress in both safety and sustainability, and on the words he delivered in a May 2006 Washington, DC, speech, during which he launched the 2015 Sustainability Goals:

"Ten years ago, we set important goals for improving our environment, health, and safety performance. We have met most of those goals, exceeded some, and have come very close in most of the others. As a result, our workplaces are safer, our facilities are cleaner, our energy use is more efficient, and our corporate governance is stronger and more vigilant. Indeed, we have become a recognized world leader in these areas and I am very proud of every Dow employee for his or her contributions toward that achievement. But, for all the work and dedication that went in to progress toward these goals, the goals themselves were, fundamentally, about us, about Dow, about putting our own house in better order. To be sure, it's a job that never ends. Sustainability begins at home. And we will always have more work to do to make our company better. It was the right path for us in 1996, and it's the right path to continue down over the next 10 years."

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This epilogue was developed under the supervision of John Dizor, Paul Adams, Ph.D., and Marc Robinson, Ph.D., by WDI/GlobaLens Research Associate Mary Lowe. Mr. Dizor is Associate Director of Personal Safety and Industrial Hygiene Expertise at The Dow Chemical Company. Dr. Adams is Lecturer of Environmental Health Sciences in the College of Engineering at the University of Michigan. Dr. Robinson is Director of WDI/GlobaLens. Acknowledgments and thanks go to Andrew N. Liveris, Chairman and Chief Executive Officer of The Dow Chemical Company, as well as others listed on page 16 of the case.



Dow set into place many EH&S best practices internationally across industry with its 2005 goals. As ambitious as the goals were, the results were even more impressive:

- Injury Illness Rate (IIR) (including contractor incidents) were reduced by 84%.
- Loss of Primary Containment (LOPC) incidents and process safety incidents decreased by more than 70%.
- Emissions of priority chemicals went down by 84%.
- Solid waste generation was reduced by 1.6 billion pounds—enough to fill 415 football fields one meter deep.
- Water usage went down by 183 billion gallons or enough to supply water to 170,000 US homes for one year.
- Energy intensity decreased by 21%, saving 900 trillion BTUs of energy—enough to power 8 million US households for a year.

The impacts of the 2005 EH&S goals were seen not just at the worker and environmental levels. Staying ahead of the global regulatory compliance curve directly related to the company's bottom line. The improvements pleased investors, generating a return on investment (ROI) of \$5 billion plus \$950 million in savings. Dow could have simply maintained the gains it achieved with its 2005 plan and reinvested its EH&S ROI in core business or capital intensive activities, but it continued to set the standard across industry with its 2015 Sustainability Goals program. The company invested the ROI and savings incurred from the 2005 plan into two key areas:

- Acquisitions that would allow Dow to expand its product portfolio, and
- Activities that would continue to steer the company along its path as an EH&S leader.

The 2015 Sustainability Goals

When Liveris launched the 2015 goals in his Washington speech, he drove a new stake in the ground. The 2005 plan had already set Dow apart in the field of EH&S performance, but the 2015 goals were truly next generation, setting a new standard for how companies addressed EH&S and sustainability. Dow's 2015 goals captured the gains the company achieved with the 2005 goals and reflected new commitments in the following areas:

- Local protection of human health and the environment
- Sustainable chemistry
- Breakthroughs to world challenges
- Product safety leadership
- Contributing to community success
- Energy efficiency and conservation
- Addressing climate change

The new goals went beyond traditional EH&S metrics to address some of the world's most difficult challenges, such as climate change and energy efficiency. They also reflected a deep-seated commitment to sustainable solutions, product responsibility, community, and the health, wellness, and safety of employees on and off the job. Below are a few examples of the 2015 goals; details can be found on www.Dow.com.

Local Protection of Human Health and the Environment

Dow's 2015 goal for local protection of human health and the environment was to achieve an average of 75% improvement in key EH&S indicators compared to the 2005 baseline. The component goals included:

- **IIR:** Achieve a rate of 0.12 per 200,000 hours of work, including Dow employee as well as contractor injuries.
- **Severity rate:** Reduce the injury severity rate by 75%. (The severity rate is a measure similar to the injury and illness rate, but weighs incidents by the severity of the injury to focus injury and illness prevention efforts on minimizing the impacts of injuries more than the number of injuries.)
- **Severe motor vehicle accident (MVA) rate:** Reduce the rate of MVAs causing or having high potential to cause injuries to 0.28 incidents per million miles driven.
- **LOPC:** Reduce LOPC incidents (leaks, breaks, and spills) to fewer than 130 incidents at all sites.
- **Transportation incidents:** Decrease the number of hazardous material transportation LOPCs by 75% and eliminate highly hazardous material releases (toxic inhalation hazard and flammable gas).
- **Process safety incidents:** Reduce process safety incidents by 75% and the severity rate by 95% at all sites, according to the 2005 baseline.
- **Environmental releases:** Decrease companywide emissions of volatile organic compounds by 30%, nitrogen oxide compounds by 30%, and priority compounds by 30%. In addition, reuse 300 million pounds of byproducts instead of disposing as waste.

Sustainable Chemistry

Sustainable chemistry allowed Dow to use resources more efficiently, minimize its footprint, provide value to customers and stakeholders, deliver solutions for customer needs, and enhance the quality of life for current and future generations. Dow's goal in this area was to increase the percentage of sales to 10% for products that were produced with sustainable chemistry methods.

Breakthroughs to World Challenges

As part of Dow's commitment to the sustainability of the communities in which it operated around the globe, Dow put into place its Breakthroughs to World Challenges goal. The goal was to achieve at least three breakthroughs that would improve the world's ability to provide adequate food and water supplies, decent housing, energy efficiencies, or improved health and safety for the world's population. The goal was heavily influenced by the United Nations' Millennium Development Goals.

The Results

Dow was just seven years into its new EH&S plan, but its achievements under the 2015 plan were shaping up to be just as impressive as those made under the first set of goals. For example:

- Dow set a 2015 target to reduce its IIR by 75% compared to 2005. The progress made in reducing the company's IIR since 1994 had prevented more than 24,000 events involving Dow employees and its contractors.
- The 2015 target was to drive the IIR to no more than 0.12 incidents per 200,000 hours. The IIR in 2011 was 0.30 per 200,000 hours, representing a 42% reduction.
- The 2011 severe MVA rate of 0.17 per million miles driven was already less than the 2015 goal of 0.28 per million miles driven.
- The number of process safety incidents in 2011 was 74% lower, compared to a reduction target of 75%.

- Dow’s goal was to reduce LOPC incidents 90% by 2015, and by 2011 there had been an 80% reduction.

Pursuit of the company’s 2005 and 2015 goals resulted in Dow having among the lowest IIR in the chemical industry. Dow’s 2011 IIR of 0.30 was substantially lower than the chemical industry average of 2.4, and much lower than the average rate for manufacturing companies of 4.4. Liveris and his executive team believed that Dow’s quest to continuously improve EH&S performance, as reflected in the 2015 goals, would ensure that the company remained among the EH&S leaders in the chemical industry.

Facilities, Mergers and Acquisitions

Partly due to the ROI and savings generated from the 2005 EH&S goals, Dow was able to pursue a number of acquisitions to expand its product portfolio and grow its international presence. EH&S remained an important consideration in any decision to acquire a new plant or business. As part of due diligence, Dow would identify issues in areas such as IIR, environmental emissions, and environmental liabilities.

After deal closure, very detailed implementation programs to enhance EH&S were applied to all acquisitions and joint ventures under Dow operating control. Capital improvements necessary for regulatory requirements or significant process safety concerns received first priority in funding decisions. Safety was always the highest priority. This was frequently articulated as “Safety First, Pounds Second” within the company. During the annual capital authorization process, improvements to resolve EH&S issues had the highest priority for capital allocation.

An example of a business decision that was driven by EH&S was the shutting down of a key plant to enable the investigation of a process safety incident. Despite customer concerns and the declaration of “force majeure” in a tight supply market, Dow’s leaders kept the plant shut until hazard mitigation was completed.

Improvements in EH&S Performance of Acquired Companies

The effectiveness of Dow’s EH&S processes was clearly demonstrated by improvements in the EH&S performance of companies acquired by Dow. Once Dow’s work processes were implemented at acquired facilities and sites, Dow consistently drove the IIR to record low levels, while improving overall environmental performance. For example, the Dow Wolff Cellulosics business acquired two sites in Germany in July 2007. Using existing work processes, the plants had 21 injuries and 22 incidents involving LOPCs in 2007. Following the implementation of Dow EH&S processes, the sites had seven injuries and five LOPCs in 2008 and 2009 combined—a reduction of more than 80%. Similar performance improvements were seen at the Hyperlast business site in Birch Vale, UK, and the Epoxy Systems business following their acquisitions by Dow in late 2007. Neither of these acquisitions had a single reportable injury in 2009.

In April 2009, Dow acquired the Rohm and Haas chemical company. Following acquisition, the Rohm and Haas plants had the best safety performance in their history, and the 2010 IIR dropped 44% from the 2008 rate to a record low of 0.41 per 200,000 hours worked.

External Partnerships and Megatrends

In January 2011, Dow and The Nature Conservancy—a non-profit organization based in Arlington, Virginia, that works around the world to protect ecologically important lands and waters—announced a

breakthrough collaboration to help Dow and the business community to recognize, value, and incorporate nature into global business goals, decisions, and strategies.

By finding ways for companies to account for the impact of nature related services to their bottom line, this collaboration would deliver new solutions at the intersection of business and conservation. Tools, models, summaries of lessons learned, and results would be shared publicly and via peer review for other companies, scientists, and interested parties to test and apply.

Over the course of five years, Dow and The Nature Conservancy would work together to implement and refine ecosystem services and biodiversity assessment models at three Dow sites around the globe. These sites would serve as “living laboratories” for developing, testing, and implementing scientific and economic methods that could be used by Dow and other companies to improve business practices through conservation. Dow leaders reasoned that as more companies began to understand that these methods simply made good business sense, the lessons would be applied across industry.

Dow EH&S leaders became increasingly aware of the pressure on the planet created by an expanding global population characterized by businesses and communities that consume resources faster than they can be replenished. In an effort to address these challenges, and accelerate sustainable development, Dow identified four megatrends (Energy, Agriculture, Infrastructure & Transportation, and Consumer & Lifestyle) to serve as the focus for a market driven strategy. Dow then aligned its research and technology expertise to innovate sustainable solutions that addressed these megatrends. To communicate how the company delivered value and reason for optimism, Dow launched its “Solutionism” campaign in 2012. This campaign reflected the power of chemistry, the spirit of Dow people, and the belief that, together, science and humanity can solve anything.

Conclusion

Liveris and his executive team continued to weave safety into the fabric of everything the Dow organization did. As leaders, they set the tone from the top down by reinforcing “safety first” in every employee communication. For example:

- In Liveris’ internal blog “Access Andrew,” he often discussed business and safety issues, actively soliciting employees’ feedback on EH&S.
- Leaders always began internal meetings with a “safety moment” in which they shared and discussed safety stories or topics. All employees were expected to do the same.
- Leaders shared updates on Dow’s progress regarding the 2015 goals. The goals were published quarterly, both internally and externally, to highlight EH&S successes as well as areas requiring improvement.
- The Dow World News—a global quarterly broadcast—highlighted EH&S action and progress.

According to David Kepler, chief sustainability officer, chief information officer, and business services and executive vice president, the visible support of executive leadership is fundamental to success.

“For employees to believe that EH&S is a top priority, it must be embedded in our values, our strategy, and in our everyday communications,” he said. “This is ultimately the only way to create a strong culture of safety and reinforce the desired behaviors—to show that we truly care.”

EH&S improvements continued to pay off for Dow. The company realized more than \$4 billion in additional savings from reductions in energy use, wastewater and chemical emissions, and an additional \$100 million from reductions in injuries, LOPCs, and process safety incidents.

Projects to reduce and reuse waste in new and innovative ways returned a net present value of more than \$2 billion per year to the company. The improvements were especially critical to the company's bottom line during the 2008 financial crisis. The tangible benefits included reductions in workers compensation premiums, which fell by 75% between 2005 and 2009. The ROI, savings, and process improvements allowed Dow to pursue merger and acquisition activity in new ways to help achieve EH&S goals and improve the organization's financial position.

Working toward meeting or exceeding the 2015 goals also allowed Dow to continue to build trust-based relationships in the communities in which it operated around the world, cultivating relationships with business leaders, regulators, customers, and other stakeholders based on a strong business commitment to sustainable environments and the health and safety of all workers. Despite ongoing progress, Liveris repeatedly indicated that the company will never be done with its commitments to Drive to Zero and sustainability.

"The 2015 Sustainability Goals are truly a game changer, helping Dow make a positive difference in the lives of people everywhere, while achieving our vision to become the most respected chemical company in the world," Liveris said. "This means staying vigilant and focused so that we not only sustain the gains, but continue to improve our performance in ways that benefit Dow, our employees, our shareholders, and the world."

Endnotes

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Dow (NYSE: DOW) combines the power of science and technology to passionately innovate what is essential to human progress. The Company connects chemistry and innovation with the principles of sustainability to help address many of the world's most challenging problems such as the need for clean water, renewable energy generation and conservation, and increasing agricultural productivity. Dow's diversified industry-leading portfolio of specialty chemical, advanced materials, agrosociences and plastics businesses delivers a broad range of technology-based products and solutions to customers in approximately 160 countries and in high growth sectors such as electronics, water, energy, coatings and agriculture. In 2012, Dow had annual sales of \$57 billion and employed approximately 54,000 people worldwide. The Company's more than 5,000 products are manufactured at 188 sites in 36 countries across the globe. References to "Dow" or the "Company" mean The Dow Chemical Company and its consolidated subsidiaries unless otherwise expressly noted. More information about Dow can be found at www.dow.com.



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