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The Dow Chemical Company: The Inseparability of Safety and Business Success

If you can't do it better, why do it?
— Herbert H. Dow

It was a crisp, cold day in January 2005 at a Midland, Michigan, Dow Chemical plant. Lawrence Washington, Jr., vice president of sustainability for The Dow Chemical Company, and Andrew Liveris, Dow CEO, surveyed the employees as they worked amid rows of state-of-the art machinery. Washington nodded and smiled at an employee issuing a safe work permit to a machine operator and looked to Liveris, who signaled his approval as well. After working for Dow for more than 30 years, Washington felt the impact of the company's far-reaching environmental, health, and safety (EH&S) goals for 2005. Liveris, who had been with Dow for approximately 30 years, also felt the significance. The two Dow executives knew that it was those 2005 EH&S goals, and associated EH&S processes and achievements, that continued to protect employees and their communities at Dow plants around the world.

In 2010, The Dow Chemical Company was awarded the National Safety Council's Robert W. Campbell Award. The award, underwritten by ExxonMobil Foundation, recognizes organizations that uphold Environmental, Health, and Safety (EH&S) as a key business value and links measurable achievement in EH&S performance to productivity and profitability.

This case study was developed for the Robert W. Campbell Award case study series which aims to educate and share best EH&S practices with the leaders of today and tomorrow.

ROBERT W. CAMPBELL AWARD

NATIONAL SAFETY COUNCIL

The decision in 1995 to develop the 2005 EH&S goals was monumental. Although at the time it was difficult to envision the goals becoming reality, Dow drastically improved its EH&S performance by integrating safety and sustainability into the very fabric of the organization, attaining nearly all of the goals it had set in 1995. The initiative not only contributed billions to Dow's bottom line, but also improved

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GlobaLens

employee morale, enhanced the company's industry standing, and assisted Dow in attracting and retaining top talent around the globe.

Senior Dow executives were happy with the progress the company had made, but were now looking ahead. They were preparing to craft a new plan that would drive the organization's EH&S policies and processes for yet another 10-year period. This triggered the question: How could Dow continue to raise the standard?

Liveris tasked Washington with drafting the next generation of EH&S goals, advising him that he and other executives wanted a new set of goals, but were not sure the same approach would be satisfactory. Firm believers in environmental performance and safety, they knew that:

- The EH&S goals were not only "the right thing to do," but also helped improve the bottom line of the company. A cost-benefit analysis of the 2005 goals showed that $1 billion invested in improvements to reduce energy use, wastewater, and chemical emissions resulted in an overall value to the company of more than $5 billion. Furthermore, the Total Business Cost Assessment of improvements to process safety, personal safety, environmental releases, and transportation incidents revealed an additional $950 million in savings.
- Dow had clearly demonstrated that setting aggressive goals could make a difference in EH&S performance and improve the company's bottom line. Setting a similar yet more expansive set of 2015 goals could continue to provide returns to the company's triple bottom line—people, planet, and profit.
- Dow leadership was feeling external pressure from the communities in which it operated, shareholders, industry peers, government regulators, and the company's own Corporate Environmental Advisory Council to implement a plan that was even bolder than the first.
- The new plan would have to reinforce Dow's commitment to the health and safety of its workers and the environmental sustainability of communities it operated in around the globe, while appealing to investors. It would have to be more specifically linked to the company's strategy and not stop at the fence line, but aspire to make a positive difference in the world.

Status quo was not an option. Liveris asked Washington and his team to provide a proposal to senior management that would set a new standard.

Washington began his research by first reviewing the initial 2005 EH&S goals. He wanted to delve deeper into the history of the first 10-year plan to understand at a detailed level how Dow became an industry leader in EH&S. He knew that management would be eager to implement a plan that added real and lasting improvements across the organization. The questions were:

1. What types of improvements and what level of progress would the company pursue with the new plan?
2. How could Dow generate goals that would continue to contribute to the company's bottom line?

The Dow Chemical Company[1]

Herbert H. Dow founded The Dow Chemical Company in 1890 in Midland, Michigan. With a motto of, "If you can't do it better, why do it?" and a spirit of innovation, Dow began rearranging atoms and molecules to create the chemicals, materials, and technologies that would help shape the future. More than 100 years later, Dow's corporate vision had become "to be the most profitable and respected chemical

company in the world." The company aimed to achieve this vision by integrating its technical expertise in science and technology with Dow's cultural values of safety, product stewardship, and environmental performance. By 2005, Dow had 42,000 employees worldwide, and manufactured more than 5,000 products at 156 manufacturing sites in 37 countries. Dow had become a $46 billion multinational corporation with core global businesses producing:[2]

- Basic and performance plastics
- Basic and performance chemicals
- Agro-science products
- Hydrocarbons and energy

Maintaining the health and safety of its workers and reducing its environmental footprint had always been of paramount importance to Dow. Executive leadership drove the company's EH&S culture under a basic guiding philosophy: If employees and the communities in which it operated were healthy and prosperous, then Dow would be profitable.

Environment, Health, and Safety at Dow

Dow's EH&S function was founded on a management system that aimed to prevent all incidents of worker injury and mitigate environmental impact. Dow's focus on achieving excellence in EH&S took time, commitment and resources, but the organizational benefits of meeting the 2005 targets were pivotal across the industry. Advancements for Dow included organizational flexibility, risk reduction, sustained value, and a global reputation as a good corporate citizen. The benefits for stakeholders across companies and industries included a library of best practices that would be studied and replicated to enhance EH&S for workers, products, and communities around the globe.

Benefits of Excelling at EH&S[3]

Two of the benefits of Dow's EH&S performance improvements—corporate social responsibility (CSR) and business flexibility—were qualitative. The CSR commitment fulfilled the company's obligation to protect internal stakeholders and enhance external stakeholder relationships. The 10-year plan ensured the health and safety of employees, while improving customer and supplier relationships, and safeguarding the sustainability of the communities in which Dow operated.

Dow's CSR commitment also generated increased business flexibility for the organization. Once Dow earned the trust of all stakeholders—shareholders, customers, business-to-business chains, governments, non-governmental organizations, industry regulatory bodies, local communities, and the general public—it had the capability to grow more profitably. Business flexibility meant lower interest rates to finance capital intensive projects, acquisition of high performance talent, obtaining tax breaks and government approvals for new facilities more quickly, and enabling managers to operate from a position of innovation rather than incident response.

EH&S excellence elevated risk mitigation to a new level, including major reductions in the areas of injury, property damage, business interruptions, market share loss due to safety related events, accident investigation, inspection, litigation, and regulatory fines. Research had demonstrated the impacts that improved EH&S performance could have for US companies:

- The most disabling work related injuries cost US companies $53 billion in 2008.
- US businesses were spending approximately $170 million a year on occupational injuries and illnesses.
- Workplaces that established safety and health management systems could reduce their costs by as much as 20%-40%.[4]

Improvements in safety and risk reduction were value-added processes that Dow could sustain over the long term. Achieving the 2005 EH&S goals enabled the company to deliver higher quality products at a lower cost. This value-added component of the EH&S plan was especially important to investors scrutinizing processes that added to the company's bottom line.

Strong EH&S performance was also needed for due diligence processes required by the US Securities and Exchange Commission related to mergers and acquisitions, initial public offerings, and selling off a division or company. Due diligence highlights for investors the underperforming divisions within a company and lagging EH&S programs can contribute to such underperformance. As a result of poor process safety standards, for example, a company may sustain more safety related incidents, thereby lowering the perceived value of the company, and the overall financial value investors attach to the company.

Dow Makes a Decision

In the mid-1990s, the concepts of sustainability and the triple bottom line[i] of people, planet, and profit were starting to become known, but there was no common standard of measurement for the social or environmental dimensions of that bottom line. Although Dow was an industry leader in safety, it wanted more than incremental change—it wanted to achieve monumental change that would be visible externally.

To ensure success, Dow's first step was to select a guiding philosophy for its 2005 EH&S goals. Company leadership chose to create a culture predicated on environment, health, and safety.

"Our leaders constantly emphasize: 'Safety First, Pounds Second.' So, when tough decisions need to be made, our leaders know that the safety of our communities and our employees is of the utmost priority—no exceptions,"[5] Liveris said, indicating that the goals and the supporting operating disciplines would fall into place.

Senior Dow executives could have chosen to create goals that were practical and easy to implement. Instead, they chose breakthrough goals that would challenge employee imagination and capabilities, revolutionize the way the organization addressed EH&S performance, and make Dow's EH&S program a model for industry best practices. Soon, they had crafted a set of goals that were based on what was feasible, with the knowledge that Dow's management systems and attitude would need to change significantly to reach the goals.

In 1996, Dow publicly committed to a comprehensive set of 2005 EH&S goals, a 10-year commitment to aggressively improve performance across key EH&S metrics (see **Figure 1**). These metrics included injuries and illnesses, loss of primary containment (LOPC) incidents (such as leaks, breaks, and spills), transportation incidents, process safety incidents (fires, explosions, and significant chemical releases), motor vehicle incidents, and emissions of priority compounds and other chemicals,[ii] among other metrics.

i An accounting metric established by the United Nations in 2007 that quantifies a company's ecological and social performance in addition to its financial performance.

ii Other chemicals could include carbon monoxide, carbon dioxide, nitrogen oxide, sulfur oxide, particulates, and volatile organic compounds.

Figure 1
Dow's 2005 EH&S Goals

Prevent Environment, Health & Safety Incidents

To value—above all things—the safety of our people and our communities; to continuously improve Dow's performance to protect the environment, health and safety of our workforce, neighbors and the public; to work with our distributors, customers, and suppliers to continuously improve the way we and they handle, transport, and use our products. Significantly improve Dow's EH&S performance by reducing:

- Injuries and illness per 200,000 work hours by 90%
- Loss of primary containment incidents (leaks, breaks, and spills) by 90%
- Transportation incidents per 10,000 shipments by 90%
- Process safety incidents (fires, explosions, and significant chemical releases) by 90%
- Motor vehicle incidents per 1 million miles by 50%

Increase Resource Productivity

To continuously enhance resource productivity to reduce risk, minimize Dow's impact on the environment and health and increase global competitiveness through greater efficiency; to emphasize pollution prevention in our processes; to transfer and use the best available technology throughout the Dow world to build the most environmentally sound and safe facilities. Further reduce air and water emissions for global operations:

- Priority compounds by 75%
- Chemical emissions by 50%

Priority compounds include persistent, toxic and bioaccumulative (PTB) compounds, known human carcinogens, selected ozone depleting substances, and high-volume toxic compounds. Related goals include:

- Reduce dioxin emissions by 90 percent by 2005
- Reduce the amount of waste and wastewater generated per pound of production by 50%
- Reduce energy use per pound of production by 20%

Business Accountability

Our eight global business groups are directly accountable for their own EH&S performance, in addition to profit and loss. In fact, many businesses tie a portion of their variable pay directly to the achievement of EH&S goals. By hardwiring EH&S into the business, we are spreading ownership and accountability into the hands of every Dow employee.

Source: "The Inseparability of Safety and Business Success at The Dow Chemical Company." National Safety Council's Robert W. Campbell Award.

These goals would test Dow's organizational strength and require the commitment of all employees, from front-line staff to executive management. As with most stretch goal situations, more than one employee (and leader) called the goals ridiculous. Rather than spending valuable resources pursuing objectives the company would never achieve, these employees said, Dow should invest in core business activities and fixed costs. Nevertheless, Dow committed to pursuing the EH&S 2005 plan.

"Raising the bar is never easy and some push back is always expected when you deviate from the norm and out of the comfort zone," Liveris said. "It also drives innovation and inspiration, though, and we knew our people had the talent and the passion to make this happen. They rose to the challenge."

For a company of its size, it was an open question how Dow could tackle such an audacious challenge and display its progress publicly. One senior executive explained, "The 2005 goals changed Dow's culture and set a standard for the rest of the industry forever." Safety had always been a core cultural attribute at Dow, but the following 10 years brought the keys to progress: re-alignment of the organization to these goals, accountability from leaders for improvement, and the development of high-level data collection and analysis.[6]

Implementation of the 10-Year Plan

To implement its EH&S objectives, Dow executives focused on both the "soft side" and "hard side" characteristics of the initiative. The soft side focused on human behaviors, while the hard side focused on the companywide operating disciplines, processes, and tools to enable success.[7]

Both were critical, but leadership believed that the soft side was especially important; it wanted to make safe behaviors a habit. "Best practices and state-of-the-art disciplines are great, but only if employees use them; otherwise, it's like a car without a driver," said one executive.

The reality is that it is much more difficult to drive behavioral change, due to the many facets of human psychology. Dow leadership, however, was prepared to move into this space because it placed a high priority on human life.

"While we talk a lot about metrics, that's only the 'how' of improving EH&S performance. The real driving force is 'why' we are doing this, which is to ensure everyone goes home safely to their families and loved ones," Liveris said. "They deserve that, and so do the communities in which we operate. Everything else— like reputation and license to operate—is the added benefit of doing the right thing."

Core to success was the concept of integration. Dow decided that true progress would require the EH&S function to be better aligned to the company structure. This meant infusing EH&S into the company's strategy, management systems, and metrics, and fully integrating it into the day-to-day operations of each business and function. This inseparability of safety and business would enable, among other benefits, more effective communications, leveraging of learnings and efficiencies, standardization, and replication of best practices around the globe.

Other critical success factors included:

- Endorsing EH&S as the top priority at the highest levels of the company
- Increasing accountability among leaders, employees, and contractors
- Transparency in reporting EH&S progress publicly against key metrics
- Active leadership commitment and engagement
- Requiring employees to include EH&S in their individual goals

Employee Accountability and Empowerment

To create real and lasting change across the organization, Dow executives knew that each employee down the chain of command had to be empowered to suggest and implement EH&S improvements. This required visible engagement and encouragement from executive leadership, and holding managers to higher standards. Lessons learned were integrated into Dow's computer, field, and classroom training programs, and EH&S related employee awards increased worker motivation. In this way, Dow leadership hoped to integrate the 2005 goals into the culture of the organization, indicating that the company would not reach its goals if everyone from the top down did not take ownership.

Implementing the Goals within the Organization

Guided by the broad set of 2005 EH&S goals, senior executives set specific, corresponding goals all the way down the corporate structure. For example, one goal was for Dow to decrease its number of LOPCs (leaks, breaks, and spills) by 90% companywide, so each global business was expected to decrease its LOPC incidents by 90% over the 10-year period, as was each division.

Goal setting streamed all the way down to the individual employee, who was required to set personal goals that aligned to the reduction targets. These metrics did not just include specific injury and illness target numbers, but tracked items identified as antecedents to injuries or environmental incidents, such as safety observations and hazard assessment cards. To get the performance Dow required, measuring results was not good enough; leading indicators would have be established.

During the initial stages of plan execution, Dow businesses that had performed well the previous year in EH&S were being held to the same standard for improvement as those that had performed poorly, and well-performing divisions were beginning to feel frustrated. Senior leaders quickly changed the expectations among divisions, tying reduction targets to other measures, such as the number of employees in a division, or how well the division had performed in the previous year.

"After the launch of the 2005 goals, we quickly realized the targets could not be evenly spread based on impact and performance; we had to set in place annual targets and developed more customizable goals for individual sites and businesses—still with a mindset that we were holding ourselves accountable for the final 2005 target. This flexibility was well received by our site and business directors," said Dave Kepler, executive vice president and chief sustainability officer.

Eventually, corporate management made Dow global businesses accountable for their EH&S performance, challenging them to set their own goals for EH&S improvements and aligning them to the 2005 goals. For example, in one business, there might have been a 1-to-1 ratio between dollars spent and pounds of chemical emissions reduced. Another business could have a 1-to-20 ratio, in which $1 spent resulted in 20 fewer pounds of chemical emissions. Clearly, each business had to make its own resource allocation decisions toward reaching the 2005 EH&S goal metrics.

Incentives and Empowerment for Employees

All managers' personal performance as well as their work groups' EH&S performance were tied to compensation, promotions, and job assignments. To hold managers accountable, Dow required managers to take visible and leading roles in establishing management systems that would promote business success. This included taking an active role in safety meetings and participating in Behavior Based Performance (BBP) programs at plants.

Under the BBP process, work groups systematically identified EH&S performance objectives, and then determined the critical behaviors that would lead to those results. After the identified behaviors were communicated to employees, observers provided feedback on whether they were performing the behaviors appropriately. Once employees consistently performed a critical behavior accurately, it was considered to have become a habit, and retired from the program. New critical behaviors were added to the program until the desired EH&S targets were met.

Managers collaborated across disciplines through safety teams made up of members from operations, EH&S, and leadership to identify areas of concern, define potential solutions, and track implementation of new initiatives to improve EH&S performance at each facility. Dow also developed its first global, standardized web-based training system, which taught employees about the hazards of the workplace as well as safety precautions, and communicated lessons learned across the organization.

Recognition was also a strong incentive to drive safe and sustainable practices among employees. Dow had internal awards for sites, businesses, teams, and individuals who improved their EH&S performance in accordance with the 2005 EH&S goals, including:

- President's and Vice President's Awards, honoring sites and businesses that significantly lowered injury/illness rates, process safety incidents, and/or LOPCs
- Waste Reduction Always Pays awards, recognizing teams and individuals that found innovative ways to save money while reducing waste, water usage, or emissions
- Responsible Care® awards, honoring Dow projects that protected people and the environment, and were consistent with the 2005 EH&S goals

Communication from the Leadership

Dow reinforced an EH&S mindset internally by beginning each of its CEO's Dow World News global broadcasts with highlights of current EH&S performance and improvement efforts. Company leadership also encouraged communication on EH&S issues among employees, asking them to begin internal meetings with a "safety moment" to discuss safety topics.

An employee commented on the company's EH&S communications approach:

> Having worked with Dow for approximately 29 years, I have never experienced a cultural shift as much as was experienced when Dow embraced the 2005 EH&S goals. I was in Hydrocarbons at the time and I remember being tested by my organization several times … 'the job will take longer,' 'we can't do it that way,' … Each time I reinforced the 2005 goals, I had no doubt I was not only making the right personal choice, I also had the backing of my leadership, unconditionally. Today that same culture of 'Safety Before Pounds' is constantly reinforced within our plants, by our leaders, and all employees.

Employees were expected to take immediate action to resolve on-the-job safety issues. For ongoing problems, employees at all sites had access to a "safety suggestion" system to communicate EH&S issues to management. Externally, Dow published a section on EH&S performance in its annual report and created an online scorecard tracking its progress toward its EH&S goals.

Standardization and Globalization of Key Processes

After completing a new organizational framework, Dow executives continued to implement their hard goals for 2005 by identifying the most effective EH&S processes Dow was using informally at various local sites and standardizing them across its global businesses.

EH&S processes that were standardized across the organization included:

- Risk assessments
- The Corrective and Preventive Action (CAPA) program
- EH&S risk mitigation at the plant level when significant changes or decisions were made at the global business level (for example, manufacturing a new product)
- The Safe Work Permit program

To organize and manage the information, Dow used its Operating Discipline Management System (ODMS), an integrated, comprehensive corporate management system for manufacturing, quality, environment, health, and safety. ODMS assisted Dow in setting performance expectations for EH&S and requirements to ensure compliance with major industry standards, including ISO 14001 certification and auditing requirements, Responsible Care®, and government regulations.

Risk Assessment

Dow established global risk management processes to identify, evaluate, and manage risks. In its industrial hygiene area, Dow established a "qualitative exposure assessment" tool to identify the most significant chemical, physical, and biological hazards to employees, and to ensure that controls were implemented to mitigate risk. Dow plants performed a process hazards analysis when any significant process changes took place, and implemented changes to address potential risks.

Corrective and Preventive Action

For each accident or incident, Dow implemented a root cause analysis and corrective action model called Corrective and Preventive Action (CAPA). Using CAPA, Dow attempted to identify the causal factors leading to events and recommended preventive actions for events with any possibility of occurring again. Corrective actions were entered into an Event & Action Tool, an internal database that tracked the completion and effectiveness of corrective actions. The tool was monitored closely by Dow management. The CAPA process included:

- **Root Cause Investigations (RCIs):** RCIs were processes designed to identify root causes of undesirable events, identify solutions, and communicate the solutions across the company. For events involving injuries or significant chemical release, plant leaders, site Responsible Care® leaders, or business leaders were responsible for completing the RCI.
- **EH&S Audits:** These internal audits were conducted by Dow subject matter experts every three to five years, and typically consisted of a weeklong review of the written programs and implementation of EH&S requirements at the plant. All findings were documented in a corrective action plan and presented to plant leadership at the end of the audit.
- **Facility Self-Assessments:** These assessments were mandatory and enabled facility leadership to evaluate management systems with a focus on improving a particular topic or sustaining strong EH&S performance.

In this way, Dow leaders were able to better understand the performance of their EH&S systems, be prepared to more effectively manage unplanned events, and leverage lessons learned across the company to prevent future incidents.

Minimizing Risk When Changes Are Made

Errors are more likely to occur during times of change. When significant changes were made within the global businesses, for example, new products were added and others were changed, increasing the potential for EH&S risk. To mitigate this, global business, functional, and EH&S personnel initiated Business Risk Review (BRR) or Management-of-Change (MOC) work processes. The BRR work process was used to identify potential risks and determine the potential impacts of the proposed changes. All significant changes at the plant level were then reviewed and approved as part of the MOC work process to ensure the appropriate training was administered to personnel affected by the change.

Safe Work Permit System

In the plants, the Safe Work Permit process was an ongoing system that enabled employees and contractors to identify potential hazards prior to initiating a task, as well as communicate that information to other contractors and employees. Repair technicians worked collaboratively with employees to address any safety concerns brought up by a Safe Work Permit. The permit also included safeguards to mitigate potential hazards, and prohibited access to work and equipment for those who were not properly trained.

Dow's Tracking System

After standardizing processes across the organization for the 2005 EH&S plan, Dow had to devise a way to track and communicate goal progress at each level, across sites and businesses. To this end, senior management decided that all Dow sites and business units would be required to set annual goals in injury and illness reductions, environmental releases, process safety incidents, and motor vehicle incidents. With this information, Dow quantified its progress and identified sites and businesses that needed assistance to improve their performance.

Lagging and Leading Indicators

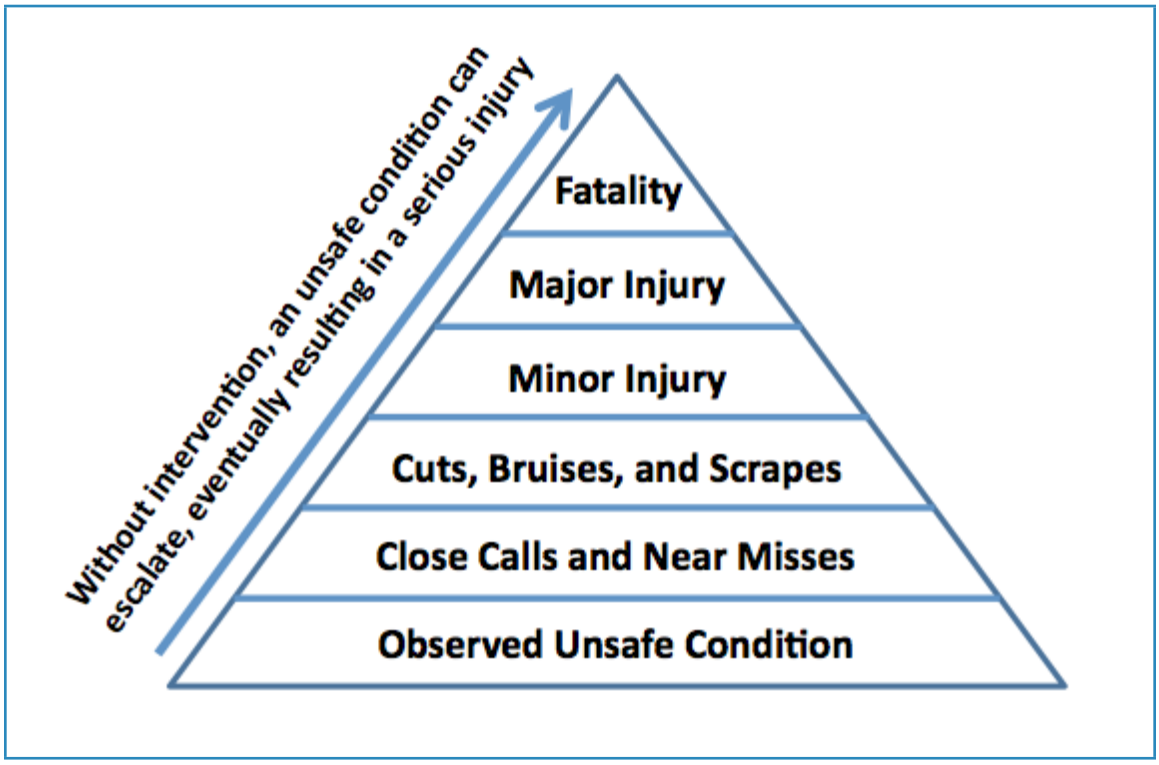
Dow tracked a number of lagging indicators, or metrics of incidents that had already occurred, including the OSHA-defined injury and illness recordability rate, LOPCs and motor vehicle incidents. Dow also included injuries of short-term independent contractors in its metrics, and provided them with safety training.

In the late 1990s, OSHA required companies, including Dow, to include ergonomic injuries in its injury rate. As a result, Dow's injury figures were higher than anticipated, but by developing tools and processes to help focus on these types of injuries and incorporating them into baseline measurements, Dow soon was on the path toward achieving its injury targets.

Dow also tracked a number of leading indicators, metrics that allowed the company to identify the areas where injuries and illnesses were most likely to occur and to prevent future incidents. Examples of leading indicators included the degree of leadership engagement, work process implementation, procedure use, the quality of housekeeping, reporting of "near-miss incidents," the effectiveness of Root Cause Investigations,

and the Healthy Workplace Index. Dow used these to help it to work below its injury pyramid (see **Figure 2**). These indicators provided a strong precautionary process that sought to prevent even minor incidents from taking place.

Figure 2
Injury Pyramid



Source: Internal Dow document

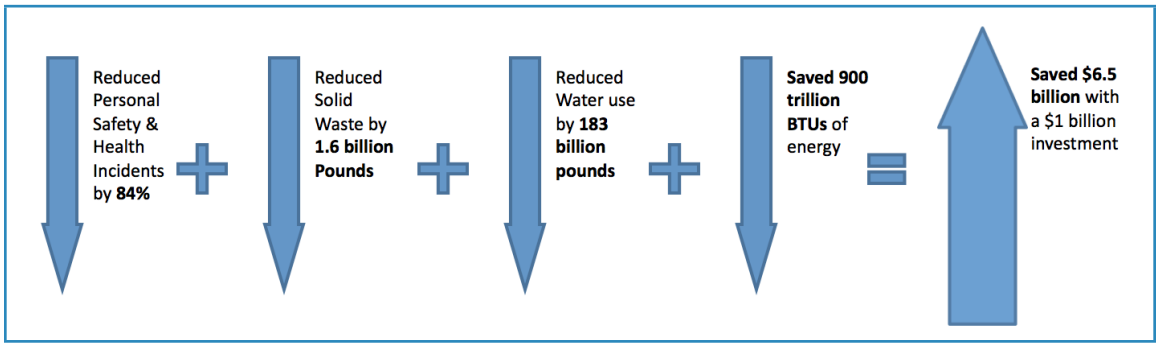
Dow identified the areas that had large numbers of less significant incidents—including medical first aid cases, precautionary medical visits, and near misses—in order to predict the areas in which significant injuries were likely to occur. Leading indicators are pictured in the lower part of the injury pyramid, which illustrates how the number of incidents decreases as severity increases.

These indicators would prove immensely useful in holding leaders, employees, and business divisions accountable for their improvements in EH&S, and to demonstrate results to management when capital allocation decisions were being made. Employees had more control over leading indicators than lagging metrics, and took more ownership of their performance in these areas.

As a result of all of the time and resources devoted to the effort, from senior executive level to the thousands of plant workers around the world, Dow made significant and valuable progress toward all of the EH&S goals by 2005 (see **Appendices A, B, C,** and **D**).

A cost-benefit analysis of the changes made to meet the 2005 goals showed that the $1 billion invested in improvements to reduce EH&S incidents, energy usage, wastewater, and solid waste resulted in an overall value of more than $6.5 billion to Dow (see **Figure 3**).

Figure 3
$6.5 Billion in Savings from 2005 EH&S Goals



Source: "The Inseparability of Safety and Business Success at The Dow Chemical Company." National Safety Council's Robert W. Campbell Award

According to Liveris:

> With Dow's public commitment to the 2005 goals, Dow invested more than $1 billion to make great strides in EH&S performance. We made it a business priority to find innovative ways to continually reduce waste and energy, and to protect human health and the environment. The company has been successful because we changed the way every employee at Dow thinks about EH&S. These efforts not only paid off in remarkable improvements in Dow's EH&S metrics, they also demonstrated that improvements in EH&S performance do not conflict with business performance. In fact, the EH&S improvements drove significant net cost savings and helped to improve overall business performance.

How Should Dow Move Forward?

Despite the achievements of the 2005 goals, Liveris had told Washington that the status quo was not an option. He asked Washington to develop a proposal that would set a new standard—one that would align to the company's strategy and not stop at the fence line, but also aspire to make a positive difference in the world.

After reviewing the obstacles and successes of the 2005 EH&S plan, and speaking to hundreds of experts—from policymakers in Washington, DC, to community members and workers at Dow sites around the world—Washington now had an idea of how to proceed. He could envision the types of goals that would align with Dow's business strategy and objectives, yet also appeal to outside stakeholders. After crafting two ideas for the proposal stage, he went to Liveris to ask for direction.

They discussed how Dow came very close to meeting all of its 2005 EH&S goals and how the 2015 goals would have to be at least somewhat bolder to appease stakeholders, especially the company's environmental council. The board of directors and investors, Liveris said, would be more concerned that the goals be measureable, fit in with Dow's overall strategy and improve the company's financial position. The goals also would also have to remain integrated with other key activities. Given this, Washington and Liveris looked closely at their options:

1. Renew the 2005 goals to reflect new metrics

In this option, Dow would renew and expand the 2005 goals by, for example, committing to reduce another 75% of chemical emissions by 2015. This option would build on Dow's previous successes, so the company would not have to invest as much capital up front. After reflecting on the $5 billion ROI from the 2005 goals, Washington told Liveris that he thought the next 10 years might yield similar results. It would also allow Dow to continue working toward an ideal metric of zero: zero injuries, zero spills, zero incidents.

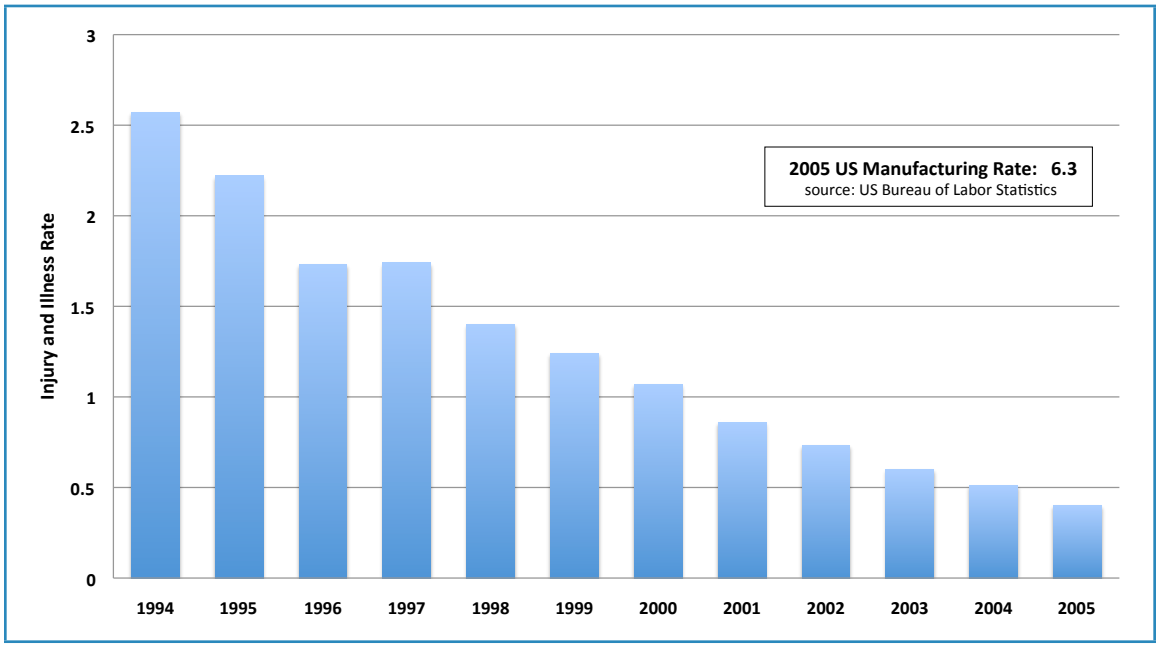
2. Create an entirely new set of goals

In this option, Dow could address a completely new set of challenges. This would entail going outside its normal focus area of simply reducing its EH&S metrics, to starting new product lines, engineering new processes, or getting involved in communities in ways that it never had before. In effect, Dow would be focused on making a broad positive impact, rather than just improve internal EH&S metrics.

These two options would be compared against a status quo baseline. However, based on the experiences with the 2005 goals, Liveris knew that Dow could not just rest on the results and harvest the economic gain. To learn more about decisions leading up to Dow's Sustainability goals, please refer to the Case Study Epilogue.

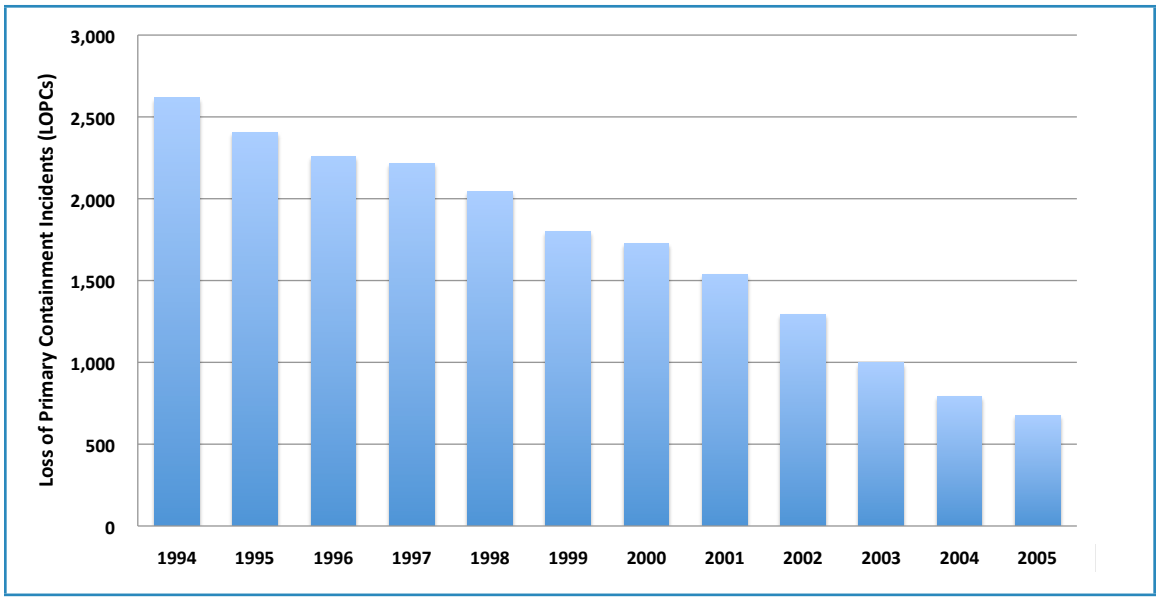
Appendices

Appendix A
Injury and Illness Rate (IIR)



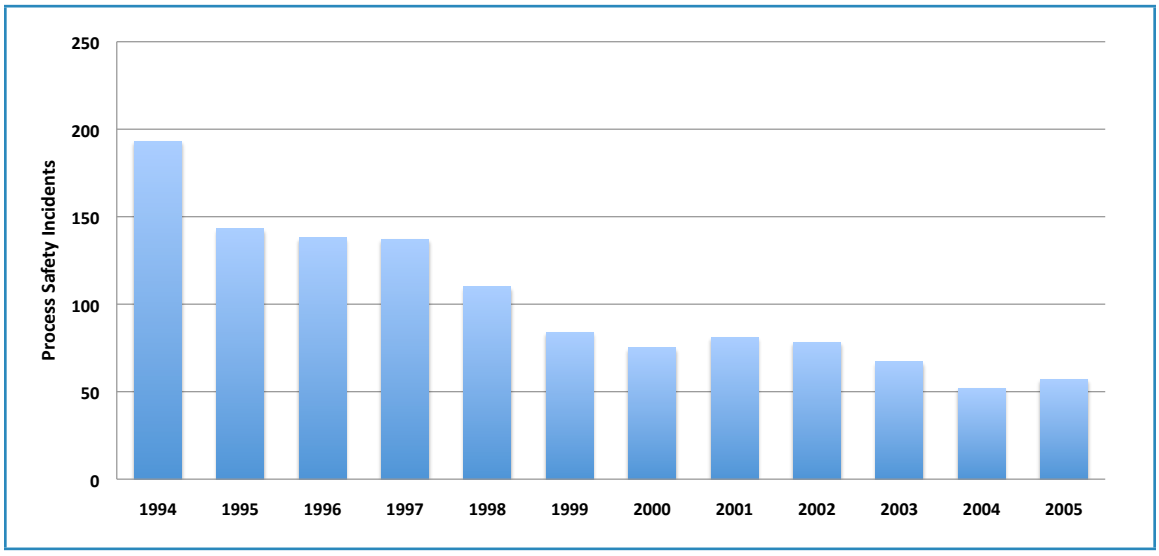
Source: The Dow Chemical Company

Appendix B
Loss of Primary Containment Incidents (LOPCs)



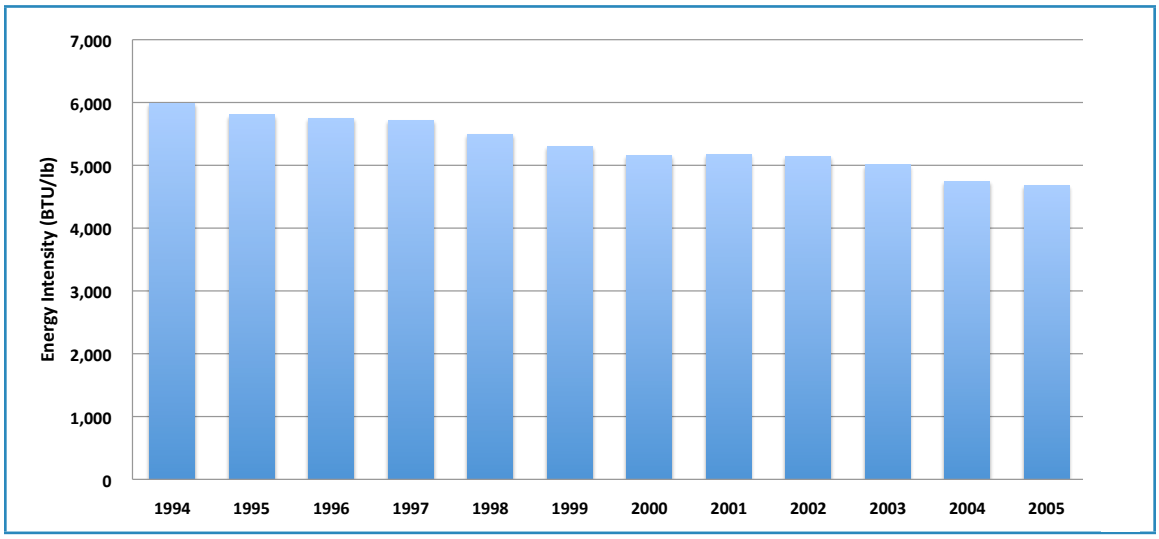
Source: The Dow Chemical Company

Appendix C
Process Safety Incidents



Source: The Dow Chemical Company

Appendix D
Energy Intensity



Source: The Dow Chemical Company

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Endnotes

[1] Much of the information from this section came from The Dow Chemical Company's website. Accessed 8 August 2011. <www.Dow.com>.

[2] Dow 10-K for fiscal year ending Dec. 31, 2005. United States Securities and Exchange Commission. Accessed 4 Aug. 2011. <http://buck.com/10k?tenkyear=05&idx=D&co=DOW&yr=05&nam=DEMO2&pw=DEMO2>.

[3] The majority of information in this section came from American Institute of Chemical Engineers: Center for Chemical Process Safety. The Business Case for Process Safety. 2. 1. New York: American Institute of Chemical Engineers, 2006.

[4] American Institute of Chemical Engineers: Center for Chemical Process Safety.

[5] National Safety Council. "2012 Green Cross for Safety Medal Winner." <http://www.nsc.org/safetyhealth/Pages/212CEOsWhoGetItAndrewLiveris.aspx#.UDKUZt2PXgU>.

[6] Interviews with Dow executives: 20 July 2011, 29 July 2011, and 5 August 2011.

[7] The majority of information in this section came from "The Inseparability of Safety and Business Success at The Dow Chemical Company." National Safety Council's Robert W. Campbell Award and from interviews with Dow executives: 20 July 2011, 29 July 2011, and 5 August 2011.

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