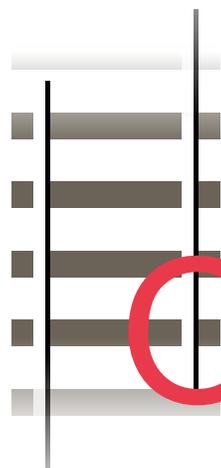


OnTrack

to Increase Rail Safety and Security



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Every day, Americans use millions of commercial products that make their lives better and keep their families healthier. Many of those products – everything from personal care products and food packaging to electronics and clothing – are formulated using raw materials and chemicals that can be hazardous if released during transport. So how are we ensuring both the security of these materials shipped via the railways and the safety for the communities that line the thousands of miles of rail across the U.S.?



The Dow Chemical Company, together with Union Pacific Railroad, are working together to meet this challenge every day, through innovative solutions that range from industry-wide railway crossing safety initiatives and Global Positioning System (GPS) sensors that track railcar movements to designing the next generation of rail tank cars. The following pages outline the progress made on each goal through the end of 2008.



Dow and Union Pacific: Goals to Improve Rail Safety and Security

In March 2007, Dow and Union Pacific announced a Memorandum of Cooperation (MOC), outlining eight goals that the two companies pledged to work toward achieving over a ten year period. These goals were made to supplement regulatory and legal requirements and are consistent with the principles and practices of Responsible Care[®], which drives continuous improvement in the safe and secure manufacture, distribution and use of chemical products.



GOAL

1

Expand the TRANSCAER[®] Program

By 2012, provide improved community awareness and emergency preparedness along highly hazardous material* transportation routes, by providing communities with a significantly enhanced outreach, education and training initiative in coordination with national, regional and state TRANSCAER programs.

Progress:

- Dow joined forces with the Fire Fighters Education and Training Foundation and Union Tank Car Company to build a six car, state-of-the-art Hazmat Safety Train for use in providing hands-on training for local community emergency responders across the country. The train was dedicated in memory of Chicago Fire Chief John Eversole on May 5, 2008.
- Dow and Union Pacific deployed the Safety Train to provide training for more than 2,000 emergency responders in 28 cities in 2007 and 2008, spanning one-third of Dow's rail transportation routes in North America for highly hazardous materials.
- The Safety Train and trainers supported regional hazmat safety conferences in California, Texas and Louisiana.
- The Dow/Union Pacific initiative earned the TRANSCAER National Achievement Award in recognition of the extraordinary results achieved.
- In addition to the joint Dow/Union Pacific initiative, Union Pacific has continued to work with other shippers and railroads to deliver high quality training for thousands of additional local community emergency responders each year.

GOAL

2

Improve Shipment Visibility

By 2010, provide improved safety, security and emergency response through continuous surveillance of highly hazardous material shipments by installing GPS units and appropriate sensor technologies on all highly hazardous material tank cars, supporting a reduction in the time these cars are unattended in transit.

Progress:

- Dow installed GPS sensors on its rail tank cars used to transport Toxic Inhalation Hazard (TIH) materials in order to provide 24/7 visibility of the location and condition of those cars.
- This full-scale, leading-edge technology deployment helped identify tracking equipment vulnerability and reliability issues that have been successfully resolved through Generation 2 and 3 design improvements.
- Dow is collaborating with CHEMTREC[®] and the U.S. Transportation Security Administration to conduct separate demonstration projects to show how GPS tracking technology can help those organizations achieve enhanced emergency response capabilities for accidents and security threats, respectively.

*As used in this document, the term "highly hazardous material" refers to chemicals that are classified as Toxic Inhalation Hazard (TIH) materials or flammable gases.



GOAL
3

Develop the Next Generation Rail Tank Car

By 2017, develop and implement a new rail tank car design for the transportation of highly hazardous materials, achieving a step-change (5-10X) improvement in safety and security performance over existing fleets.

Progress:

- Dow and Union Pacific joined forces with Union Tank Car Company to lead an aggressive three-year research project (in collaboration with the Federal Railroad Administration, Transport Canada and the U.S. Transportation Security Administration) to develop new tank car design concepts and technologies that can significantly enhance the safety and security of transporting TIH materials by rail. More than 60 people have been engaged on various sub-teams made up of design engineers, university researchers, contractors and specialists in emergency response, rail operations, rail maintenance, research and development, and logistics.
- The project team identified and tested new design concepts and technologies that can provide a 200 to 300 percent improvement in crash worthiness for head and side impacts, when compared to today's standard design. By comparison, traditional approaches can provide only a 70 to 75 percent improvement.
- Further, in collaboration with Midland Manufacturing and members of the Chlorine Tank Car Development Panel, the project team was able to develop and initiate service trials on a new low-profile valve and fitting assembly, featuring fail-safe internal closures, to prevent chemical releases from sheared-off valves and fittings in a rollover.
- Through a robust technology transfer program, the project team has significantly advanced the scientific knowledge and the modeling and analytical tools available to tank car builders for the design and optimization of advanced tank car protection systems.
- At this stage, the Next Generation Rail Tank Car Project is transitioning its work to a broader-based government and private sector initiative that will continue to drive tank car safety and security improvements in the years ahead.

GOAL
4

Improve Supply Chain Design

By 2015, reduce the shipment of highly hazardous materials by 50 percent, while continuing to meet the needs of the marketplace and reducing overall risk.





GOAL 5

Eliminate Non-Accidental Releases

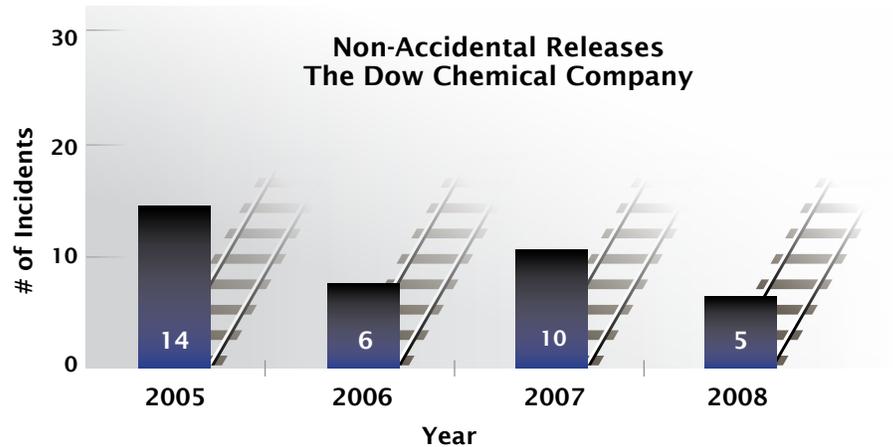
By 2010, drive non-accidental releases of hazardous materials to zero.

Note: A non-accidental release (NAR) is defined as an unintentional release of hazardous material during transportation not caused by an accident or derailment. NARs consist of leaks, splashes and other releases from improperly secured or defective valves, fittings and tank shells, and also include venting from safety relief devices.

Progress:

- Dow shipping locations have developed and begun to implement a number of new measures to improve awareness, operator training, incident reporting, follow-up investigation and accountability, and will require post-load pressure and leak detection testing in order to further reduce NARs.
- As a result, Dow shipping locations have been able to reduce NARs by 64 percent since 2005. That means that over 99.996 percent of Dow's shipments reach their destination without an NAR.
- As part of the railroad industry's continuing effort to eliminate chemical releases from rail tank cars, many of the railroads have established award programs to further increase shipper awareness and recognize those shippers who have taken an instrumental role in preventing NAR incidents. Dow has earned the following recognition awards from the nation's Class I railroads since 2006:
 - Norfolk Southern Thoroughbred Chemical Safety Award
 - CSX Chemical Safety Excellence Award
 - Canadian Pacific Chemical Shipper Safety Award
 - Canadian National Safe Handling Award
 - BNSF Stewardship Award

- With a continuing emphasis on operating discipline and accountability, Dow remains firmly committed to its “Drive to Zero,” where each employee makes a personal commitment to zero incidents, zero injuries and zero excuses.



GOAL 6

Deploy Communications Based Train Control/ Anti-Collision System (Positive Train Control)

By 2015 as federally mandated, implement technology that will help us eliminate collisions on mainline track pending FRA approvals and the success of pilot projects.

Note: Positive Train Control (PTC) is a predictive collision avoidance technology that can stop a train before an accident occurs. PTC is designed to keep a train under its maximum speed limit and within the limits of its authorization to be on a track. It will also help prevent train-to-train collisions, over-speed derailments and casualties or injuries to the public and railway workers.

Progress:

- Union Pacific began testing PTC technology across 456 miles of track in Iowa, Nebraska, Wyoming, Washington and Idaho - in order to further validate hardware and software technology requirements to implement it across its rail network. Once PTC technology proves safe and reliable, Union Pacific will submit its plans to the FRA for approval and begin installation. If all goes as planned, implementation would begin in 2010, with completion by 2015 as federally mandated.
- In October, Union Pacific announced an Interoperability Standards Agreement with Norfolk Southern, Burlington Northern Santa Fe and CSX Railroads. Interoperability is critical since freight and passenger trains share tracks and must be able to exchange and use the same information in order for PTC to function appropriately.

GOAL 7

Reduce Movement in High-Threat Urban Areas (HTUAs)

By 2015, reduce the non-essential dwell time of highly hazardous chemical shipments in transit in high-threat urban areas by 50 percent.

Progress:

- Simultaneously with the MOC goal, Union Pacific and other railroads, in collaboration with the U.S. Transportation Security Administration, embarked on a new program designed to reduce the risk associated with TIH rail shipments in high-threat urban areas by 50 percent by year-end 2008. Major components of that initiative include:



Collaborating for Safer Communities

Union Pacific's railway system transports Dow products everyday – products that are critical to the U.S. economy. Both Dow and Union Pacific are committed to doing our part to ensure that rail remains the safest way to transport these essential chemical products.

GOAL 8

Improve Accident Prevention

By 2015, achieve a 50 percent improvement in hazardous material rail operations safety.

Note: The nation's railroads make over one million hazardous material shipments each year, with 99.998 percent of those shipments reaching their destination without an accidental release.

Progress:

- Union Pacific's accident performance is better than the industry average, and the company remains committed to further continuous improvement, driven by specific initiatives in the following areas:
 - Risk-based maintenance and operating improvements
 - Targeted employee training, including use of simulators
 - Human-factor incident reduction, including the use of alertness management principles
 - Significantly reducing the percentage of highly hazardous material shipments moving in dark territory (i.e., on track that is not protected by signal technology)
 - Continued emphasis on improving grade crossing safety
- As a result of measures and initiatives like those described above, in 2008 Union Pacific was able to achieve a 14 percent improvement in train accidents from 2007, and has had an overall improvement of 26 percent from 2006. Union Pacific remains on track to achieve its 2015 goal.
- Implementation of Total Safety Culture (TSC), an employee-led safety program focused on enhancing safety practices while encouraging a culture of concern for not just personal safety but also coworkers' safety.



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