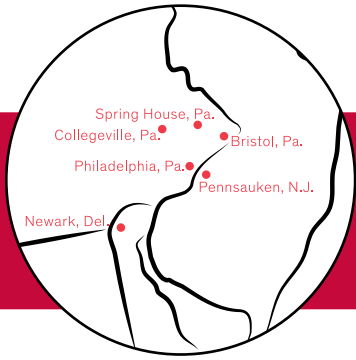




SPRING 2014



# IMPACT

CREATING COMMUNITY SUCCESS IN THE DELAWARE VALLEY

## HISTORIC TREASURE GETS ENERGY-EFFICIENT MAKEOVER

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# DOW IN THE DELAWARE VALLEY

- 100+ years in the region
- Approximately 2,000 employees in the region
- Four of Dow's 13 global businesses headquartered in the region
- Research and development, manufacturing and commercial operations spanning acrylic technology for paints, coatings and construction materials, technologies for enhanced water purification, advanced polymers and technologies for household and personal care, ingredients and delivery systems for pharmaceuticals and food, insulation used in homes and buildings and products used to fabricate electronic chips
- Annual sales in 2013 from customers based in the region of approximately \$1.1 billion
- Committed to improving life in the communities we serve, contributing more than \$5 million to more than 150 community programs since 2010



[www.dow.com/delawarevalley](http://www.dow.com/delawarevalley)

# DOW IN THE WORLD

- Founded in 1897 by Herbert H. Dow in Midland, Michigan
- Approximately 53,000 employees worldwide
- 201 sites in 36 countries
- Annual sales in 2013 of more than \$57 billion
- Diversified industry-leading portfolio of specialty chemical, advanced materials, agrosiences and plastics businesses
- Delivers 6,000 technology-based products and solutions to customers in approximately 180 countries

[www.dow.com](http://www.dow.com)

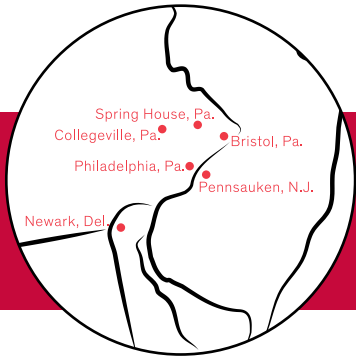


DOW COMBINES THE POWER OF SCIENCE  
AND TECHNOLOGY TO PASSIONATELY INNOVATE  
WHAT IS ESSENTIAL TO HUMAN PROGRESS





SPRING 2014



# IMPACT

CREATING COMMUNITY SUCCESS IN THE DELAWARE VALLEY

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### On the cover:

John Stutzman, Azize Ala, Alan Piwowar, Mike Bender, Jian Wu, and Owen Young take a break while rehabilitating a historic home in Norristown, Pa., as part of a Habitat for Humanity project.

# Showcasing Sustainability on Global Sports Stage



## WORLDWIDE PARTNER

Well before 2,850 athletes from 88 countries descended on Sochi, Russia, last February with their skis, skates, sleds, and dreams in tow; before more than 1 million tickets were sold to 98 events; before 3 billion people from around the world tuned in over 17 days to watch the 2014 Olympic Winter Games...

Dow was hard at work making history.

In early February, Sochi 2014 announced that through Dow's efforts, the Olympic Winter Games was the first in history to mitigate the entire direct carbon footprint of its Olympic Organizing Committee before the Opening Ceremony. That means Dow and its Russian customers enabled the mitigation of the greenhouse gas emissions associated with organizing and hosting the Games.

It sounds impressive and it is, but appreciating the true positive impact requires a look at the numbers. Before the cauldron was lit at the Opening Ceremony of the Olympic Winter Games,

more than 520,000 metric tons (MT) of CO<sub>2</sub> equivalents had already been mitigated. To put that in perspective, that's equal to taking 102,000 cars off the road for a year.

### Sustainable Future

As a Worldwide Olympic Partner and Official Chemistry Company of the Olympic Games, Dow responded to Sochi 2014's ambitious goal to deliver the Games with minimal impact on climate with a groundbreaking program called Sustainable Future.

In the year leading up to the Olympic Winter Games, Dow worked with its customers in Russia to implement energy efficient and low-carbon technologies in the areas of infrastructure, agriculture and industry within different regions of the country. The tally of emissions reductions (520,000 MT vs. a target of 360,000 MT) achieved even before the Games started was verified by third party international experts.

Sochi 2014 officials were pleased. "The Sustainable Future program went above and beyond our expectations, as it reached our mitigation



*“The Sustainable Future program went above and beyond our expectations.”*

goals in such a short time,” said Dmitry Chernyshenko, president and CEO of the Sochi 2014 Organizing Committee, in a February news release. “The program is also contributing to promoting technological advancements and delivering long-lasting benefits to the Russian economy.”

The Sustainable Future program included infrastructure projects that help insulate buildings and reduce energy waste; agriculture projects that promote sustainable farming practices – the reduction of mechanical equipment, fertilizer and water, for example; and industrial projects that improve manufacturing practices and increase energy efficiency.

Beyond the Sustainable Future program, Dow showcased its sustainability and efficiency solutions directly in Olympic venues and associated buildings and infrastructure (see Sustainability Solutions). In many of those projects, Dow applied technologies developed in its Delaware Valley locations. Industrial and anticorrosion coatings, for example, helped make the Bolshoy Ice Dome and Fisht Olympic Stadium durable and long lasting. And coatings solutions created durable metal and concrete surfaces at the Ice Cube Curling Center.

## **Beyond the Olympic Games**

Dow’s commitment to helping host territories achieve a long-lasting, positive sustainability legacy began in 2010 – when the company became a Worldwide Partner of the Olympic Games. Dow delivered sustainable solutions for the London 2012 Olympic Games two years ago, further ramped up its efforts in Sochi, and today the company is already collaborating and dialoguing with future host cities in Brazil, South Korea and Japan.

Director of Dow Sports Marketing Marko Blagovic said the growth of global sports presents an attractive platform for Dow to showcase its sustainability technologies, especially in developing countries like Brazil, China and India.

“The growth of the sports market worldwide outpaces GDP, and countries are making sizable infrastructure improvements to host global or regional sporting events,” Blagovic said. “We have technologies that can help these cities and countries provide efficient, comfortable, safe and long-lasting venues.”

Whether through 10-year high-profile partnerships with the Olympic Games, or through the deployment of technologies, collaborations and consultations, Dow is finding in global sports, an important stage to showcase its sustainability technologies for years to come.

# **Sustainability Solutions**

Dow sustainability solutions were designed into nearly every Olympic venue and infrastructure project. Here are several examples:

## **Bolshoy Ice Dome – Hockey**

Heat transfer fluids for high-performance ice and air conditioning; industrial coatings

## **Sanki Sliding Center – Bobsled, luge, skeleton**

Water-resistant coatings to protect venue from wear; epoxy resins to create better adhesion

## **Fisht Olympic Stadium – Opening and Closing Ceremonies**

Polyurethane systems insulate metal piping for consistent thermal performance and longevity; anticorrosion coatings

## **Adler Arena – Speed skating**

Insulation makes skating surface energy efficient and reliable

## **Iceberg Skating Palace – Ice skating**

Systems ensure high quality of ice

## **Coastal Cluster/Mountain Cluster – Infrastructure**

Compounds create reliable power cables; coatings solutions create durable wood, metal and concrete surfaces

# **Spotlight on Sanki**

Construction of the Sanki Sliding Center, the site of bobsled, luge and skeleton competitions, was a daunting challenge. Not only did the complex project need to be safely completed in record time, but it was located in a remote, mountainous location – terrain that made it difficult to deliver conventional equipment and materials to the construction sites.

After consultation with Dow, project designers incorporated POLYOX™ water-soluble polymer as a concrete additive. The additive allowed the construction contractor to use an innovative spray application for the first time, reducing construction time from the standard two and a half years for a run (or facility) of this kind down to seven months.

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# Sustainable Future

To mitigate the emissions of the Sochi 2014 Olympic Winter Games, Dow, in partnership with Sochi 2014 Organizing Committee and its customers, has undertaken an ambitious program that has offset these emissions, and more importantly will leave an enduring legacy of low carbon solutions in Russia.



## MINIMAL CLIMATE IMPACT

**ORGANIZING COMMITTEE FOOTPRINT**  
of 360,000 tons of CO<sub>2</sub> equivalent



**SPECTATORS AND MEDIA TRAVEL FOOTPRINT**  
of 160,000 tons of CO<sub>2</sub> equivalent

## Promote Growth and Sustainability

### MITIGATION OF TRAVEL EMISSIONS

THIS IS THE FIRST GAMES TO OFFSET CLIMATE IMPACT BY SPECTATOR & MEDIA TRAVEL.

This partnership has mitigated emissions of the Games, totaling

# 520,000

tons of CO<sub>2</sub> equivalent

Multiyear Commitment

### WEATHERIZATION OF HOMES

Construction

WITH COLD TEMPERATURES IN THE RUSSIAN WINTER, POOR INSULATION RESULTS IN A GREATER CONSUMER NEED FOR HEAT, RESULTING IN HIGHER EMISSIONS.



Through a partnership between Dow and Profflex, a new tailor-made foam insulation solution helps Russian homes improve efficiency by maintaining heat and reducing emissions.



In turn, this also creates awareness with the public on how to save energy and emissions.

### SUSTAINABLE FARMING

Agriculture

WITH A MASSIVELY GROWING OIL & SEEDS MARKET IN RUSSIA, MORE SUSTAINABLE FARMING TECHNIQUES PROMOTE FUTURE SELF-RELIANCE.



Dow provides training and consultation services to local farmers.



Dow also provides seeds that enable more sustainable farming practices and healthier oils for consumers.



Farmers produce sunflower and canola oils that can be used in local retail and food service. Reduced impact on the environment, producing healthier foods and sparking local business.

### IMPROVING STRUCTURAL INTEGRITY

Infrastructure

OLDER STRUCTURES REQUIRE MORE SERVICE AND CONTRIBUTE TO HIGHER EMISSIONS

Integrating carbon fiber composites into infrastructure solutions result in longer service lives, less construction, maintenance and demolition waste, plus improved operations-related emissions.



Through this program, Dow is aiming to stimulate wider use of carbon fiber across Russia to enhance infrastructure with low carbon solutions.



WORLDWIDE PARTNER

# Leveling Playing Field at Frozen Fenway



There's not another baseball field in America that possesses the aura and history of Fenway Park in Boston. Yet for two weeks last December and January, when the revered Boston Red Sox baseball team was enjoying the offseason, the park transformed into Frozen Fenway, a sports venue for hockey games and community skating events.

If you attended one of the Frozen Fenway events earlier this year, then you enjoyed a novel application of a common Dow product.

The ice skating rink for Frozen Fenway sat atop a layer of TUFF-R™, Super TUFF-R™ and THERMAX™ polyisocyanurate insulation made by Dow in Pennsauken, N.J. The polyurethane foam board was used to level the grade of Fenway Park's playing field to create a reliable foundation for the various layers of the rink.

In past years, field managers used sand to level the field, a messy, time-consuming process. The polyurethane boards, on the other hand, were as easy to place on the field as they were to remove when the ice rink was torn down.

"This is a great example of a nontraditional application of one of our products," said Rob Buchler, site leader, Dow Building Solutions. "The insulation leveled the field and helped keep the ice cold and after the event, the tear-down process was simple. Everyone was happy."

So if you happened to enjoy one of the seven high school hockey games, two free community skate days, or nine college hockey games at Frozen Fenway earlier this year, your experience was made a little bit better by Dow.

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# Minding the Kufens

## A Sled Redesign for Team USA Luge

When Erin Hamlin claimed bronze in women's luge in Sochi, Russia, last February, she became the first American to earn an Olympic Games medal in singles luge. No one was more excited for Hamlin and her history-making run than her fans at Dow who helped redesign Team USA's sled.

Dow developed USA's first brand-new sleds in almost 20 years by incorporating new materials and engineering features to replace an aging fleet of sleds.

The project started with the kufens (runners) of the sleds. Working in close partnership with USA Luge, Dow's Materials Science team researched and engineered composites to replace the kufens' traditional wood cores. The research and testing quickly evolved from there to redesign and improvements to the entire sled structure.

"What we've done is provide the latest technology in design, in engineering and in manufacturing into the sport of luge," said Jay Tudor, research scientist, Dow Core R&D.

The collaboration with USA Luge demonstrates how Dow works with customers to understand their challenges and come up with innovative, tailor-made solutions for complex problems. That's the case in dozens of industries, from automotive to construction to microchips, and, yes, even Olympic sports.



Dow engineered, designed and developed the first brand-new sleds for USA Luge in almost 20 years.



WORLDWIDE PARTNER

# Dow Technology Revolutionizes Paint

## Innovation Is Industry Game-Changer

It's not every day that paint makes headlines.

That all changed when Dow brought to market one of its most significant ground-breaking technological advancements in acrylic latex paint in more than 50 years.

In 2012 Dow introduced EVOQUE™ Pre-Composite Polymer, a new polymer that can help paint manufacturers improve paint performance while using less titanium dioxide (TiO<sub>2</sub>, pronounced t-i-oh-2). TiO<sub>2</sub>, which has been used by paint

formulators for decades, is a white pigment that brightens white, pastel and mid-tone paints and allows paint to hide marks or change the color of a wall. It's essential to paint performance, yet it's energy- and water-intensive to manufacture. Dow developed technology that substantially reduces water and energy consumption of paints by reducing the need for TiO<sub>2</sub>.

### Pesky Paint Problem Solved

"TiO<sub>2</sub> has been used for decades in paint formulations because it provides whiteness and brightness to paints, while hiding marks on surfaces," said Dave Fasano, application scientist, Dow Coating Materials. "At the same time, it's inefficient because the pigment particles don't disperse evenly. So the more you use, the less effectively it works. Everyone in our industry understands that and has been trying to address it for decades."

TiO<sub>2</sub> particles are incredibly small crystals. The greater the concentration of TiO<sub>2</sub>, the more the particles clump together, decreasing the paint's hiding ability. As a result, consumers need two and sometimes three coats of paint to sufficiently cover marks or change the color.

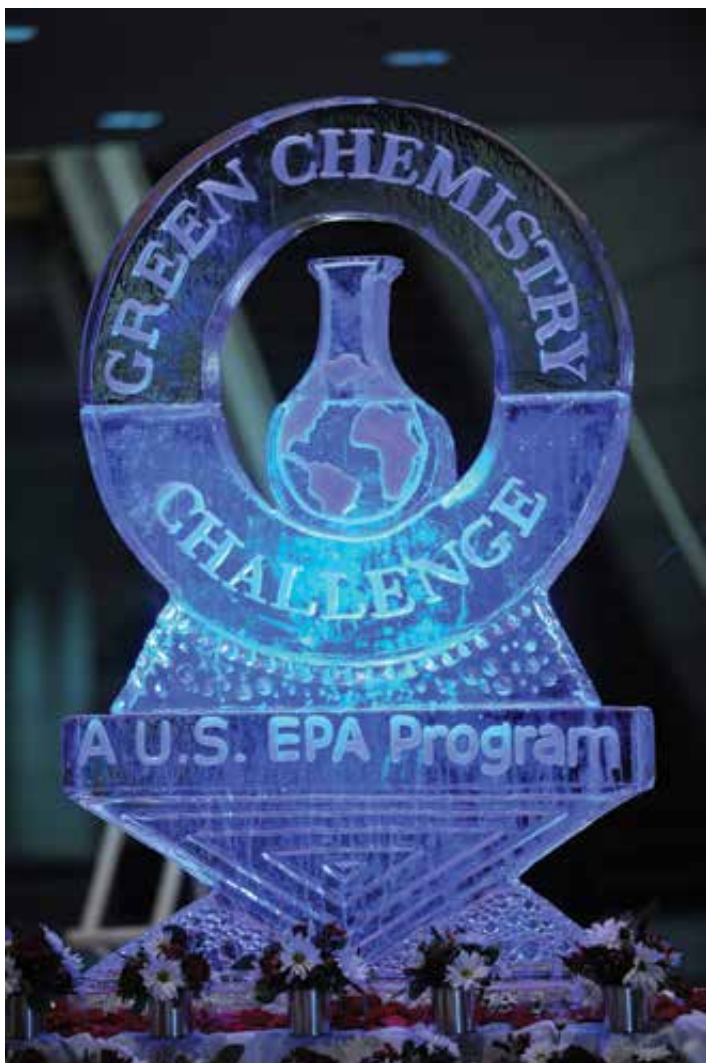
Dow researchers found a way to keep TiO<sub>2</sub> particles separated by altering the molecular structure of an acrylic latex binder the company has sold to paint companies for 50-plus years, essentially locking the TiO<sub>2</sub> particles into place so they can't clump together.

Fasano puts it this way: "Latex has always been the glue that holds together all the components in coatings and gives paint its durability. We took what has always been there (latex) and made it smarter."

### Sustainability & Consumer Benefits

EVOQUE Technology can help significantly reduce the amount of TiO<sub>2</sub> required in every gallon of latex paint. As a result, the carbon footprint to manufacture paint can be reduced by up to 22 percent, harmful emissions by up to 24 percent, and water consumption by up to 30 percent. Given the enormity of the global latex paint market – about 3 billion gallons a year – the potential positive impact to the environment is significant.

Consumers win, too, because EVOQUE Polymers balance sustainability and performance. With this product, consumers won't have to use as much paint to achieve the



U.S. EPA Presidential Green Chemistry Challenge Award.



*"We took what has always been there and made it smarter."*

same hiding coverage; two or three coats become one or two. Paints are also more durable because they can resist a variety of stains and corrosion.

### Positive Reception

Interest in the product among paint formulators has been strong since Dow introduced it. Ryan Osterman, operations leader at Dow's Bristol site, has seen a spike in customer interest. "We've had multiple visitors and they understand the benefits in improved performance and efficiency."

The U.S. federal government and chemical industry, too, have taken notice. Last December the Environmental Protection Agency (EPA) awarded Dow its prestigious Presidential Green Chemistry Challenge Award for EVOQUE™ Polymers. It is the ninth such honor for Dow since the award's introduction in 1996 and the first to recognize an innovation developed and manufactured in the company's Delaware Valley operations. EVOQUE

Technology was developed at Dow's  
Northeast Technology Center,  
recently

relocated to Collegeville, Pa., and is manufactured at its facility in Bristol, Pa., and other sites around the world.

The national awards are sponsored by the EPA in partnership with the American Chemical Society. The EPA grants the awards each year to companies that incorporate the principles of green chemistry into chemical design, manufacturing and use.

In advance of the EPA Green Chemistry Award, Jim Jones, assistant administrator of the EPA's Office of Chemical Safety and Pollution Prevention, visited the Northeast Technology Center to learn more about the chemistry of EVOQUE Polymers.

"Dow's technology is just one of many examples of Green Chemistry in action – helping solve environmental problems while saving money, and reducing waste and resource use. When technologies like this make their way to market, the human and environmental impacts, as well as economic impacts, are real and long lasting," Jones wrote on the EPA's blog following his visit.

For more information about EVOQUE and other innovation-enabling coating technologies, visit [www.dow.com/coating](http://www.dow.com/coating).

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Researchers based at Dow's Northeast Technology Center developed technology that substantially reduces water and energy consumption of paints by reducing the need for TiO<sub>2</sub>.

# Science Teachers, We Support You

Imagine being a science teacher these days. Financial realities impact everything from class size to supplies to field trips. Yet there is growing evidence of how crucial it is for students to see, touch and test drive what they learn.

Teachers today – especially those teaching science, technology, engineering and mathematics (STEM) – need advocates. They need to be cheered on, appreciated and, most of all, supported in their pursuit to inspire children to seek STEM professions.

Supporting teachers is a key part of Dow's STEM education strategy. Dow has become a leader in promoting STEM education because these skills are in high demand both within the company and in the economy as a whole. As evidence of the latter, a study by the McKinsey Global Institute found that the U.S. will have a shortage of more than 1.5 million STEM professionals by 2020.

"We need to act quickly and decisively to turn this trend around and ensure that there are enough people with

the right skills," said David Bem, Dow vice president for Research & Development and a member of the company's STEM Council, a group of leaders who chart the course of Dow's STEM strategy.

## Teach, Learn, Work, Advocate

Dow's national STEM strategy is built on four pillars: supporting teachers, engaging students, preparing workers and advocating in the community for STEM education. This Teach/Learn/Work/Advocate concept recognizes that meeting the STEM challenges of tomorrow requires action now on many levels. And it's no accident that Teach is first.

"Dow believes teachers are the multiplier effect on our young people, serving as an important conduit between the love of science and the connection to a STEM career," said Rob Vallentine, Dow's global director of STEM education.



Teachers from around Philadelphia learn how to provide inquiry-based science teaching during a week-long seminar offered by the Riverbend Environmental Education Center in collaboration with The Franklin Institute.

*Dow's national STEM strategy is built on four pillars: supporting teachers, engaging students, preparing workers and advocating in the community for STEM education. This concept recognizes that meeting the STEM challenges of tomorrow requires action now on many levels.*

### Multi-faceted Support

Dow supports STEM teachers through sponsorships, grants, volunteerism and professional development.

Each year the company funds teacher participation in prestigious training programs such as the Smithsonian Science Education Academies and the Keystone Science School. And in 2014, four Philadelphia teachers are among 159 from across America selected as Dow fellows to the New Science Teachers Academy, a program of the National Science Teachers Association (NSTA). These teachers will benefit from online professional development, seminars and mentoring, and will attend the 2014 NSTA National Conference on Science Education in Boston.

“When I heard about NSTA, I thought it was amazing. It’s really a great opportunity,” said Catherine Rigoulot, a high school science teacher at Mariana Bracetti Academy Charter School in Philadelphia who was chosen for the program. “Teaching science is a little overwhelming sometimes. There’s a lot that’s put on you. But it’s great to see the students’ faces light up, to see the light bulb turn on.”

Dow also supports local Delaware Valley teaching programs, including several run by Philadelphia Math + Science Coalition and its parent organization, the Philadelphia Education Fund (Ed Fund). Each year, for instance, Philadelphia teachers can apply for a grant funded by Dow to receive up to \$1,000 for educational materials. One such grant allowed middle school students to explore the effects of UV-A and UV-B radiation on human skin and eyes using UV detector beads, sunscreens and sunglasses. Another enabled a high school class to create a compost system to better manage manure, yard waste and cafeteria food waste.

“We know from national data that, on average, teachers across the board spend about \$800 of their own money on school supplies every year. I suspect that number is higher for science teachers,” said Don McKinney, program

coordinator for the Math + Science Coalition. “Through the generosity of Dow, we’ve been able to offset that with these grants.”

### Taking Action Today

Professional development resources and programs remain an integral element of Dow’s overall support of STEM teachers. As part of that commitment, the company funds an immersive training program offered by the Riverbend Environmental Education Center. It includes a collaboration with The Franklin Institute where teachers spend a week in August learning about inquiry-based science teaching.

“It’s a new way of teaching science, not out of a book,” explained Laurie Bachman, Riverbend’s executive director. “Teachers come to an understanding of how important it is for the students to be the ones asking the questions.”

Teachers who attend the training can apply for a year-long fellowship that gives them curriculum materials for their classrooms, one-on-one mentoring, and feedback from a seasoned teacher after a series of classroom visits. Of the 18 teachers who took part in the most recent training, about a third were able to take advantage of the fellowship.

“People have many ideas about what education should be and how we can improve it, and education probably does need to be changed on a global scale,” Bachman said. “But right now, we developed this program because of what *is*. There are so few children in Philadelphia who have access to high quality education on the level of their suburban peers, and we’re trying to change that.”



Students get a close look at fossils during a visit to the Riverbend Environmental Education Center in Gladwyne, Pa.

# Franklin Institute Expansion Heralds the Promise of Science

It's hard to miss the new art installation on Race Street just off the Benjamin Franklin Parkway in Philadelphia, where more than 12,000 four-by-four-inch anodized aluminum tiles undulate and ripple in even the slightest of breezes. The "Shimmer Wall," designed by artist Ned Kahn, covers the entire facade of the new Nicholas and Athena Karabots Pavilion, the first major addition to The Franklin Institute in 20 years. By gracefully demonstrating the science of movement, the "Shimmer Wall" serves as a promise of the caliber of science exhibits inside the new pavilion.

The Nicholas and Athena Karabots Pavilion, opening on June 14 of this year, greatly expands the Institute's capacity to inspire people about the wonders of science. The 53,000

sq. ft. building will house a new STEM (science, technology, engineering and mathematics) education and conference center, a climate-controlled traveling exhibition gallery, and the new core exhibit "Your Brain" in which visitors can explore neuroscience and their own senses.

"Effective STEM education is critically important to the future of our country, and the first step toward that is engaging students in the sciences," said Jane Palmieri, president of Dow Building Solutions and executive corporate committee member at The Franklin Institute.

"With this expansion, the Institute will be able to open up a world of STEM career possibilities to more students in our region."



The Shimmer Wall on the new Nicholas and Athena Karabots Pavilion demonstrates the science of movement for people passing by.

## Successful Partnership

The Franklin Institute raised funds for the Nicholas and Athena Karabots Pavilion through the now complete Inspire Science capital campaign. In keeping with its commitment to STEM education in general and its philanthropic partnership with The Franklin Institute in particular, Dow was one of the first major companies to support the fundraising campaign.

“Dow’s lead sponsorship of the Philadelphia Science Festival makes organizing the Festival possible, and Dow’s support of the Institute’s ongoing STEM youth programming initiatives is critical to their success,” said incoming President and CEO Larry Dubinski. “When Dow scientists engage children in hands-on activities, it opens a whole new world of possibilities to these curious students. We value our wonderful partnership with Dow, and look forward to continuing to work with them.”

Dow’s partnership with The Franklin Institute has made STEM learning opportunities possible for a range of audiences, including those who attend the Philadelphia Science Festival, which is organized by the Institute and now in its fourth year. The Institute helps to implement the nearly 100 events presented over 9 days each April by nearly 150 community, corporate, and academic partners. More than 50 Dow employees from sites throughout the Delaware Valley volunteered during the 2014 Festival.

In addition, Dow provides critical support for the Institute’s Partnerships for Achieving Careers in Technology and Science (PACTS) program. As the Institute’s signature youth leadership program, PACTS mentors roughly 150 students each year in grades 4–12 through after-school and weekend activities. Program activities include robotics competitions; architecture classes that teach students how to use analysis and design as

approaches to a multitude of problems; and environmental science that emphasizes community partnership and service as well as scientific study. Overall, PACTS students have an average 99 percent high school graduation rate, as compared to the school district graduation rate of only 61 percent.

## Modern Energy Efficiencies

PACTS students will enjoy much-needed additional classroom space when the Nicholas and Athena Karabots Pavilion opens in June 2014. The new building is being constructed in a way that honors its history yet benefits from the most advanced construction technologies.

To tie the past to the present and future, designers chose limestone from a quarry in the same region of Indiana as the stone facing of the original 1933 museum. Other materials were sourced from companies much closer to Philadelphia, including Dow. The Company’s THERMAX™ sheathing and ROOFMATE™ insulation, for example, are both used throughout the building. Dow’s products helped the Institute reduce energy usage and save operational costs each year, part of earning a LEED certification (Leadership in Energy and Environmental Design) at the Silver level from the U.S. Green Building Council.

Expanded space and resources for STEM learning benefit the entire community as students, families and adults explore the capacities of science and technology to impact the world’s most difficult challenges, and to provide solutions to everyday problems. Add in the Shimmer Wall, and the Nicholas and Athena Karabots Pavilion helps the Institute to pursue this goal with style.

For additional information about PACTS and the Nicholas and Athena Karabots Pavilion, visit [www.fi.edu](http://www.fi.edu).

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Impacting approximately 150 students a year, The Franklin Institute’s youth leadership program, Partnerships for Achieving Careers in Technology and Science, teaches the use of analysis and design in problem-solving and scientific study.

# Philadelphia Shines

The old saying “a picture is worth a thousand words” still rings true in our fast-paced, image-intensive world. It is increasingly challenging for companies to tell their stories in ways that resonate with customers and other stakeholders.

Memorable organizations – and often the most successful ones – are those that find creative means to convey what they bring to society at large. There are many companies who do this well, bringing their familiar brands to life all around us.

“Making emotion a part of our brand and connecting with our marketplace in a different way is challenging,” said Kimberly Kupiecki, public affairs leader for Dow Functional Materials. “It’s about having a higher-level conversation with our stakeholders – bringing them solutions and making better products.”

In the past decade, Dow has been working tirelessly to translate the company’s values and brand into something that is relevant and meaningful to stakeholders. One of the

most successful ways Dow is doing this is through video storytelling. People naturally connect with the attitudes, hopes and dreams shared through stories, so creating videos that become storytelling tools helps bring more of a human face to Dow’s businesses.

“There are plenty of practical ways to share facts, figures and data about the technical performance of our products,” said Neil Carr, business president of Functional Materials for Dow, “but sharing a story that reveals why we do what we do is the best way to connect on an emotional level with the people we serve and to illustrate our commitment to their success.”

Dow is fortunate to have an in-house video production team that is the creative engine behind the company’s video production efforts. Studio 2020 is a state-of-the-art Dow creative production department based in Midland, Mich., with studios in Philadelphia, and also at Dow’s Northeast Technology Center in Collegeville, Pa. All three production facilities have dedicated resources supporting

*“Making emotion a part of our brand and connecting with our marketplace in a different way is challenging. It’s about having a higher-level conversation with our stakeholders – bringing them solutions and making better products.”*



Alan Friedlander, Doreen Gallagher, Linda Lee and Ron Sim take time out during a location shoot in Philadelphia.



Ron Sim and Tony Walker work on the “Elemental Messenger” video produced using Philadelphia locations and people.

the marketing and communications efforts for the company's many businesses.

Four of these businesses comprise Dow Functional Materials, headquartered in Philadelphia, whose technology serves markets like water, energy, food, pharma, and home and personal care. The Studio 2020 team recently created, produced and shot a four-minute video that uses familiar Philadelphia locations and local Philadelphians to tell its story about how Dow's businesses are making lives a little better every day.

"Elemental Messenger" tells the story of a retired Dow scientist who continues to share small gifts of insight and hope by releasing balloons carrying positive messages that float down into the hands of residents, who are touched to have their day brightened in some way. Dow business leaders also share their thoughts about customer collaboration and innovation in these key markets, recognizing that people everywhere want and need reliable sources of energy, clean water, healthier food, effective medicines and quality personal and home care products.

The film captures the essence of Philadelphia through shots taken on the Belmont Plateau, the intersection of 9th and Pine Streets, Broad Street in front of City Hall, a bench outside of the Metropolitan Bakery, and a stroll through the famous Italian Market.

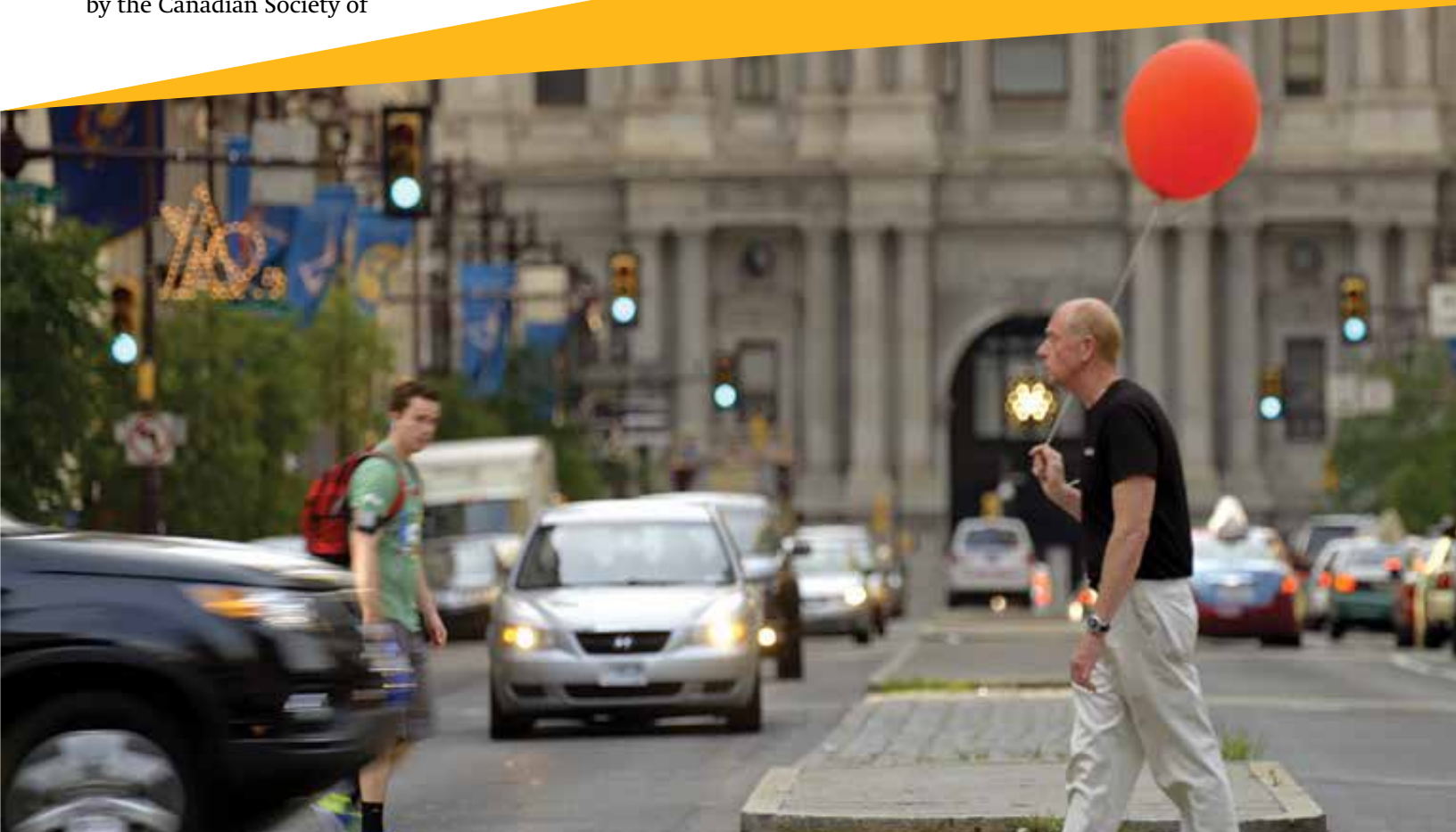
"Elemental Messenger" was recently recognized for Best Corporate/Educational Cinematography by the Canadian Society of

Cinematographers, reflects the tremendous in-house talent Dow has at its fingertips. Alan Friedlander, who produced "Elemental Messenger," has been creating award-winning corporate productions and live events for 30 years. Tom Pilog, who edited and arranged the scoring for the film, is a former editor for the legendary NFL Films and seven-time Emmy award winner, now working full time with the studio. Ron Sim, who conceived, shot and directed the film, is a world-renowned cinematographer and winner of many Canadian cinematography awards. Jeff Panara from the Collegeville studio produced the computer-generated graphics of the balloons flying through the streets of Philadelphia.

"This was truly a collaborative and enjoyable effort for us," Friedlander said. "We had an amazing team dynamic because we respect one another as professionals and continually challenge ourselves to get to the next level. Everyone 'gets it' and wants to deliver their very best work."

This is the first in a series of videos featuring Dow's Functional Material businesses. A second film focused on water is currently in production.

To watch "Elemental Messenger," visit Dow's Sustainable Living website at [www.sustainableliving.dow.com](http://www.sustainableliving.dow.com). For additional Dow videos, visit [www.youtube.com/DowChemicalCompany](http://www.youtube.com/DowChemicalCompany).



Produced in Philadelphia, Dow's "Elemental Messenger" video captures the essence of the city through shots taken on the Belmont Plateau, the intersection of 9th and Pine Streets, in front of City Hall, outside of the Metropolitan Bakery, and on a stroll through the famous Italian Market.

# Putting Manufacturing Back on the Map

American manufacturing is at a crossroads.

With that one sentence, Dow initiated a call to action to revitalize the U.S. economy through advanced manufacturing. This statement opens “The Dow Chemical Company Advanced Manufacturing Plan for the U.S.,” a compilation of Dow’s core beliefs on national public policy issues that affect the nation’s competitiveness.

Dow, which has long been a global pioneer in driving new technologies and innovation, developed the plan to provide a roadmap to drive job creation, encourage innovation and strengthen American competitiveness globally. The plan outlines policy recommendations in the areas of energy, trade, tax environment and regulatory reform.

Manufacturing is the lifeblood of the nation’s economy, creating the foundation for a productive, sustainable future. And while it took a serious blow in the last several decades, manufacturing is experiencing a bit of a renaissance. In fact, more than 500,000 jobs have been created since January 2010.

## Dow’s Local Footprint

Dow is urging government, industry groups and corporations to galvanize around a manufacturing resurgence. In his 2011 book, “Make It in America: The Case for Re-Inventing the Economy,” CEO Andrew Liveris advocates for the importance of manufacturing to the long-term health of the U.S. economy. At the same time, Dow has stepped up advocacy efforts in regions like the Delaware Valley.

This region is an important manufacturing hub in the U.S., generating more than \$1.3 billion in total wages and supporting over 23,000 jobs in Philadelphia alone.

The Delaware Valley is also important to Dow. As part of its regional footprint, the Company employs approximately 2,000 people, including more than 900 employees in manufacturing locations in Bristol, Pa., (paints, coatings, adhesives, etc.); Pennsauken, N.J., (building materials and insulation); and Newark, Del., (consumables for electronic chip fabrication).



A Chemical Mechanical Planarization (CMP) operator is loading a polishing pad on a lathe for grooving. Dow CMP Technologies (CMPT) pioneered many of the pad products and processes that are widely used today and for over 30 years has remained the industry leader. CMPT offers a full range of polishing pads and slurries designed to meet the unique performance needs of each CMP application and node.



*“Making meaningful changes now will help ensure the future sustainability and productivity...”*

“We are heavily invested in this region,” said Bill Schulz, Newark site leader. “The products we make here are used in industries across the globe. We need to constantly improve to continue to meet our customers’ needs for quality and consistency in our manufacturing processes.”

### Assessing the Landscape

In the past year, Dow has proactively sought ways to advocate for advanced manufacturing in the region.

Since its establishment in early 2013, Dow has played an active role in Philadelphia Mayor Michael A. Nutter’s Manufacturing Task Force, a council established last year. The task force is charged with evaluating the state of manufacturing in Philadelphia and recommending specific measures to support regional growth and competitiveness.

“Manufacturing in this region has gotten somewhat of a bad reputation that’s not warranted,” said Gary Hockstra, vice president of Hydrocarbons & Plastics and Dow’s representative on the task force. “The mayor believes we need to get Philadelphia back on the map as a preferred location for manufacturing in the U.S., which totally aligns with Dow’s own efforts in this area. Making meaningful changes now will help ensure the future sustainability and productivity of many major companies, including Dow.”

One of the task force goals last year was to gain a better understanding and definition of the manufacturing sector as it currently exists. It found a shifting landscape that includes major industries including chemicals, medical equipment, machinery, food processing, transportation and many others.

“The current operating environment for manufacturing doesn’t take into consideration evolving industry needs or the changes that companies have experienced over the past several decades,” said Peter Gudritz, Dow’s Northeast government affairs and community engagement leader. “The Mayor’s task force is a great step in changing the environment, and Dow is happy to be supporting these efforts.”

Reflecting on the overall effort to accelerate advanced manufacturing, Hockstra said there is reason for optimism. “Based on the mayor’s enthusiasm and public commitment to the strategy, I am very optimistic about implementation moving forward. Response has been positive and we all support this new focus and direction for rebuilding.”



A technician at Dow's Newark, Del. facility conducts a surface inspection. CMP's products must meet stringent customer requirements for use in manufacturing current and next generation memory and logic chips.



A Dow scientist holds a polished wafer containing computer chips. Silicon wafers must be perfectly flat and smooth, as layer after layer of intricate circuit wiring is created on the surface. Defects such as micro scratches on a semiconductor chip can render it useless.



The Newark site has polishing labs that are designed similar to their customer's clean rooms where they make wafers containing chips. CMP technicians work in these clean room environments to develop and test new pad and slurry products that will be used by customers to make computer chips.

■ On March 5, 2014, representatives from Dow, The Franklin Institute and Drexel University announced that a team made up of Drexel Engineering students and representatives from Philadelphia Science Festival partner organizations will attempt to beat the Guinness World Record for the Largest Rube Goldberg Machine to kick off the Festival on April 25, 2014. • The press conference was hosted at Drexel University where it was announced that Drexel students will attempt to set a Guinness World Record next month to kick off the 2014 Philadelphia Science Festival. Forty-four Drexel students will attempt to break the record for the largest Rube Goldberg - style device. • Justin Land (Dow) joined Dennis Wint (The Franklin Institute), John DiNardo, Senior Vice Provost for Academic Affairs (Drexel University), Adam Fontecchino, Professor, Drexel Engineering, for this event.



■ Howard Ungerleider, executive vice president, Advanced Materials, and executive sponsor, GLAD (Gays, Lesbians and Allies at Dow) is joined by members of the Company's GLAD Network at the Attic Youth Center's 20th Anniversary Gala Celebration on November 16, 2013. In 2013, Dow was recognized for the ninth consecutive year for its continued leadership of and commitment to lesbian, gay, bisexual and transgender (LGBT) rights in the workplace, by the Human Rights Campaign (HRC) for achieving a 100 percent rating on its corporate equality index – a national benchmarking tool on corporate policies and practices related to LGBT employees.



# Dow in the



■ The First State FIRST LEGO League Championship, sponsored by Dow, was held on February 15, 2014, for elementary and middle school teams at the New Castle Air National Guard Base. More than 1,000 people, including employees from Dow, came out to support the 400 students as they competed.



■ On November 19, 2013, Delaware Governor Jack Markell and Alan Levin, Cabinet Secretary, Delaware Economic Development Office, visited Dow's Newark, Del., site. Pictured left to right: Delaware Cabinet Secretary Alan Levin, Dow's Dave Fogarty, Howard Ungerleider and Shannon Williams, Delaware Governor Jack Markell, and Dow's Bill Schulz.



■ Dr. Martin Luther King Jr. once said, "Life's most persistent and urgent question is: 'What are you doing for others?'" • On January 20, Dow employees and family members joined City Year Greater Philadelphia along with nearly 1,000 community members, school partners, and corporate sponsors at Overbrook High School in Philadelphia in honoring Martin Luther King Jr.'s legacy of service. • Dow employees from Collegeville, Newark, Philadelphia and Spring House rolled up their sleeves and let their artistic talents shine, adding a bit of STEM influence to the walls of Overbrook. Over the course of a couple hours, canvases of paper soon turned into a colorful DNA helix and brain.



■ For the second year in a row, the Perkiomen Valley Chamber of Commerce (PVCC) hosted the Collegeville Community and Business Expo at Dow's Northeast Technology Center. In total, more than 70 Chamber member organizations provided Dow employees information about amenities, services and businesses around the community.

■ Despite the record-breaking snowfall experienced throughout the Northeast this past winter, impressive snow sculptures found their home on the lawn of Dow's Spring House Technical Center.

# Delaware Valley



■ Debbie Zimmer of Dow is joined by City of Philadelphia Mayor Michael Nutter, Streets Department Commissioner David Perri, Councilwoman Jannie Blackwell, Deputy Streets Commissioner Donald Carlton, Dan McElhatton of Keep Philadelphia Beautiful, and Skip Weiner of Urban Tree Connection on March 5, 2014, to kick off the countdown to the Philly Spring Cleanup and encourage residents to "Keep Up the Sweep Up." • To support the efforts, Dow, in conjunction with McCormick Paints, donated 1,000 gallons of paint to be used for all Philly Spring Cleanup projects.



■ Employees volunteered at the FIRST® LEGO® League (FLL) Regional Qualifier, supported by Dow, at Oxford Area High School (Oxford, Pa). Nearly 25 teams faced the 2013 NATURE'S FURY™ Challenge. • The Pennsylvania FLL Regional Qualifier was part of a larger FLL initiative in which more than 200,000 children ages 9 to 16 from over 70 countries will discover what can be done when intense natural events meet the places people live, work, and play through this year's NATURE'S FURY™ Challenge. • Left to Right: Sam Alexandre (Dow) Robert Russell (Dow and Oxford Robotics), Justin Land (Dow), Brian Hildebrandt (Oxford Robotics), James Roomesberg (Dow).



■ Parents, teachers and students from Bucks County in Pennsylvania assembled at Dow's Spring House Technical Center for science demonstrations and the local You Be The Chemist Challenge (Challenge). Students showed off their knowledge of chemistry concepts, important discoveries and chemical safety awareness. • The Bucks County Challenge, held on March 18 at the Spring House Technical Center, had 20 students from Newtown Middle & Elementary Schools, Goodnoe Elementary School, Richboro Elementary School, Holland Middle School and Churchville Elementary School compete.

# Historic Treasure Gets Energy-Efficient Makeover



Volunteers from Dow have been a key part of the rehabilitation of this home in Norristown, Pa., by Habitat for Humanity of Montgomery County. Pictured: Jim Alexander, Stewart Williams, John Reffner, Marcelo Figueira, and Wei Gao.

Every Habitat for Humanity home comes with a story of lives positively affected. One particular home in Norristown, Pa., comes with two stories.

The structure, which was built around the time Grover Cleveland became president 130 years ago, is located in the town's Central Norristown Historic District. The house is currently undergoing a full rehabilitation, courtesy of a partnership between Habitat for Humanity of Montgomery County (HFHMC) and Dow.

The historic home was donated anonymously to Habitat by an elderly couple who lived there 50 years. A friend had given them the home when they were young newlyweds expecting their first baby. They raised their family there, retired there, and ultimately grew old together there. With little fanfare but with a great spirit of generosity, they donated the house to Habitat.

And the other story? It's that of Sanaé Carey. Sanaé has worked with the local Habitat affiliate since she was 16. She's now a single mother of four children, ages 4 to 15 years old, and will become the new homeowner of the Norristown home. To be the recipient of care from an organization she's long supported is particularly meaningful to her. "I started volunteering with Habitat when I was a kid," said Carey. "Never in my wildest dreams did I think I would benefit personally from this relationship."

## New from the Inside Out

HFHMC has traditionally focused more on rehabilitation of existing homes than on new home construction, a growing need in the densely populated, land-scarce counties of Pennsylvania. Still, the Norristown historic home has presented its own special set of challenges.

"The house was in pretty rough shape when we took over," says Marianne Lynch, executive director of HFHMC. "It was built during a time when basic building standards were much lower. Not only was there no insulation, in some places you literally could see right through the brick wall to the outside." Habitat has worked closely with the Historical Review Board (HRB) in Norristown to ensure the project met historical

standards and that all improvements would preserve the original integrity and architecture of the home. The biggest challenge was the exterior: it couldn't be altered in any way, so improvements could only be done from the inside.

"We completely gutted the interior and started again from the studs," said Lynch.

## 21st Century Energy Efficiency

According to Gary Parsons, lead building scientist with Dow Building Solutions, the renovation was an ideal fit for Dow's air sealing, insulation and weatherization products, although it presented a bit of a challenge because of the HRB's strict preservation standards for the home exterior.

Dow recommended several options from its building solutions portfolio specifically for interior use, including STYROFOAM™ brand polystyrene insulation, FROTHPAK™ polyurethane foam spray and GREAT STUFF™ window and door insulating foam sealant and fire blocking products.

"The difference is astounding," said Parsons. "It wouldn't surprise me to see the energy bill for this home cut in half after this installation is finished. In other retrofit projects we have completed, we have seen a huge impact on energy consumption for the homeowner."

## Next Up: Neighborhood Revitalization

In an effort led by Dow, HFHMC will join a Neighborhood Revitalization program this fall with neighboring Habitat for Humanity affiliates in Philadelphia and Bucks County, the first-ever collaboration for these three Habitat groups. Revitalization efforts in the two affiliates are already under way and HFHMC will join the effort next fall, with a three-to-five year commitment to Norristown.

"I love the new direction that Habitat is taking with these revitalization projects and am thrilled to be partnering with our close affiliates," said Lynch. "The more collaborative we can be with them and with Dow, the more all benefit and the bigger impact we can have improving lives."

## Energy Efficiency Tips

*Whether your home is 130 years old or brand new, make sure it's energy efficient.*

*Here are several ways you can lower your utility bill:*

- **Effective Insulation:** Reduce air leakage with complete insulation coverage of walls, foundation, ceilings and ducts
- **Weatherization:** Reduce moisture and seal in air with housewrap or foam insulating sheathing, flashing products, caulk or foam sealants and weather stripping
- **High Performance Windows:** Get better efficiency from lower U-value windows
- **ENERGY STAR Qualified Equipment:** For heating and cooling, water heaters and appliances

For more energy efficiency tips, visit [www.dow.com/building](http://www.dow.com/building).

# Making a Difference in Your Community

## Dow May Want to Support You



Deb Kline educates visitors at the 2013 Philadelphia Science Festival about iron in cereal.

Dow's spirit, belief and commitment to improve the quality of life of its communities has existed for more than 100 years. We play an active role in improving life in the communities we serve in the Delaware Valley and around the globe.

Through community and sponsorship grants and employee volunteerism, Dow is committed to improving life in the communities we serve, not just to be a good neighbor, but a global corporate citizen.

Dow looks to invest in programs and organizations that will have a long-term impact and serve as a starting point for widespread community involvement and growth.

Three grant programs available in the Delaware Valley include:

### **DowGives**

#### ***Dow's signature national community grant program***

**Purpose:** To build stronger communities

#### **Programs Supported:**

- **Science in Society:** Transformational initiatives making a difference for students and academic institutions by increasing interest in careers and opportunities linked to science, technology, engineering and math (STEM)
- **Contributing to Community Success:** Programs promoting economic development and job creation, providing permanent improvement to the social infrastructure of the community or offering long-term benefit to the community

- **Sustainability:** Programs that enhance or protect the natural environment, raise awareness of environmental issues among a broad public audience, and/or link to partnerships that demonstrate the innovative value of sustainability and Dow's products to society and the environment

2014 application deadlines are April 15, September 15 and December 15.

To learn more: [www.dow.com/delawarevalley](http://www.dow.com/delawarevalley)

### **Community Advisory Committee Grants**

**Grant program managed by Dow's Community Advisory Committees in Bristol, Pa., Newark, Del., and Spring House, Pa., which serves as a link between Dow's Delaware Valley locations and surrounding communities**

**Purpose:** To support transformative initiatives designed to prepare the next generation of STEM innovators

**Programs Supported:** Those that strengthen middle school STEM programs or reach a large number of students

To learn more, contact Dow's Northeast Public Affairs at [fnapaned@dow.com](mailto:fnapaned@dow.com).

### **Dow Promise**

**U.S. program created by Dow employees to positively affect African-American communities near Dow locations through outreach activities and grants**

**Purpose:** To support programs striving to overcome economic and educational barriers to success

**Programs Supported:** Dow Promise supports programs that demonstrate one of the following:

- A clear need in the city or community where Dow has a presence
- A chance to help pre-college students discover the wonders of science
- Support of a project or program involving science, engineering, business or a related area where Dow needs talented people
- An opportunity to sustain and enhance the environment

To learn more: [www.dow.com/dowpromise](http://www.dow.com/dowpromise)

# Profiles in Leadership

## Making STEM Education Come Alive

There are as many opinions on what defines exceptional leadership as there are views on what constitutes the ideal vacation. It's no wonder, then, that each year a new batch of leadership books shows up on the bestseller list. Motivator, communicator, visionary, delegator, educator – these are all valid. Consider, though, volunteers. Those who choose to go well beyond their day jobs to contribute to their communities and to the greater good are people to admire and aspire to emulate.

Dow has a rich heritage of volunteerism. Employees are encouraged to dive into their communities and to make a difference. It's with no small amount of pride, then, that Dow presents four employee volunteers from its Delaware Valley operations:



### **Melissa Johnson**

Spring House, Pa.

Day Job: Senior Research & Development Manager

Volunteer Role: One Awesome Coordinator for Science Engagement

For the past few years, Melissa Johnson has organized You Be The Chemist competitions for students in Montgomery and Bucks counties. More than 1,000 children from 11 schools took part this year, testing themselves against their peers in a fun and inspiring competitive environment. Now Melissa is expanding her role by helping to launch a Science Ambassadors program. It's designed to encourage and organize Dow employees to share their love of science with the community.

"People all around Dow get involved with kids and with schools in their communities, and we got a sense that even more people would volunteer if we made it easier for them, which is what we do with Science Ambassadors," Johnson said. "I became a scientist because I think science is fun and exciting, and I like to share that with other people."



### **Jason Galinski**

Newark, Del.

Day Job: Senior Production Manager

Volunteer Role: Tireless Advocate for STEM Education

Junior Achievement of Delaware is expanding into science, technology, engineering and mathematics (STEM) subjects, and Jason Galinski is right in the middle of it all. As a member of the board of directors for Junior Achievement of Delaware, an organization that

helps students develop business skills for the 21st-century global marketplace, he's helping to forge a partnership with the state's Department of Education and Gov. Jack Markell's STEM council. The goal is to link JA with modern business challenges. "Junior Achievement's focus has always been financial literacy and career readiness," Galinski said. He also administers the You Be The Chemist program in Delaware, with about 75 students from four schools taking part. "I enjoy working with students and families in the community, supporting their success in education."



### **Bob Solomon**

Collegeville, Pa.

Day Job: Research Scientist

Volunteer Role: Veteran Science Fair Judge  
Across eastern Pennsylvania, Delaware and southern New Jersey, thousands of students

take part in science fairs each year put on by the Delaware Valley Science Fairs organization. Bob Solomon is a board member with the organization and among his important roles is recruiting Dow coworkers to serve as judges at the fairs. "Our job is really to motivate and inspire, but part of that process is to interact, answer questions and possibly even mentor students," Solomon said. "Most people who volunteer have such a good experience that they come back." Solomon has volunteered with the organization for more than 20 years. He says it's a great feeling to see students return to the fairs year after year with a growing understanding of science.



### **Robert Russell**

Newark, Del.

Day Job: Technologist Leader

Volunteer Role: Robotics Advisor with a Soft Spot for Kids

As advisor to a high school robotics squad, Team Ozone, in Oxford, Pa., Robert Russell knows teaching life-long learning skills begins with nuts and bolts. The team competes in conjunction with the nonprofit organization, For Inspiration and Recognition of Science and Technology ([www.USFirst.org](http://www.USFirst.org)). Each school year, team members work together to design and build a robot that can achieve a specific task. The details of the task are unveiled in the fall, and teams have until spring to complete their robots. In doing so, the students learn not only about science and engineering, but about problem-solving and teamwork. "I just hope I can encourage them to stay in science," Russell said.

# Do You Like Us?



## We're on Facebook!

Search *Dow Chemical Company* and "like" our page to be updated on:

- Upcoming events
- News and business
- Recent achievements
- Dow's involvement in the community
- Photos and videos of people in the community

Find us at <http://www.facebook.com/TheDowChemicalCompany>

## Let's Be Friends!



## DRINKABLE WATER. FOR A THIRSTIER PLANET.

Dow solutions like DOW FILMTEC® reverse osmosis membranes are helping satisfy the rapidly increasing demand for drinkable water, filtering 15 million gallons of water per minute. Saltwater to drinking water. Together, science and humanity can solve anything. **Solutionism. The new optimism.®**

