Cefic Responsible Care Awards 2016
Full list of entries

The range of entries once again illuminates the diversity of industry's Responsible Care initiative.

JURY PROCESS: The jury discussed each category prior to nominating overall winners and commendations. The table below presents the results of their deliberations. A brief summary of all entries, excluding overall and commendation winners, follows.

BEST IN CATEGORY (8 categories)		
Communications (4)	Lamberti, Italy	A day as a chemist at Lamberti
Distribution (1)	Dow Europe, Germany	Using SQAS as basis for safety & quality driven relationship between shipper, carrier and customer
Energy Efficiency (5)	HCS Group, Germany	New energy concept at the Haltermann Carless site in Speyer
Environment (13)	Covestro, Germany	A dream come true - the use of $C0_2$ as a raw material for polyurethanes
Occupational Health & Safety (15)	MSD, Ireland	Achieving Occupational Health & Safety Excellence in a Time of Great Change
Process Safety (2)	Versalis, Italy	Process Safety & Asset Integrity in Versalis
Product Stewardship (6)	DSM Sinochem Pharmaceuticals, Netherlands	Sustainable Antibiotics
Security (1)	Kemper System, Germany	Liquid chemicals - safe and pioneering packaging solution
Accenture special award	SAFECHEM	The SAFECHEM Chemical Leasing Model - unlocking the potential of the Circular Economy
(*) Figure in brackets denotes number of entries in this category.		

Communications Category

Ashland

Responsible Care Training

The company's web-based course ensures every Ashland employee worldwide receives regular training on Responsible Care. Ashland upgraded the course in 2015 to include a general overview supplemented with specific chapters on the firm's Zero Incident Culture and Product Stewardship.
An introductory video message from the CEO with local language subtitles is backed up with a local language video by the in-country leader which helps personalize the training and get users' attention from the start. This global initiative reaches around 2,000 employees at Ashland's European operations.
The training automatically refreshes for each employee's learning plan every 12 months.
Once training is complete, employees should be able to explain the Responsible Care ethic and why it matters to Ashland, and identify related policies and goals. They'll also be equipped with knowledge of the speciality chemical firm's Zero Incident Culture and concepts of preventable incidents, as well as being able to relate to the relevance of product stewardship within the value chain.

Lamberti SpA

A Day as a Chemist

In a joint effort with the local town of Albizzate, and under the official Environmental Agreement signed by the two partners, Lamberti launched a new educational project running between February and April 2016. It involves around 150 students and kicks off with a plant visit for students and teachers who take part in a special lesson that takes them from the classroom to the lab. Topics are brought to life by an enthusiastic and motivated group of 15 volunteer employees.
Aimed mainly at middle school and slightly younger, 10 sessions address matter (atoms, molecules, air and water), energy (kinetic and potential, chemical) and environment (pollution, waste treatment).
Lessons are in two parts: a more traditional format using colourful, animated powerpoint presentations and other materials which are followed up with related experiments in chemistry and physics.
The judges praised the project's aims to encourage and interest young people in the world of chemistry, and it was described as "well-structured" although the Responsible Care element was not clearly defined.
Design of the project took three months starting July 2015 and will run each year for the duration of the three-year Environmental Agreement with Albizzate.
Lamberti's aim is twofold:

- to familiarize the local community with its science and technology base, its skilled workforce and their dedication to the area's sustainability
- to provide a public service through its support for the school and enhance children's' learning of science.

Radici Group

Stakeholder Engagement: a Case History

Radici's entry covered various approaches to communicating with stakeholders on sustainability issues. It targeted different target groups and delivery channels and outlined basic results of the exercise based around the content of the company's 2015 sustainability report.
Specifically, Radici also explored the use of LinkedIn and LinkedIn Sales Navigator to spark a dialogue and interaction on sustainability issues with its customer base. A three-phase programme started with analysis of the company's client and contact base used for measuring customer satisfaction in 2014.
Phase 2 involved a search for clients and leads through the business-oriented social networking service, while the final stage was direct contact via InMail with identified leads.

The exercise was based on a contact list covering more than 800 employees at nearly 600 companies.

Solvay Specialty Polymers

Working for a Better Future

Outlining the Solvay Way concept – "contributing to quality of life through a more innovative and sustainable chemistry by enrolling …employees through our continuous progress approach" – this entry zeroed in on its connections with the local community.
An end-2012 opinion poll of plant neighbours at 15 major Solvay production sites aimed to assess the quality of their relationship and communities' perceptions of social, economic and environmental issues. Results have helped guide local management of sites.
At Spinetta Marengo that involved the setting up of a local advisory board (LAB) in July 2014, bringing together a wide range of representatives including opinion leaders from the economic and social fields, suppliers and cultural organizations. The LAB is around 30-strong and meets four times a year outside working hours to encourage maximum participation. "Transparency is our watchword", says Solvay, and meeting reports are published on its website.
One of the direct outcomes of its improved communications efforts included an Open Day at the site involving all stakeholders including customers and local universities. The event attracted a strong response with around 2,200 people from the community attending.

Distribution Category

Dow Europe

SQAS: a Basis for Safety- & Quality-driven Relationships

With around 400,000 shipments by road and intermodal transportation every year, including a significant element of dangerous goods, Dow Europe has a close eye on safety of both the transport and storage of its products.
The company developed a process and database covering all its carriers using information from the well-established Cefic scheme, Safety and Quality Assessment Systems (SQAS), which evaluates the safety, security, quality and environmental standards of logistics service providers (LSPs). The Dow SQAS template focuses on subcontracting, management systems, legal requirements, training and maintenance and has 88 questions. If a valid SQAS assessment is already available, Dow does not carry out an additional audit.
The Dow database has around 150 service providers. Each month it runs reports and analyses all entries in an approach that flags up issues such as when reassessments are due, whether LSPs' action plans have been implemented and any gaps closed. The database has been used to develop key performance indicators (KPIs) to measure improvement; scorings are also used as part of the tender process and as a benchmark tool.
The judging panel, commenting on the lone entry in this category, said it demonstrated effective and systematic use of SQAS, enabling Dow Europe to both monitor and challenge its service providers.

Energy Efficiency / SPICE^3 Category

Borealis

Windmills at the Kallo plant

This project demonstrated the business approach to a Port of Antwerp invitation to cooperate on the building of a new wind turbine park. The proposal involved Borealis having 3 or 4 turbines on its land and connected to the company's electrical grid with start-up scheduled for 2015. Borealis formed a team to develop a strategy that would benefit the company, first negotiating technical requirements to mitigate the risks, then negotiating commercial terms.

Construction, commissioning and start-up went smoothly and in November 2015, around 3.75 MWh was produced by the turbines, representing roughly 20% of Borealis' electricity consumption at the site. In addition, the company gets a substantial discount on the market price for every MWh of electricity produced, saves on transport costs and taxes, and receives an annual fee.

Borealis

VOC Reduction Effort

Swedish environmental regulations meant Borealis needed to look at reducing overall volatile organic compound (VOC) emissions after completion of a new polyethylene unit at its Stenungsund site in 2015. After reviewing various production units to identify the most effective approach to achieve the necessary reduction, Borealis focused on modifying the product discharge system on a HDPE gas phase reactor where various issues meant gas was flared rather than recycled, thus impacting VOC emissions. Process design proved to be the answer, combining conventional and research-based approaches. Process modification meant removing one of two product discharge systems, replacing it with a smaller vessel and installing a gas recycle line.
The changes have brought various benefits including doubling the effectiveness of powder filling to around 100%, improved powder transport capacity, and minimizing gas losses to flare. Potential annual savings on ethylene are valued at between €600,000 and €1.2 million.

Borealis AG

Next Generation HVDC Cable Insulation System

One of the consequences of the drive for renewable energy is increased demand on the electricity transmission network in order to integrate these new sources with the existing grid and to build new connections from energy generation points to users. High voltage direct current (HVDC) is the most efficient way to transport bulk energy over long distances without significant losses, making it more environmentally friendly. This has pushed up demand for HVDC cable.
Borealis aimed to develop a new HVDC insulation compound capable of operating at increased voltage and transmission levels which was achieved thanks to the compound combining high levels of both chemical and physical cleanliness. Its official launch in August 2014 kicked off the commercialization phase. Borealis says the improved transmission level (2.6GW) is "enough power to light the city of Paris in a low loss, high efficient and sustainable manner". In addition, it achieved a significant reduction of energy consumption during the actual cable production cycle.

HCS Group

New Energy Concept at Speyer

This project, which saw development of new burner technology to enable use of vent gas, is featured on the website after gaining a special commendation from the judges who described it as "interesting" and one that "meets lots of policy requirements". The technology eliminates thermal post-combustion of the unused vent gas.

Wacker Chemie AG

Optimization of Integrated Energy System

In another energy efficiency entry rated by the judges, Wacker stresses its focus on closed material loops, using byproducts as starting materials for making other products. The company offered two concrete examples of the closed loop approach at its production site in Burghausen.
In the first project, the company is implementing a vapour recycling system at its Siloxane II plant where there is "vast potential for energy savings and heat recovery". Some of the heat from condensation of the vapour stream leaving the extraction column will be used to generate low pressure steam to heat

the upstream hydrolysis loop, eliminating the need for external supplies of heating steam.
Around 1600 kW energy will be recovered, equivalent to over 23,000 ton/year heating steam, and steam consumption by the complex will fall by more than 13%; standardized overall energy consumption will drop by more than 9%. Some 1,357 ton/year CO_2 will be saved. Start-up of the new unit is scheduled for October 2016.
Wacker's second example involves modifying heat transfer within the dispersible powder plant. Currently, around 1.3 MW heat is transferred into the cooling water and 0.7 MW in the powder plant via an existing waste-heat utilization loop. Addition of a secondary loop and use of specific materials in the plate fin heat exchangers will double the heating energy supplied to the dryer plant and reduce the heat being transferred to the cooling tower to 600 kW.
This project, due for implementation in the final quarter of 2016, will reduce the quantity of heating steam by around 8,000 ton/year and offer CO_2 savings of 1,365 ton/year.
Both projects are funded under Germany's programme for energy-efficient and climate-friendly production processes.

Environment Category

Clariant Produkte (Deutschland) GmbH

Low Emission Technology

Clariant's Functional Minerals' Low Emission (LE) Technology is a two-tiered bentonite solution for green sand casting developed for the worldwide foundry industry. The products offered by Clariant reduce BTEX (benzene, toluene, ethyl benzene and xylene) emissions from green sand by up to 80 percent while maintaining high throughput, clean casting surfaces and low scrap rates. The 'eco-friendly' technologies assist foundries in complying with environmental regulations and standards.
Clariant LE Technology also helps improve the health and safety of foundry operators, the environment and neighbours. Because the additives' efficiency is higher, lower dosages are required; higher efficiency also means the amounts of waste sand are reduced, and the lower BTEX contamination in the waste sand results in reduced disposal costs; greenhouse gas emissions are lower because of the smaller amounts of coal in the premix.
The company's lab and foundry engineers support foundries by monitoring green sand performance and emissions.

Covestro (formerly Bayer MaterialScience AG)

Use of $C0_2$ as a Raw Material

Its full title: *A Dream Comes True - the use of $C0_2$ for the production of plastics* reflects the results of 40 years of research to identify the right catalyst. Jurors picked this entry as the Environment Category winner and in the overall winners' discussions it was recognized as a top three entry.

Covestro (formerly Bayer MaterialScience AG)

Improvement of Fumes Suction System

Equipping all extruders at Covestro's polycarbonates (PCS) compounding plant in Filago, Italy with new fume hoods delivered a raft of savings within a year. The old hoods were large, based on low air velocity and high throughput, and were not automated. Their replacements involved high air velocity, low throughput, localized aspiration, valve automation and speed regulation of ventilators.
Implementing this simple but effective project resulted in tangible benefits which could be measured within a year: a 31 percent reduction in methane consumption; a 25-45 percent fall in ventilator electricity use and a 5 percent drop in $C0_2$ emissions. Additional benefits include improvements in machinery reliability, lower maintenance turnarounds and safer cleaning operations.
The project is being shared with Covestro's worldwide PCS compounding plants and other sites are

expected to implement it.

Covestro (formerly Bayer MaterialScience AG)

Reduction of Scrap Material

Standard steps when a new lot of polycarbonate (PC) has to be produced on a water bath extrusion line involves several steps: first, cleaning of the line purging PC which leaves scrap; then production of the new material for around 15 minutes followed by stopping to check the line for quality control (QC); and finally continuing if ok, or correcting and reverting to the first step. Scrap material is sold for recycling.
In 2010, the installation of optical and thermal sensors at the die of the extruders alerted operators when PC strands broke, creating waste material. Prior to the 2010 installation at Covestro's Filago plant, the percentage of scrap material was over 6 percent equal to around €3.7 million. By 2015, the volume of scrap material generated had fallen to 3 percent (c €2.5 million) and within the next two years the goal is to fall below the 3 percent level.
Various measures have helped Covestro achieve improvements. Analysis of stop times for QC enabled compilation of a list of more stable materials where correction times were not required at the beginning of production. Similarly, evaluations identified those materials not requiring initial QC tests, and recipes were revised to create more stable materials. Better planning and analysis also meant more overall efficient operating of the lines.
The project produced both economic savings and a better working environment.

Dow Benelux

Poplars for 1,4-Dioxane Phytoremediation

Dow Benelux found a novel method to tackle historic groundwater contamination at a former dioxane plant in Terneuzen, Belgium. Classic hydraulic containment via effluent treatment with advanced oxidation is costly and sustainably questionable. Phytoremediation involves the use of living green plants and is a low-cost, solar energy-driven clean-up technique. The alternative being used at Terneuzen, by which the dioxane-contaminated impacted groundwater is degraded by UV light, is a modified version of Applied Natural Sciences' *Treewell*® system.
At the site, 240 poplars were planted in late 2012. In the modified *Treewell*® system the bottom of the planting hole is sealed with bentonite and a tube with two screens drilled to 8 mbgl (metres below ground level) which connect the trees with the groundwater. The roots absorb groundwater, dioxane and soil minerals and transport them to the leaves where, by the process of transpiration, water and dioxane is disbursed into the atmosphere and the dioxane removed by UV-oxidation. An estimated 440 m^3 of groundwater is being treated annually.
Since planting, the groundwater has been monitored three times a year and an annual gas monitoring of the leaves' canopy measures dioxane evaporation and degradation. As less dioxane than anticipated is being emitted initial assumptions are that dioxane is also being degraded by the roots. A root zone investigation is scheduled during 2016 that will compliment bio-augmentation investigations into microbial activity at root level.
The phytoremediation will continue until around 2020 when the dioxane-contaminated groundwater has been remediated.

Endura SpA

Synergies for a Circular Economy

The judging panel selected Endura as the second ranking entry in the Environment Category winner and, in the overall winners' discussions, awarded the project a Special SME Commendation.

Merck

Implementation of Design for Sustainability

Implementation of the Design for Sustainability (DfS) programme began in 2014 targeting improvements in six areas: materials, water, energy and emissions, packaging, waste and usability/innovation. Merck defined a sustainable product or solution as one that "maximizes value for customers and Merck, and (that) demonstrates reduced impacts to human health and the environment throughout its life cycle."
By June 2015, all active projects that had started before April 2014 had been converted to the DfS programme. And in January 2016, 56 percent of active projects met at least one area of improvement and 25 percent met three or more.
One example is the redesign of a manifold developed to reduce overall material use, particularly stainless steel. The redesigned manifold weighs 47 percent less than the previous model (equivalent to 38 percent lower carbon emissions in shipping); easy removal of filtration heads reduced autoclave emissions by 91 percent, plus lowering electricity, water and related costs for the autoclave user. The redesign minimised manufacturing waste to landfill and scrap material. The annual materials reduction is about 130 kg of aluminium or >7,000 aluminium beverage cans. The DfS programme is being considered for adoption by other Merck divisions.

Nuova Solmine SpA

Continuous Watercourse Monitoring System

Since the 1960s, Nuova Solmine has supervised the artificial watercourse that receives water discharge from the Casone industrial zone of Scarlino and the urban wastewater in Follonica, Grosseto Province, Tuscany. However, recorded fish deaths triggered the need to install a biological alarm system.
The automatic system, iTOXcontrol, created by Dutch company microLAN, uses marine bacteria comparing the light emission values from these organisms at the entrance and exit of the canal, and generating alarms in the presence of toxic substances. The degree of the organisms' luminescence is proportional to the quality of the water. Data is transmitted to the control room, manned 24/7 by Nuova Solmine ensuring immediate response in the event of alarms being triggered.
The system, the only one in Europe running tests on ecotoxicological salt water, was installed in June 2014. Nuova Solmine reports that throughout 2015 toxicity in the canal is 'significantly below the legal limit' achieving the goal to decrease the environmental impact of its (and nearby companies') activities.

Sanofi Chimie Vitry-sur-Seine

Remediation of APIs in the Environment

Rehabilitating soil and groundwater to extract Active Pharmaceutical Ingredients (API) and intermediates (also known as "site specific substances" or 3S) at the Vitry-sur-Seine production and R&D plant, south of Paris, started in 2012. This represented the second step in site remediation work that began in 2008.
The clean-up treats soil to a depth of five metres and embraces 33 of the 100 APIs manufactured between 1908 and 2000. The 33 APIs were selected on three criteria: production >10 tonnes annually for three years, degree of toxicity, and biodegradability.
The €104 million project - including €10 million for the API work - involves excavating 210,000 tonnes of soil, recycling 5,300 tonnes of metal, dismantling 40 industrial structures, replacing 14km of buried pipes, dismantling seven power stations, plus analysis of over 5,000 soil samples, and 1,000 samples taken from groundwater and the River Seine.
The project is scheduled for completion by 2018 and the 10 hectares of recovered land area is earmarked for biotechnological manufacturing units plus maintaining containment wells over several years to reduce pollution impact and extracting specific substances traces.

Solenis LLC

Zero Spill Culture

When reviewing production practices at its EMEA (Europe, Middle East, Asia) facilities, where Solenis operates eight manufacturing plants with almost 1,000 employees, the company spotted small spills in the charging operation. Investigations discovered that these spills of, for example, 200g of powder when emptying a large bag and removing it from the charging hopper, were regarded as 'inevitable' and therefore no corrective measures were taken to prevent them.
A focused team worked to gather information on activities from each plant enabling an analysis of the spill situations; each plant was also asked to provide photographs of good practices to help prevent spills and situations leading to spills. This enabled the team to develop the Zero Spill Culture (ZSC) programme and training which all employees must complete on an annual basis.
The project looked at overfilling, hoses and pipes, and filters handling to identify and address areas for improvement. Since January 2016, every plant, by rotation, presents a monthly conference call summary on ZSC progress. To date spills have been reduced by >20 percent and a target of 50 percent has been set within the next two years.

Svilosa AD

Combined Plant for Waste Treatment and Utilization

Bulgaria's sole bleached kraft pulp producer Svilosa searched for a way to utilise its waste product. Those wastes include precipitates of silicates, calcium oxide, carbon, mineral substances; ash from wood bark incineration and calcium carbonate dust. Combined with calcium carbonate the wastes, which are alkaline, render a neutralizer and acid soil improver.
In December 2013, Svilosa won approval to construct a 40,000 tonnes-a-year combined plant for waste treatment via granulation. Since end-2015, the company has been able to offer agricultural producers two new products for cultivated land improvement. One a soil improver for acid soil neutralization (100 percent calcium carbonate); and the other a soil improver with a mix including calcium carbonate (78 percent), calcium oxide/calcium hydroxide/silicon dioxide (18 percent) and wood ash (4 percent).

Total - Refining & Chemicals - Polymers Division

Operation Clean Sweep

Total's polymer division is supporting the industry's Operation Clean Sweep® programme in its European and US plants. The plan has been formulated in response to the significant volume of end-of-life plastics found discarded at sea - an estimated 10 percent of plastics consumed are dispersed in an "uncontrolled way", endangering marine biodiversity.
Total's Feluy plant in Belgium has invested over €500,000 to minimise the loss of plastic pellets from various sources: a truck blower system, a bar screen in the aqueous effluent treatment unit, sewer drain grates and sweepers. These moves have resulted in the retrieval of three tonnes of pellets-a-month. At the Laporte plant in the USA a US$500,000 investment in 2014 provided a store for "roll off boxes" filled with covered polypropylene pellets and the introduction of drains. At three US plants - Bayport, Laporte and Carville - the company applies strict procedures with railcar transporters of Total polymers to ensure loaded railcars leave the plant free of loose pellets.
Total has also written to over 500 European customers and carriers and >400 in the USA encouraging them to team up to prevent pellet loss and reduce marine litter.

Total - Refining & Chemicals - Polymers Division

Packaging Reduction & Recycle Content Booster

Light-weighting and boosting recycled contents are two main targets in Total's polyethylene (PE)

multilayer film development. New resins - based on bimodal metallocene technology using the company's proprietary catalysts - offer long chain branching, easier processing and lower energy consumption for customers.
As the majority of the film solutions were developed in collaboration with customers, details of the film structure were not disclosed. However, in one in-house solution Total notes that changing the original formula of the polymer bag to a structure with an important percentage of its 'Supertough' PE resin enabled down-gauging that resulted in 17 percent less packaging and 17 percent less waste.
Two collaborations on film solutions provided, respectively, a 25 percent reduction and 30 percent reduction across three measures: non-renewable resource consumption, energy consumption and greenhouse gas emissions. For every 1,000 tons PE used in each of the two cases, the resultant savings equate to 80 terajoules and 3,900 tonnes of carbon dioxide equivalents, and savings of 70 terajoules and 3,400 tonnes of carbon dioxide equivalents, respectively
For the refuse bag market, Total also has a film solution that incorporates more recycled content (from 50 to 80 percent) and a thickness reduction of 14 percent.

Occupational Health & Safety Category

Ashland

Building a Zero Incident Culture

The four cornerstones of Ashland's Zero Incident Culture (ZIC) – leadership, employee engagement, risk reduction and performance measurement – pull together multiple elements of Responsible Care related to going beyond compliance and reducing injuries. Goal zero is a challenging target at the best of times and over the years, it had lost some momentum. Ashland decided not to switch to another new programme but rather to "refocus, re-tool and re-brand ZIC…as a way of doing business". Actions included bringing ZIC into the company's overall Responsible Care policy and strengthening messaging on focused topics via 2-minute videos of senior leaders. These topics ranged from emergency preparedness to slips, trips and falls together with non-traditional safety-at-home issues such as distracted driving and painkillers.
Summaries of near hits, defects, incidents and other learning opportunities are prepared and shared monthly; likewise, exemplary actions and best practices are shared across the company. Ashland also upgraded its web-based Responsible Care training course which is taken by every employee. And to efficiently engage employees in the ZIC initiative, Ashland went for "a hands-on regional approach" through Discovery Team Meetings. These involved employees from multiple locations gathering at a production or research centre to learn about implementing ZIC, trade best practices and identify opportunities for improvement, and then return to home base with knowledge to share.
A particularly effective exercise around plant operation ergonomics involved analysis of real incidents and near hits at multiple facilities. This often had an immediate impact with nearly 50% of issues fixed on the spot and other items placed on a 30, 60 or 90-day implementation plan. Feedback has shown real improvement in employee morale in areas affected by ergonomic improvements.

Borealis

Improved Additive Suction Station

The company identified a situation at its PP pellet plant where up to 7kg of additive was being lost as a result of the emptying and cleaning process. There was also a risk of product contamination resulting in reduced product quality and margin loss. Moreover, the process had to be carried out in an uncomfortable position for the operator who would also be subject to high levels of noise.
The planning and execution took time and effort but Borealis employees found a low-cost solution that made use of existing equipment. By upgrading and modifying the bag unloading station, the loss of additive has been eliminated, noise is at low levels, and operators now enjoy a safe and far more ergonomic workplace. The changes also mean that potential contamination can be detected and the

cleaning process has been improved.

BioMarin

QC Chemical Awareness Initiative

After two chemical exposure incidents in 2015, BioMarin realized there was a lack of in-depth chemical knowledge across the Cork, Ireland site. Environmental, health and safety reps at the biotech company supported set up of the Quality Control (QC) Awareness Team and encouraged development of an awareness campaign for employees and contractors.
Five main focus areas involved the following: identify the most widely used chemicals in each department's work activities; introduce measures to promote safe handling and use; promote first aid measures; develop and disseminate MSDS (material safety data sheet) information posters; and use of posters to outline correct waste disposal practices across the site.
The initiative, which was praised by judges for its "detailed application, team building, and employee engagement" has involved numerous activities such as generation of "QC Chemical of the Week" posters, workshops, and training demonstrations for use of PPE and respirators. A programme of future actions will ensure the benefits of the chemical awareness initiative – which has enjoyed positive feedback from all departments – continue for existing and new employees.

Dow Chemical Ibérica

Driving Cultural Change: EH&S Sponsors

In a focused and personalized effort during 2013-14 to help "achieve the next level" of OHS and process safety (PS) performance, Dow's Tarragona site in Spain sought "influencing leaders" at all levels of the 600-strong organization including contractors. These EH&S Sponsors needed to demonstrate a string of attributes such as:

- When I face an EH&S issue I assume a leadership role, involving whoever is needed to find a safe, effective and quick solution
- If I see an unsafe action or a requirement that is not followed, I take immediate action, stopping the job, explaining why and looking for safer alternatives to resume the job. I'm actively recognizing things well done
- I lead by example with my active participation in EH&S programmes

Other attributes ensure that sponsors work to involve others, share knowledge and experience, facilitate training and be aware of EH&S performance indicators.
Dow believes that having multiple sponsors throughout the site will help it achieve the goal of zero OHS/PS incidents. The company developed a personal plan to support individuals willing to take part and says there has been a clear shift to more active and visible engagement in EH&S in several workgroups, improved quality of suggestions and 10% annual rise in near miss learning experiences. Feedback from the judges noted the use of individual personalities to drive the project.

Dow Olefinverbund GmbH

DCG-fit: a 3 stage fitness programme

DCG-fit addresses current health-related topics such as high blood pressure, nutrition, diet, ergonomics and smoking within the context of industrial safety training measures for the first time.
Dow's Central Germany operations employ around 1,700 people and this 2014-15 initiative involves a basic course for all employees, supplemented with two additional, more advanced levels. Level 2 involves a workshop and level 3 includes personal counselling on obesity.
A recurring challenge with this type of programme is ensuring participation by a high proportion of employees, reaching the right target groups, and organization (for example, so that people working in continuous shifts can take part).
The basic course was taken by 94% of employees and the vast majority of feedback was valuable and

very informative.

Janssen Pharmaceutical

Controlling Exposure to Anaesthetic Gasses

Janssen Pharma identified a very specific OHS issue at three of its research and development (R&D) sites, and worked on how to address it through a J&J EHS R&D Community of Practice Meeting. Reports of acute adverse health effects associated with isoflurane were reported by eight employees; benchmarking showed other pharma companies were exploring solutions to the same problem.
The occupational exposure limit (OEL) within J&J was 20ppm and the symptoms were associated with exposures in the 10-23ppm range. Company experts reduced the OEL to 2ppm and developed a new baseline sampling plan which was applied at R&D workstations at the Beerse site in Belgium. Results were analysed, evaluated and documented.
In a step-by-step approach, Janssen developed, tested and implemented new, innovative solutions to reduce the exposure level to isoflurane below the new internal OEL. Subsequent actions include added containment controls, reviews of PPE, and identification of additional good work practices.
An audit verified the new programme's effectiveness with only minor actions required. Janssen has shared the lessons learned internally and the project learnings have also been shared outside the company at various international meetings. This "evidence-based, comprehensive" project scored highly with some of the judges.

Lamberti SpA

Reducing Behavioural/Organisational Accidents

Lamberti's focus on reducing behavioural accidents is based on the "Resilience theory", the ability of a system to adapt to change resulting from a crisis in the surrounding environment. Applied to health and safety, the theory requires:

- safety at three levels – the individual worker, the group (eg workers on the same shift), and the organization (site management, HS&E manager etc)
- knowledge at these three levels of the psychological mechanisms governing risk perception
- the ability at all these levels to identify dangerous situation in the workplace

With this in place, an organization can create a widespread, shared culture that can effectively address emerging issues and incidents as and when they arise.
Lamberti launched the project in 2012 focusing on the plant's main workshop, extending it to new areas each year and completing in 2015 with the site laboratories. In 2016, the approach is being extended to other Lamberti sites, starting with a preliminary audit, then training, on-the-job assessment and follow up actions. A specially devised HSE Portal supports and reinforces the project.

MSD

OHS Excellence in a Time of Great Change

Since November 2013, employees at the MSD Swords site in Ireland have worked in the knowledge that manufacturing activities will finish in 2017 and the site will be sold. This entry detailed this and other challenges impacting worker safety, and was recognized as a powerful example of managing change in a particularly negative situation. Jurors picked this entry as the OHS category winner and it was recognised as a top three entry in the overall winners' discussions it.

Pfizer Newbridge

Sustaining EHS Success through Ownership and Empowerment

Developing a successful safety culture and achieving continuous improvement requires a team effort.

Pfizer's approach from 2012 involved putting together an EHS Champion programme based on volunteers being empowered through focused training to raise issues in the knowledge that action will be taken. A Champion also encourages colleagues to address issues and is involved in solutions. Up to 2015, the number of EHS Champions had roughly tripled to 61.
Pfizer has seen improvement in terms of timely identification and increasing the number of safety issues raised. EHS Champions receive training as risk assessors, auditors and incident investigators, and a number of successful participants have been promoted. The programme is being shared with other Pfizer sites and the company has put in place plans to ensure it builds on the successes achieved to date.
The project was praised by judges for demonstrating a strong communications effort and continuous improvement.

Solvay SA

Designing and Deploying a Full RC System

The design, testing and deployment of the Solvay Care Management System (SCMS) covering quality and HS&E kicked off mid-2013 and was piloted at 12 sites during 2014-15. Full deployment is now underway of the system which is compatible with ISO9001, ISO14001 and OHSAS18001. Definition of a comprehensive audit protocol is also underway.
SCMS is designed to be the Group's QHSE reference for all manufacturing sites and R&I centres, and reflects Solvay's commitment to Responsible Care and the strengthened ICCA Responsible Care Global Charter.
It covers eight areas of risk: product quality, product safety, process safety, environment, industrial hygiene, occupational health, occupational safety and transport safety. Solvay notes that this QHSE company-specific system involves "clear, structured, tiered requirements" and is suitable for external certification, adding: "SCMS can be considered as a good model for large [and] medium sized companies willing to harmonize and simplify management systems and link them strongly with company requirements".
SCMS has four tiers, with level 1 requirements corresponding to compliance with international QHSE standards; 2 and 3 corresponding to compliance with internal standards; and 4 representing Solvay "best in class". It can be adapted to individual site needs, business situations and strategies, and can be used in part or totally.
Among the judges' comments were an "impressive mix of measures" and "ambition beyond legislation". The data collection, continuous improvement aspect and global dimension were also praised.

Solvay SA

Industrial Hygiene in a Moving OEL Landscape

This project to streamline the company's global industrial hygiene (IH) practices involved development and release in 2015 of a series of tools and processes, based on five "pillars", to 130 Solvay sites worldwide.
Key IH challenges include the large number of substances, diversity of tasks, complexity of exposure assessments, involvement of non-specialists, reduced visibility for IH vs accident prevention management, and a moving landscape for OELs.
The first of the five pillars is internal Solvay OELs (SAELS): Solvay develops its own acceptable exposure limits for both substances without an OEL and for those where it has questions or new information on an existing OEL. The second pillar involves application of an occupational exposure or hazard band when no OEL/SAEL is available or applicable. The hazard band is then used to characterize risk management measures.
Under the third pillar, Solvay applies its critical task exposure screening (CTES) process for tier

1 assessments and tailored for use by operators on the shop floor, who provided strongly positive feedback in a 2015 satisfaction survey. The fourth addresses high risk or RL1 situations using a ranking matrix.
The fifth pillar is Socrates, an IT tool accessible by shop floor management which was designed and developed to encompass the various methods and processes in the other pillars, and records individual long-term exposures.
The communication and continuous improvement aspects of this Solvay entry evoked positive comments from the judging panel.

TOTAL Refining & Chemicals

Safety: Promoting and Sharing Best Practice

Total launched a competition in 2015 involving dozens of its refining and chemical plants in a new approach to promote, share and implement safety best practices. The objective was to promote one or two good practices identified at each plant and bring them together during the following Safety & Process network meeting involving plant safety reps worldwide.
Around 70 good practices were displayed in poster form at the meeting venue. Each participant has a quota of five stickers to allocate during meeting breaks, enabling a quick ranking of practices. Results are announced at the end of the meeting with presentations then given on the best three.
These were: a system to detect small hydrocarbon releases, combining safety and environmental benefits; use of bags or attachments for tools when working at height; a safety observation sheet to provide a checklist for safety reviews. Total notes that accidents have been avoided thanks to implementation of these practices.
All good practices are subsequently shared electronically and are promoted periodically so they can be communicated and implemented at various sites.

TOTAL Refining & Chemicals

Railcars Still Need GPS

Total uses more than 1,000 rail tank cars for the transport of dangerous goods from its industrial sites in France to destinations across Europe. While these cars are on rails, it's still important to be able to track their exact location to ensure their impacts on all stakeholders are restricted to the minimum and conform with Total's safety standards and commitments.
Instead of having to rely on information feeds from the transporter, Total found a way to securely install GPS beacons with shock detection capability on its leased rail tank car fleet, enabling rapid response to any serious incident such as derailment or collision. Every four hours, a car's position is recorded, transmitted and archived daily to create a log that is shared with all points in the logistics chain.
Tracking enables Total to verify that low-risk routes, in terms of health, safety and environment, are followed. Alerts are sent if there's any deviation from the itinerary or excessive delays. Monthly analysis of data against key performance indicators also allows Total to implement any changes or improvements through all stages of the logistics chain to reduce the number of rail cars used for each product flow.
The project was launched in January 2015 and Total aims to have all rail tank cars equipped with the GPS system by end 2016.

Versalis SpA

Aramis: Managing Workplace Health

Versalis, part of the Eni Group, has developed an integrated workplace health management system offering integrated, real-time data management related to industrial hygiene and occupational medicine. Known as Aramis (Advanced Risk Assessment and Medicine Information System), it enables Versalis to respond swiftly and implement actions to continuously improve the workplace

environment.
Operational since January 2013, Aramis uses a multilingual platform and can be accessed remotely by key users to retrieve data analysis and statistics. Management HQ and ten plants throughout Italy were first to be connected to Aramis giving access to 1,000 users who have different roles, duties, responsibilities and functions.
The system has also been rolled out to Versalis' French and Hungarian plants, and Eni chose to adopt Aramis group-wide in 2015. Developments during 2016 will enable workers to get real-time access to their health and exposure records. The judges' comments described it as a "good project taken up at group level" and featuring a "powerful database".

Process Safety Category

Celanese Corporation

Building a PS Culture Development

Building on its 2011 Manufacturing Leader Process Certification process, Celanese introduced an operations/team leaders' initiative in Q4 2014 piloting them at 'volunteer' manufacturing sites. Each site was able to specify their implementation schedule provided it is completed by end-2016.
Milestones in the project to boost process safety (PS) culture include the creation of training modules, establishing a site-specific "train the trainer" process whereby site trainers train their operations/team leaders following which they can be certified. Celanese notes that PS certification can be combined with a parallel initiative for occupational safety.
For operators and craftsmen there are five training modules, each containing four process safety elements. One module has been developed annually since 2013.
When full implementation is achieved in 2017, the results will be evaluated and a decision made whether to extend the project from 'volunteer' sites to all company sites.

Versalis SpA

PS and Asset Integrity

Versalis' three-phase project, carried out between 2011 and 2016, checked process instrumentation and asset integrity aiming to, if necessary, improve safety at its 14 European petrochemical plants. Nine are in Italy, two in Britain and the remaining three each in France, Germany and Hungary.
In Versalis-speak, the project aimed to improve the Safety Integrity Level (SIL) of the Installed Safety Instrumented Functions (SIFs), the objective being to ensure plant reliability, optimise management costs and maintain the highest safety standards.
The upshot has been an improvement in plant reliability and a reduction in accident damage - the number of accidents and near misses occurring between 2010 and 2015 has been reduced by over 300 incidents.

Product Stewardship Category

Borealis AB

New Low Fire Hazard Cable System

Borealis recently introduced a low fire hazard (LFH) solution for FR-XLPE (Flame Retardant-crosslinked low density polyethylene) low voltage cable applications. The silane crosslinkable system is based on a polymer that eliminates the need for grafting with liquid peroxides in the compounding process, making production safer for both operators and the environment.
It is the first halogen-free solution approved by Underwriters Laboratories for American low voltage cables with horizontal flame requirement. The main alternative is brominated solutions that have HSE issues including the toxic effect on humans and the environment of organobromines and antimony

trioxide.
The product is designed for installation and sheathing of photovoltaic cables used to connect solar panels.

Clariant Produkte (Deutschland) GmbH

AMBIT: In-silico Tool for Safety Assessments

During 2013, Clariant's Global Toxicology & Ecotoxicology division developed AMBIT in collaboration with IT programmer IdeaConsult. It is an open software tool designed to support companies by facilitating high quality chemical safety prediction. Its comprehensive search functionalities are proving an effective in-silico tool for safety assessments of chemicals involving significantly fewer animal studies, and thus contributing to animal welfare.
A free web-based application since April 2016, AMBIT could prove very useful for companies in both R&D and regulatory purposes. Based on a 'predicted toxicity model', it applies the principles of read-across - a scientific method for predicting unknown properties of one chemical from known properties of similar chemicals.
In the context of REACH compliance, AMBIT will aid companies to develop clearer and more transparent scientific justifications for their use of read-across. The European Chemicals Agency (ECHA) has already supported the AMBIT initiative, giving Cefic's LRI (Long-range Research Initiative) project access to the entire non-confidential REACH dataset (14,570 substances and 450,000 structures).
AMBIT is being presented at a number of international conferences, including events being held in the USA, Japan and South Korea during 2016.

DSM Sinochem Pharmaceuticals

Sustainable Antibiotics

Jurors picked this entry as the Product Stewardship Category winner and in the overall winners' discussions it was recognized as the outright winner for 2016 across all categories. Further details of this groundbreaking initiative to combat irresponsible production of antibiotics – which has already won strong support from both inside the industry and influential external organizations – are available on the website.

SAFECHEM Europe GmbH

Chemical Leasing: Unlocking Circular Economy Potential

In this maiden year of the Accenture Special Award, the company chose this entry above all others and across categories. A Dow subsidiary business, the SAFECHEM Chemical Leasing Model supports the concept of circular economy: customers do not pay for the volume of products and services but are charged a monthly usage fee. Further details are available on the website.

Solvay Chimica Bussi SpA

Laundry Washing Without SVHC

Solvay's Analysis of Safe Alternatives (ASA) aims to identify possible substitution alternatives, or manufacturing process improvements that can minimize the presence of SVHCs in marketed products.
The company has been manufacturing granular laundry washing powders and tablets containing the organic peroxide phthalimido peroxy hexanoic (PAP) for several years. Added to laundry detergent formulations it bleaches, disinfects and deodorises at temperatures as low as 20^0C, potentially allowing major energy savings.
Even though the industrial process manufacturing PAP is of 'no concern' regarding local surface water, soil or sediment, the atmosphere or the environment (it is readily biodegradable) one of the ingredients is boric acid, which stabilises the formula in case of self-accelerated reaction to

decomposition. As boric acid is listed as a SVHC for human health Solvay set out to find an alternative. The new boron-free granular grade that Solvay developed uses a different production process and formula with high flowability and a wider stability in any detergent matrix. The new grade is compatible with chemicals normally used to produce detergent unit doses, plus it can reduce - by volume - 30 percent of common household detergents thus saving packaging space and transport costs. The alternative boron-free PAP grade will be commercialised during 2016.
The wider product range also has applications in whitening toothpastes and dental kit gels.

Versalis SpA

A new Bio-based SBR

Versalis is evaluating the environmental performance of tyres using e-SBR (styrene-butadiene rubber) produced with traditional mineral extenders oil versus extenders derived from renewable sources. The innovative e-SBR for tyre use is produced with a maximum 80 percent of renewable extender oil - FAV-butylate produced from sunflower oil. Exploring a bio-based SBR tyre alternative is driven by the goal of producing tyres that may reduce rolling resistance by up to 30 percent resulting in both lower fuel consumption and $C0_2$ emissions.
Versalis's comparative analysis is based on a Life Cycle Assessment (LCA), following the European Product Environmental Footprint (PEF) methodology. PEF is a multi-criteria measure of environmental performance through a goods or services life cycle defined by the European Commission.
The results of a first LCA screening step was scheduled for mid-May 2016 [after the Versalis submission] and will focus data collection and quality priorities for the actual PEF study, scheduled for completion by September 2016. PEF results will allow Versalis to compare environmental performances, identify potential improvements across the life cycle, suggest modifications to production and distribution processes, and select environmental performance indicators.

Security Category

Kemper System GmbH & Co. KG

Pioneering Packaging Solution for Liquid Chemicals

Kemper has developed a two-component knead bag that is a solvent-free, two-component liquid applied waterproofing system based on polyurethane resin. The chemicals are separately filled into the chambers of the plastic bag that are divided by a rubber cord.
After removal of the cord the two chemical components can be mixed without fear of contamination or mixing mistakes. The technology allows quick and clean mixing in a predetermined mixing ratio in 'environmentally friendly' packaging.