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OUR COMMITMENT TO SUSTAINABILITY



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**RESPONSIBLE CARE
PERFORMANCE REPORT 2015**

Expanding our Boundaries



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Foreword

FROM THE DESK OF THE GPCA RCC CHAIRMAN

With my recent appointment as chairman of the GPCA Responsible Care Committee, I am delighted to share the 2015 Responsible Care Performance Metrics report. The report is produced in accordance with our shared commitment to the Responsible Care Global Charter:

- Safeguarding people and the environment by continuously improving our environmental, health and safety performance and the security of our facilities
- Engaging stakeholders by communicating openly on our performance and products

I would like to extend my acknowledgement to the member companies for demonstrating transparency in the metrics data reported and for sharing highly informative and remarkable success stories, some of which are included in this report. The content in these success stories provides a valuable opportunity for others to learn from, and I encourage you to take this opportunity to share your company's journey with us.

We have now reached our sixth year of performance reporting and the second time in which we have reported against all 21 Responsible Care metrics. The quality of the data continues to improve and GPCA consolidates this data and includes it in the regional chemical industry's submission to the International Council of Chemical Associations (ICCA), where GPCA is held in high regard for this consistent effort.

Responsible Care efforts within our member companies continue to develop apace, and I am very encouraged to see that some of these efforts are being reflected in our industry performance data, where we are showcasing sustainable improvements in many metrics. However, as I am sure you will agree, we cannot stand still. As long as we have the opportunity to save one extra life, reduce our injury frequency by a further percentage point, minimize our impact on the environment through investment

in new technology and changes to our processes and improve our natural resource efficiency, we still have work to do.

Despite all of these efforts, the true challenge is to take our RC metrics reporting from a conscious, planned task, to one that happens automatically and seamlessly as an integrated activity within our daily business.

Finally, it is rewarding to highlight that for the first time, we have included statistical data relating to activities 'beyond our fence lines'. This is only the start and as we embark on extending the reach of Responsible Care to our logistics partners that we will increase the focus of EHS&S performance reporting throughout our product supply chain.

Thank you sincerely for continuing to support and share the gulf regions Responsible Care journey.

Warren W. Wilder

Chairman, GPCA Responsible Care Committee





RC Performance Metrics - methodology and approach

Tracking and reporting of our Responsible Care performance continues to be the cornerstone of our RC program and the main duty of the Performance Metrics sub - committee within GPCA. The collection, analysis and reporting of our performance continues to be a valuable process that will assist GPCA and its member companies show transparency in its Environment, Health and Safety (EHS) performance and to identify improvement in key areas.

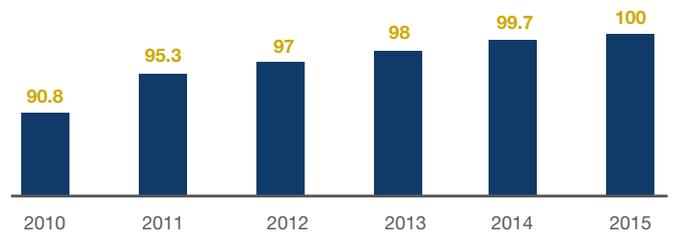
The data presented in this report is collected and analysed via 21 individual performance metrics under the following five headings:

1. Occupational health and safety
2. Process safety
3. Emissions and discharges
4. Resource utilization
5. Distribution and products

Reporting of performance data enters its sixth year and we have an increasingly meaningful trend line with which to benchmark our performance. In the 2015 reporting year, we are delighted to announce the following achievements with regards to PM data submission:

- Second year in which the full set of 21 Responsible Care Performance Metrics are being reported.
- The data reporting efficiency has reached 100 % across all five categories for the first time i.e. companies have reported against all of the requirements, with no omissions.

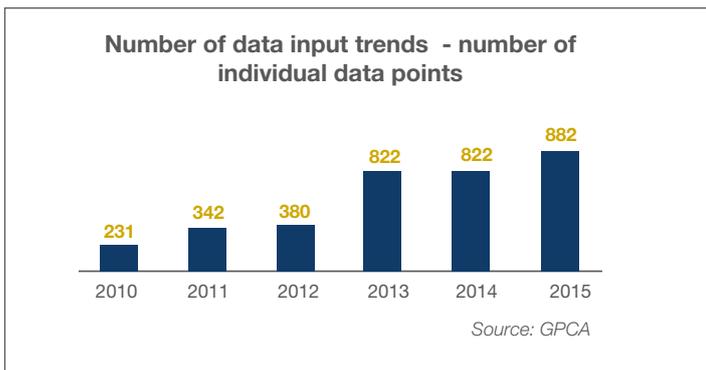
Historical data submission trend - percentage of data reported against total



Source: GPCA

Additionally, we are pleased to report that this year we have a total of 42 member companies and affiliates reporting their results, thus leading to an increase in the number of individual data inputs that have been collected and verified by GPCA. The total number of individual data items collected in 2016 reached over 882. The quality and timeliness of the submissions have been exemplary with very few exceptions.

The overall increase in data submission is shown in the historical bar chart below, covering years 2010 – 2016:



GPCA believes that the above figures represent a culture shift in performance reporting, openness and transparency within our members and supports the notion of our RC Committee Chairman that RC reporting is 'an integrated activity within our daily business.' We have seen many successful examples of this within our members, and we are delighted to share once such example from GPIC in Bahrain:

GPIC mainstreams Responsible Care PM data collection and reporting

At GPIC, we believe that "what cannot be measured cannot be improved". Hence in this context we have welcomed the initiative from GPCA Responsible Care Committee to mandate the member companies in presenting data to the RC Performance Metrics (PM). At GPIC, we have mainstreamed the collection of the PM data, its analysis and lessons learned in our business functions. The objective of this is to gain maximum benefit from this wonderful initiative from GPCA in our quest for continual improvement through transparency and accountability.

Since the inception of the Performance Metrics reporting in 2010-2011, we have evolved our RC PM commitment as follows;

1. A dedicated Responsible Care Committee was established and one of the functions is to collate RC PM data and report to GPCA on time.
2. The first reporting for the RC PM data was in 2012 and on annual basis requested from GPCA. Based on a well-established reporting platform in GPIC, the frequency of collecting and reporting the Performance Metrics was initially carried out on a quarterly basis and later on in 2013, monthly basis.
3. To maximize the benefits of RC PM data for continual improvement the PM were made part of the Safety, Health, and Environment department monthly report with trending, monitoring and analysis.
4. In 2015, RC PM data collection and reporting was included as part of the department's yearly sustainability goals.
5. The common data from RC PM is being used for GPIC GRI sustainability reports.

Occupational health and safety

Why is this important?

Occupational safety performance is intended to show how well our H&S programs are working by measuring recordable injuries as a factor of the overall number of hours worked across all reporting companies. This is the ultimate test of our performance – it shows how well we are doing in preventing physical injuries to our people.

'Occupational safety' data is the primary indicator of safety performance in high-hazard industries, and ours is no different. The five-year rolling frequencies presented in this section are a direct indication of how well we are keeping our people safe and preventing injuries to our people. Although these indicators are continuing on a positive downward trend, we must not ignore the fact that tragically, there were four fatalities reported across member companies during 2015. This shows that we still have much to do as an industry and as Responsible Care companies to improve our safety performance. It is our collective responsibility to ensure that best practices and 'lessons learned' are shared not only to ensure that similar accidents are prevented in fellow member companies, but also as an opportunity to ensure that where best practices can be replicated, that we provide that opportunity.

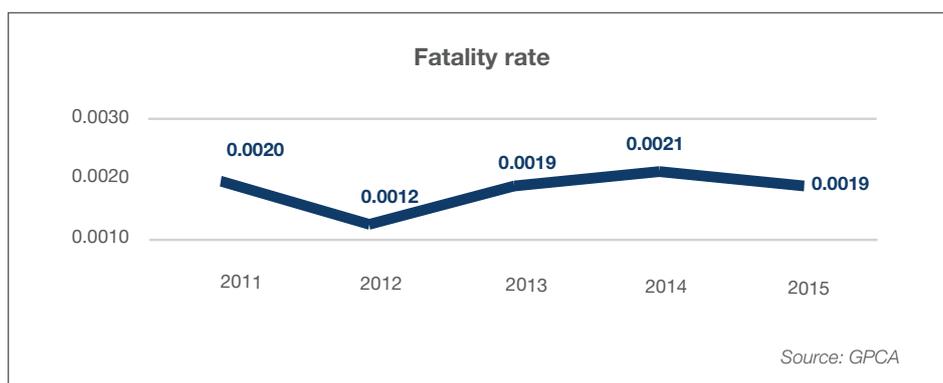
The following metrics are reported for employees and contract employees covering the period 2011 – 2015:

- » Fatalities
- » Lost Time Recordable Incident Rate (TRIR)

Fatalities

Transparency is one of the core values of Responsible Care and the majority of GPCA member companies have been demonstrating this value by sharing success stories, lessons learned and reporting Performance Metrics. During 2015, members have sadly reported four fatal accidents across the region, two are related to vehicle accidents and other two as a result of uncontrolled pressure and energy. The member companies give priority to these incidents, ensuring learnings are captured and appropriate steps are implemented to strengthen their EHS&S management systems in order to avoid such events repeated in the future. The GPCA Responsible Care Committee is promoting lessons sharing of these incidents, so the wider chemical industry community can also learn.

The five year trend for fatalities within member companies is shown in the graph below where the current rate is 0.0019 fatalities per 200,000 man-hours worked. This is a marginal improvement compared to 2014.



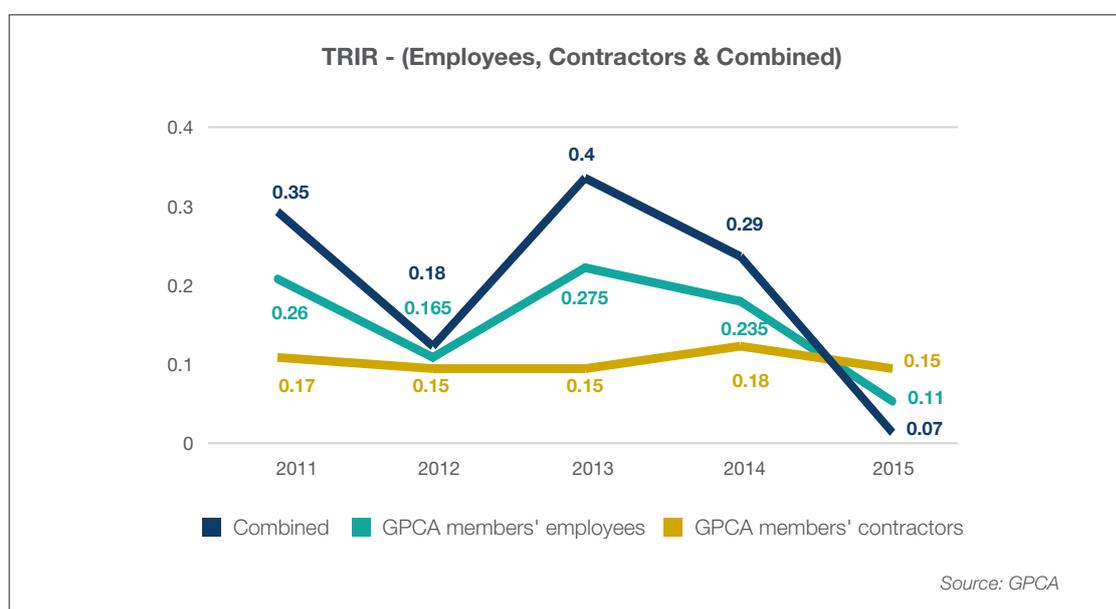
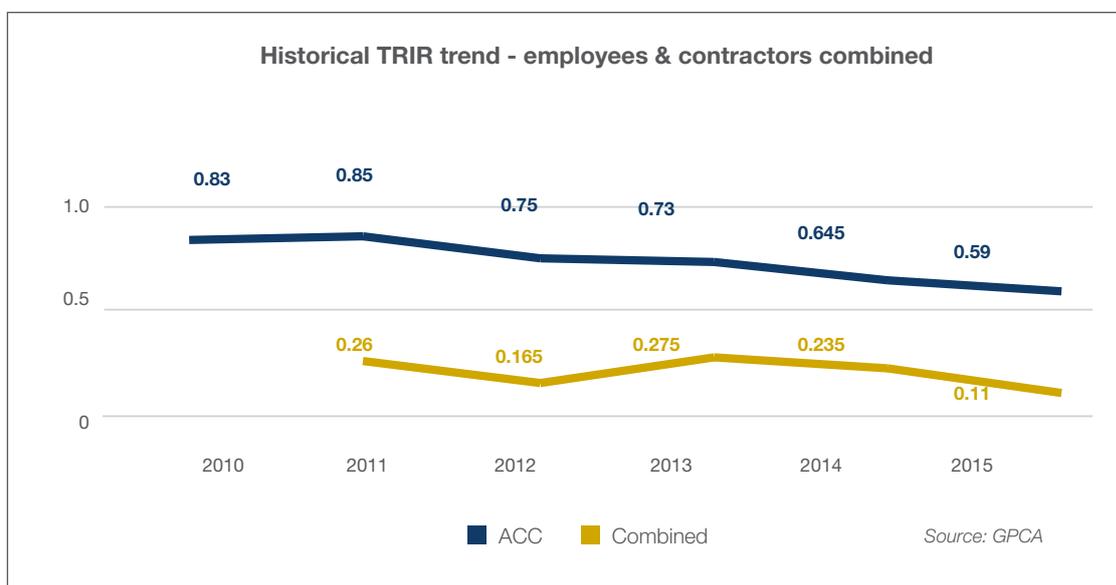
| Reporting Year | 2011 | 2012 | 2013 | 2014 | 2015 |
|-----------------------------|--------|--------|--------|--------|--------|
| Man-hours worked (millions) | 100.75 | 161.23 | 320.53 | 284.19 | 424.79 |
| Fatalities (number) | 1 | 1 | 3 | 3 | 4 |

Source: GPCA

Total recordable Injury Incident Rates

Our total recordable injury rates also continue to decline steadily, with further progress being seen in 2015. The combined injury frequency rate of 0.11 is testament to the continuing efforts of our members to manage safety risks to As Low as Reasonably Practicable (ALARP). As can be seen from the chart below, the trend is consistently lower than that of our peer group in the American Chemistry Council (ACC).

Whilst we continue to report a combined TRIR (i.e. one that takes into account both employee and contractor exposure), there is a value to separating the trend lines, as previous years' metrics in this area have consistently reported an injury frequency which is higher for contractors than member company employees. This trend is reversed in 2015, where significant improvement in contractor accident rates has pushed the trend line below that of member company employees for the first time.



Lessons learned from incidents

Whilst the overall trend in injury rates amongst GPCA members is relatively stable, the important message to convey is that it is not zero. Our Responsible Care efforts continue to focus on active monitoring of EHS performance, supporting the development and roll-out of EH&S training, such as the International Minimum Industry Safety Training (IMIST), the development of robust EH&S management systems in line with the seven codes of Responsible Care practices and facilitating communication between members. We must not lose sight of the fact that practicing safety in our diverse operations and activities is essential.

World-class HSE performance involves more than just applying a management system, it requires the involvement of all in the organization, from top to bottom. It is the belief of many that the development of management programs to address culture and behaviour is the true essence of a 'zero injury' organization. This involves passing control of the behaviours being identified and the actions being taken to those participating in the program through safety committees, or dedicated project and problem solving teams which are self-managing. We are pleased to report that many of our members are already investing in such programs and we see this as a positive move towards continuous safety improvement. One such success story is the recently developed behavioural intervention program by S-Chem, as described in the story below.

SUCCESS STORIES

S-CHEM'S APPROACH TO BEHAVIOURAL INTERVENTION

S-Chem's 'Safety Coach Program' is designed to promote an accident and an injury-free work place by identifying at-risk behaviours and conditions and promoting safe behaviours among the workforce in the organization. This is accomplished through the continuous education and observation of employees and contractors behaviours through three critical performance areas, namely **safety coaching, breaking down 'at-risk' behaviours, and yearly risk charts.**

The program involves:

- Instilling the belief that raising workers awareness of the hazards associated with the job will reduce the chance of accident or injury.
- Employee participation in the collection and analysis of data about safe and at-risk behaviours.
- Employee-led coaching so as to provide immediate feedback and positive reinforcement to other employees and contractors.
- Comprehensive participation in identifying and correcting the barriers that preventing 'safe work' where we all work together to remove the barriers.

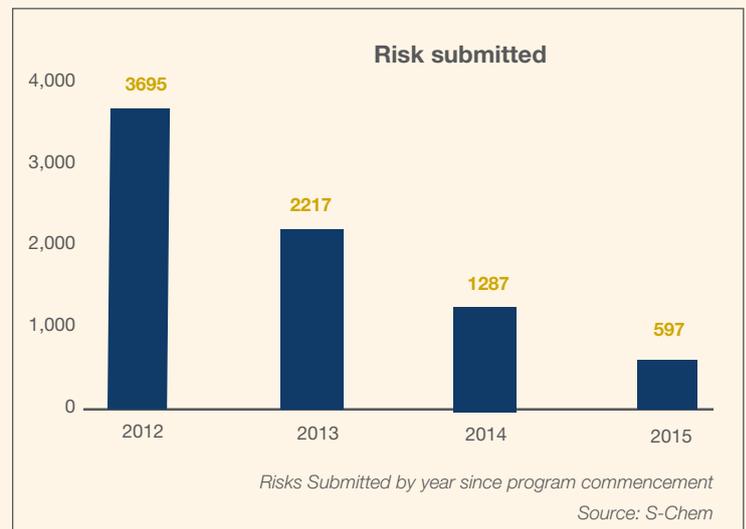
In August of 2011, S-Chem developed its behavioural safety program (BESTT). BESTT stands for Behavioural Enhancement for Safety through Teamwork and the use of Tenets.

The BESTT program allows all safety coach observations data to be maintained electronically within a web-based system. This allows the data to be visible to all employees at the time data entry occurs. Employees and leadership have readily available information on risk, and this helps to correct hazards in the

workplace before they potentially cause an incident.

S-Chem employees care about the people they work with. Establishing a personal and positive interaction with those who you are working with has shown to develop the right culture where employees welcome another set of eyes to help spot potential dangers and prevent unwanted accidents or injuries.

The S-Chem Safety Coach program has resulted in the following reduction of risk through trending data and taking action:



It is important to remember that safety is only part of the story, and GPCA encourages all its members to report openly and constructively on the efforts being taken to improve the health and wellbeing of their people. This is the other major facet of the GPCA Employee Health and Safety Code. The article on the next page contains insight into a strategic approach to improve employee health and wellbeing.

A VIEW FROM OUR INDUSTRY: OCCUPATIONAL HEALTH AND WELLBEING

Occupational Health (OH) Management is designed to mitigate occupational illnesses and protect employees' health against various occupational hazards. This can be achieved only through consistent focus on health surveillance, monitoring and intervention. The work environment needs to be under continuous surveillance so that hazards or factors are detected and controlled, before they cause any adverse health effects.

Regulatory compliance is generally the main reason why companies develop OH management systems. Companies tend to emphasize health issues such as smoking, obesity, hypertension etc. relating to personal wellness, but stop short of identification of workplace specific health issues.

Organizations often make reactive decisions when problems arise and preventive health measures are usually implemented too late without correcting the root causes associated with the work environment. So long as the unhealthy work environment remains unchanged, the potential to impair health will always exist.

A proactive occupational health management system requires a planned approach to:

- Anticipate potential OH risks and take preventive measures in advance of the manifestation of a health effect resulting from exposures.
- Avoid or minimize the number of individuals exposed, using a hierarchy of controls approach which includes avoidance, substitution, engineering, administrative controls and finally personal protective equipment.
- Exposures to hazards being limited to published occupational exposure limits (OEL), through active monitoring and based on risk assessments.

Challenges

The key challenge in tackling occupational health issues is the unique nature of the hazards and delayed impacts. Many occupational diseases have a long latency period and consequences may only become apparent many years after exposure. Some occupational diseases may be caused by both work and non-work factors such as hearing loss, musculoskeletal disorders and chronic obstructive lung disease.



Another challenge is a lack of comprehensive data on hazard-illness relationship. In some cases this relationship is well-understood and established such as noise and carcinogens, whereas in some cases this hazard-

disease relationship is still not evident and requires further investigation. Hazards can at times also be contributing factors to diseases such as ergonomics and musculoskeletal disorders. In view of these restrictions, a uniform approach or strategy cannot be adopted for tackling all categories of occupational health hazards.

Management Strategies

Develop and prescribe appropriate standards

Development of standards, relevant to the local work conditions, in accordance with industry best practices, and ensuring legal compliance. The standards should be supported by processes, technical guidelines, procedures and checklists etc.

Competency and knowledge

A training program should include training and competency processes to ensure that OH professionals possess necessary competencies to manage the occupational health hazards on behalf of the company. Employees should be provided with an overall understanding of OH, and have full awareness of the specific workplace hazards that they could be exposed to, and the management controls that ensure they and their colleagues remain unharmed. In addition, as the concept of OH is still relatively new in our industry, the practice of sharing of information, both internally and externally becomes vitally important.

Designing with an OH mindset

When building a new facility or modifying an existing facility, it is key that OH risks are considered. Learning from existing operations should be incorporated into designs, combined with technology advancements and new patents. Applying the hierarchy of controls principles is best applied when designing new facilities.

Occupational health risk assessment

In order to establish an effective OH management program, a company needs to identify all the potential OH hazards and risks arising from routine and non-routine activities. These risks should be categorized using a defined risk matrix, and a plan developed for monitoring and controlling the risk.

Monitoring and exposures reduction

Establish relevant monitoring programs, based on regulatory requirements and available best practices, utilising a comprehensive reporting system. The programs should include biological, physical, mechanical, chemical and psychological hazards.

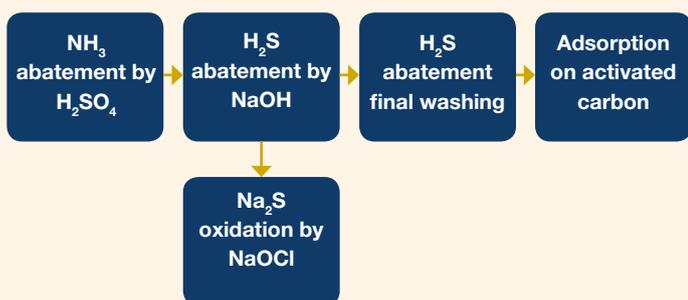
Results should be recorded in a robust reporting system in order to obtain and analyze reliable and comprehensive data on hazard exposures and related illness, leading to proactive management controls.

ORPIC GOES 'BEYOND THE BOUNDARY' WITH ITS ODOR ABATEMENT PROJECT

Since 2011, Orpic's Sohar Refinery had received many complaints from the surrounding community related to odor nuisance. Such was the significance of these complaints, the following impacts were suffered:

- Relocation of more than 30,000 people from the local area at a cost of more than \$77 million to the government.
- Closure of the main gate of the Sohar Industrial Port for more than one week in 2011.
- A two day delay (with associated cost implications) to the 2013 refinery turnaround.

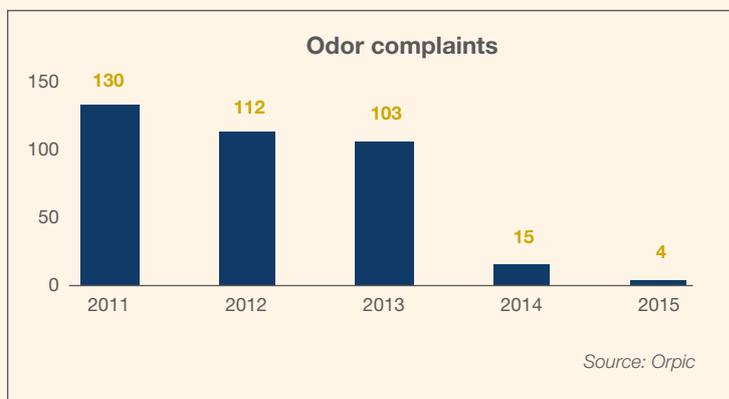
The main odor source identified within the refinery was from the waste water treatment plant (WWTP). As a result, Orpic started an environmental improvement plan (EIP) in 2011 in order to resolve the odor issue and reduce community complaints. The EIP involved more than 19 projects with an estimated cost of \$75 million. Some of the projects are showing the schematic below:



One of the contributors to reducing odor complaints was the "Odor Abatement Project". This project was performed in two phases: Phase-I, covering all waste water treatment plant (WWTP) basins and installing a temporary stack to improve the dispersion of the emissions. Phase-II was implemented to extract all gases under the covers and treat them. Phase-I was completed by mid-2013 and phase-II by the beginning of 2015. This project reduced the emissions such as hydrogen sulphide, ammonia and volatile organic compounds from the WWTP.

Results

The tables below show the actual emissions reductions as a result of the project, along with the five-year reduction in community complaints due to odor:



| Emissions to air from WWTP | Before | After |
|-----------------------------------|--------|-------|
| Hydrogen Sulphides (H2S) | 125ppm | 0ppm |
| Ammonia (NH3) | 150ppm | 0ppm |
| Volatile Organic Compounds (VOCs) | 42ppm | 3ppm |

Source: Orpic

Note: a short video about this project can be found on the YouTube: <https://m.youtube.com/watch?v=W1JysLRonKM>

Process safety

Why is this important?

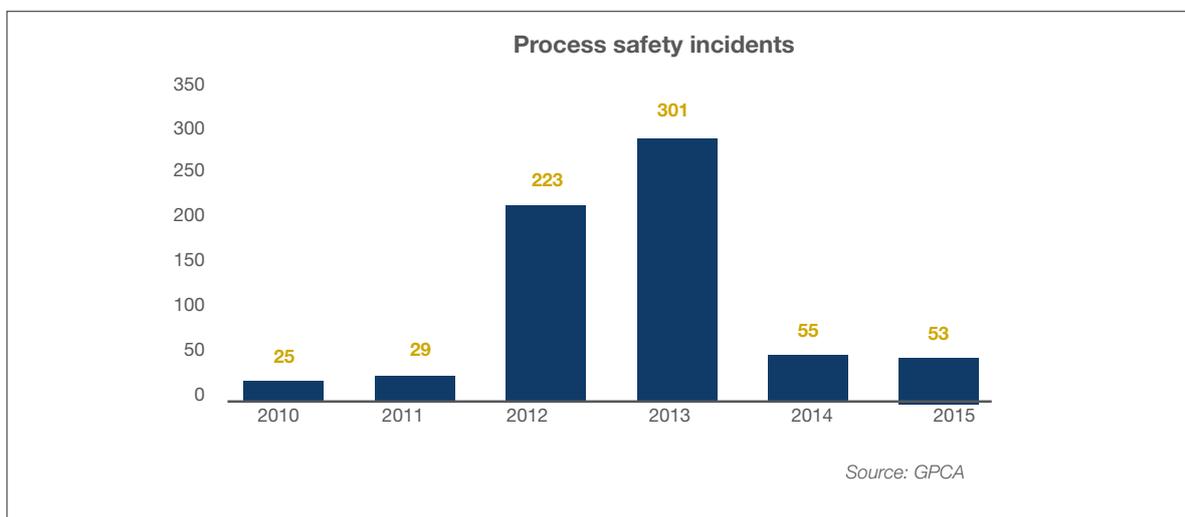
According to the Energy Institute, process safety is a blend of engineering and management techniques focused on preventing catastrophic accidents and near misses, "particularly structural collapse, explosions, fires and toxic releases associated with loss of containment of energy or dangerous substances such as chemicals and petroleum products." In the case of GPCA, this means collecting and analyzing the number of loss of primary containment events. In other words, the metric is directly related to the safety of personnel should a release occur, as well as those having an impact on the environment. Historical events have shown us that the most serious process safety events can have significant impact in terms of loss of life and asset damage. For many, this makes them far more significant in terms of impact than 'occupational safety' events which tend to impact less people due to a single event.

GPCA continues to advocate that a successful process safety management program is the cornerstone of safe operations in the chemical industry and is critical in the prevention of major process releases. The GPCA process safety code therefore focuses on the development of a complete set of management practices designed at minimising loss of primary containment from the chemical process. Whilst this undoubtedly requires a strong focus on operations and maintenance, there is also a strong focus on other management system aspects, such as investigation and learning, assurance, auditing and training.

The comparison rates for both American Chemistry Council (ACC) and GPCA companies are shown in the chart below. For 2014, GPCA collected data from 39 companies against ACC's

118 companies, and for 2015 we have data from 42 companies against ACC's 121 companies. It should also be noted that in line with the requirements of the ICCA Globally Harmonized Approach to Process Safety Reporting, only Tier 1 (the most significant) process safety events have been reported in 2014 and 2015. This is in contrast to previous years, where all PS incidents were reported, regardless of severity.

It is also important to recognize that the difference in the bar is reflected both in the number of companies where ACC has approximately 67% more members and that the production output is not comparable. Nonetheless, the differences in reported numbers between ACC and GPCA are shown:



What can be seen is that despite the difference in sample size and larger production volumes, ACC companies are reporting more process safety incidents than their GPCA counterparts.

In 2012, the International Council of Chemical Associations (ICCA) tasked its Responsible Care Leadership Group (RCLG) to establish a globally harmonized approach to process safety. The global metric and reporting process approved by the ICCA Board is being launched during 2016. RCLG associations worldwide, including GPCA, will be asked to report the 'Total number of

process safety events (PSE).' This data will enable calculation of process safety events rate which is an improved indicator of overall performance and is more easily comparable with our industry peers, since it is calculated on frequency of exposure (200,000 man-hours) in the same way our occupational injury rates are calculated.

Nonetheless, what remains important is our members' continuing efforts to reduce sources of leak and therefore process safety exposure at source.

SUCCESS STORIES

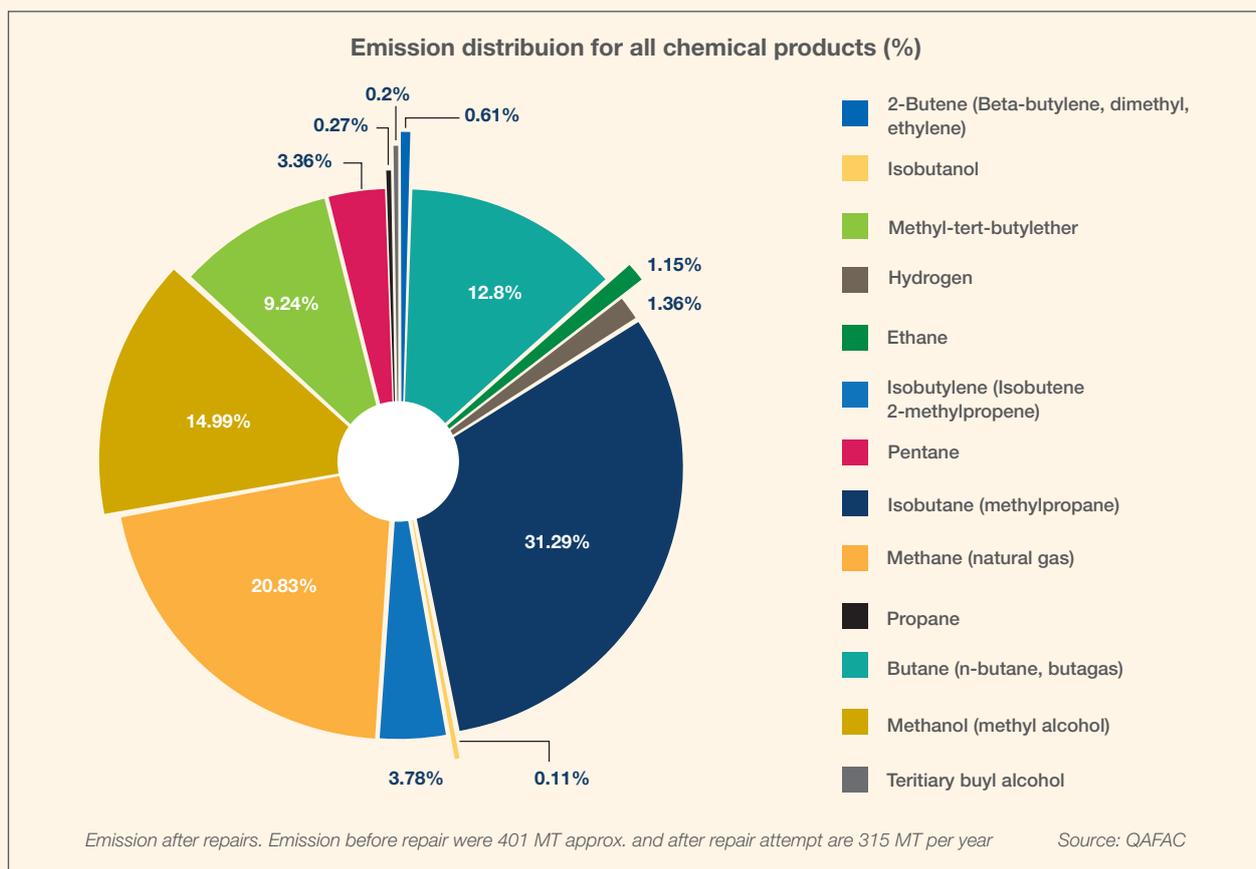
QAFAC – ENSURING PROCESS SAFETY THROUGH A LEAK DETECTION AND REPAIR REGIME (LDAR):

In 2015, QAFAC implemented a full scale Leak Detection and Repair (LDAR) program, which has been performed at QAFAC for screening of all accessible and inaccessible leak sources. The LDAR campaign is directed at the monitoring of fugitive emissions of Volatile Organic Compounds (VOC) and hazardous air pollutants, where a grand total of 110,298 sources have been inventoried. Complete monitoring and measurement of 104,621 accessible sources was carried out by means of a TVA-FIDC (Toxic Vapour Analyzer-Portable Flame Ionization Detector) and

screening of 5,677 inaccessible sources by means of an OGI (Optical gas imaging) - Camera. All sources that have undergone a repair attempt have been re-measured.

LDAR is implemented in accordance with the US EPA Method 21, which is the standard US Environmental Protection Agency Correlation used to calculate emissions loss.

The campaign has helped in reducing the environmental impact of QAFAC operations, to improve process safety performance and to save costs due to preventing the loss of chemical components used in the production process. As a result of the LDAR campaign implementation, 214 sources of leaks were repaired, reducing emissions by 22% and preventing the loss of over 86 MT/Y of product.



IBN ZAHR – MP STEAM OPTIMIZATION

Ibn Zahr is an affiliate of SABIC and manufactures MTBE, propylene and polypropylene.

In Ibn Zahr MTBE1 and 2 plants, MP Steam (pressure 11.5 kg/cm² G) for ejector is being consumed in order to create vacuum in dehydrogenation reactors. The MTBE de-hydrogenation reactors undergoes evacuation step after regeneration through steam ejector and MP steam of around 50 T/hr is required continuously. This impact sustainability KPI's for GHG, energy and water.

After studying the required vacuum pressure limit in order to pass a vacuum test, there is a margin to save around 4 T/hr of steam consumption. Steam consumption is reduced by throttling the isolation valve without affecting desired vacuum level in catofin reactors. After optimization, MP steam consumption has been reduced by 4.1 ton/hr, details as follows;

| | Before optimisation | After optimisation |
|---|---------------------|--------------------|
| MP steam consumption in Cat-1 ejector (average) | 24-25 tons/hr. | 23.37 tons/hr. |
| MP steam consumption in Cat-2 ejector (average) | 24-26 tons/hr. | 22.21 tons/hr. |

Sustainability environment footprint improvements

| | |
|------------------------------------|--------------------------------------|
| Net MP steam savings per year | 4.1 tons/hr *8300 = 34,030 tons/year |
| Green house gas emission reduction | 7000 tCO ₂ e/year |
| Energy reduction | 100,000 GJ/year |

Economic savings

| | |
|-------------------|------------------|
| 680, 5600 SR/year | 181,493 USD/year |
|-------------------|------------------|

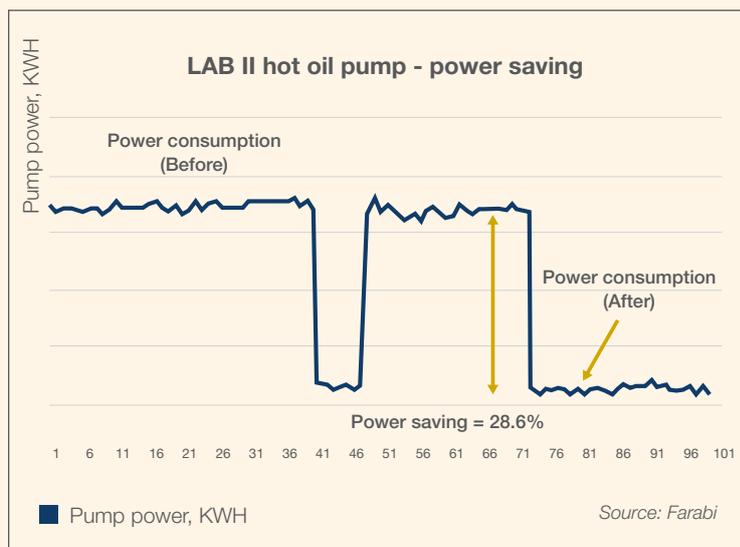
Source: Ibn Zahr

FARABI – IMPELLER TRIMMING – LAB II HOT OIL CIRCULATING PUMPS

As part of Farabi's sustainability initiatives, a detailed technical study was carried out for all HT (high torque) drives across all plants to identify potential areas of power reduction. The LAB II - Hot oil circulating pumps were identified as a big opportunity to save power as there was an excess head available at the hot oil control valve inlet.

Further technical evaluation indicated that the excess pressure at the hot oil control valve inlet could be reduced by trimming the pump impeller to its lowest possible size while still meeting the hot oil flow requirement.

The pump impeller has been trimmed to its lowest possible diameter, by following a robust management of change (MOC) process. The modification has resulted in power savings of 165 KW/hrs. (1.44 million KWH/Annum) a reduction of 28.6%. All process parameters such as hot oil flow, header pressure and control valve opening, are normal and within the acceptable operating range. Equipment reliability has also been improved by reducing vibration in one of the hot oil control valves which is of course an obvious integrity threat.



Emissions and discharges

Why is this important?

Protection of the natural environment is not just the right thing to do, it is an absolute expectation of our stakeholders, and increasingly in our region. Legislation is becoming more influential in order to make environmental performance part of a company's 'license to operate' requirements. Since the inception of the RC program, GPCA has been collecting and reporting on key aspects of environmental performance. In practice, only once we understand the size of our environmental footprint, will we truly appreciate how we can reduce it.

Our environmental performance is summarized in this section of the report, under the following headings:

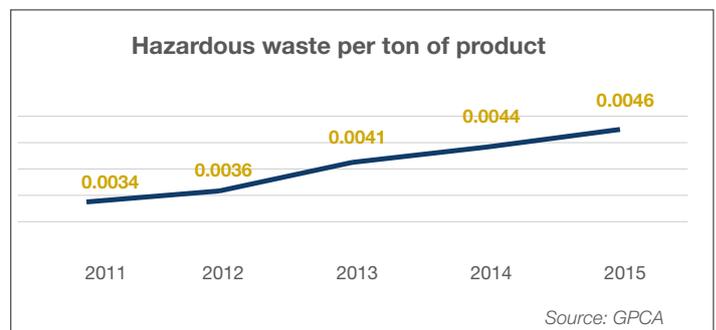
- » Waste – hazardous and non-hazardous
- » Waste water discharges to the environment
- » Chemical oxygen demand
- » NOx and SOx emissions
- » Greenhouse gas emissions; and
- » CO₂ intensity

The graphs and trends shown in this section have been developed with reference to production of the reporting Members for each specific year in order to give readers an idea of what is the emission level with reference to each ton of production.

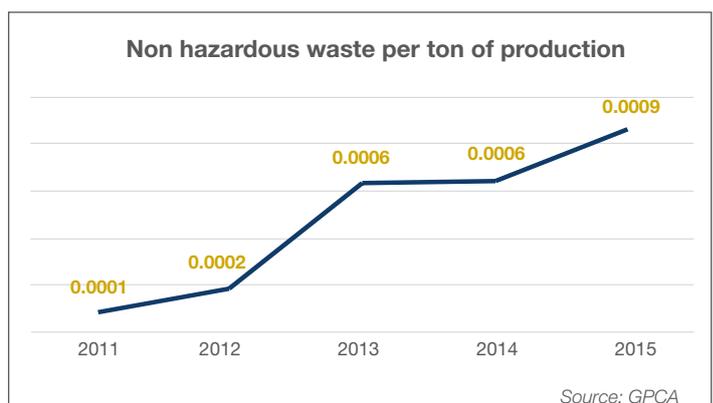
Waste – hazardous and non-hazardous

GPCA continues to collect data from members for both hazardous and non-hazardous waste generation. These metrics have been collected since the inception of the program. Since the establishment of a dedicated task force in 2013 to look more closely at the management of industrial waste, not only have the trend lines shown positive movement over the years, but they are also 'smoothing', giving greater confidence in the reported data. Some fluctuations are nonetheless still evident, however it is important to remember that the waste figures reported are gross tonnage and normalized per ton of production; as production rises, it is natural that the gross volume of waste produced increases.

In 2015, GPCA members collectively produced over 629 thousand tons of hazardous waste and 114 thousand tons of non-hazardous waste. Comparison with previous years is shown in the charts below:



Average rates of non-hazardous waste disposed by member companies are still showing an increase over the reporting years, demonstrating that there is increased awareness on the management and classification of non-hazardous waste streams. Average non-hazardous waste per member company was just over 3656 tons in 2015. The chart below is showing non-hazardous waste normalized by the tonnage of production over last five years.

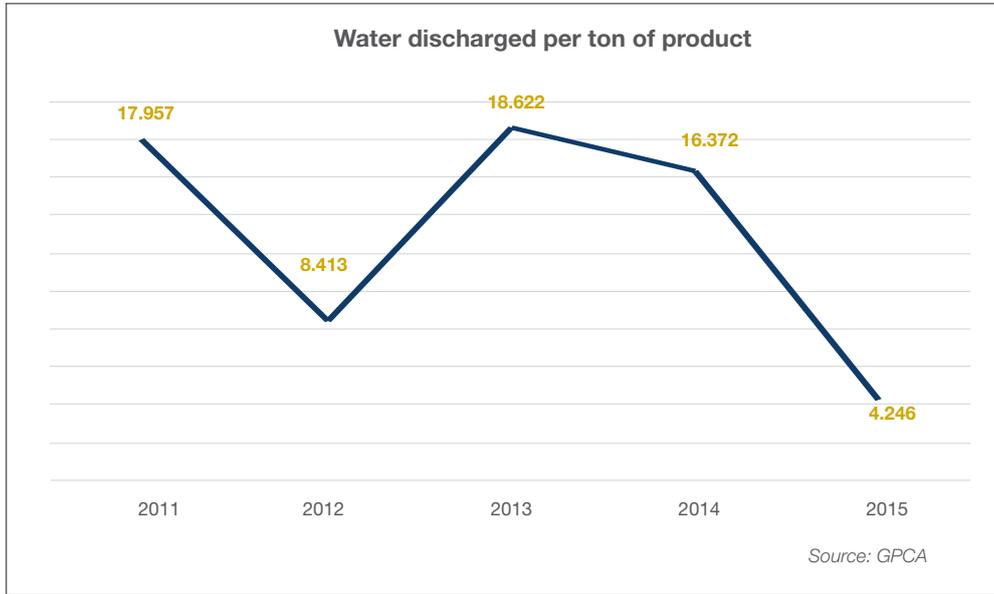


Waste water discharges to the environment

The volume of waste water discharged across member companies is lower than previous years, at an average of 13.4 million m³ per company, per year. In addition, it should be noted that many members are embarking on efficiency projects to either decrease the amount of waste water as a result of their production processes, or to seek efficiencies in the way water is treated in order to reduce energy consumption and emissions

in the treatment processes. As the previous success story from Orpic has shown, the impact of waste water performance is not just of an environmental impact; it is also a societal concern which may give rise to stakeholder complaints from ground contamination and odor nuisance.

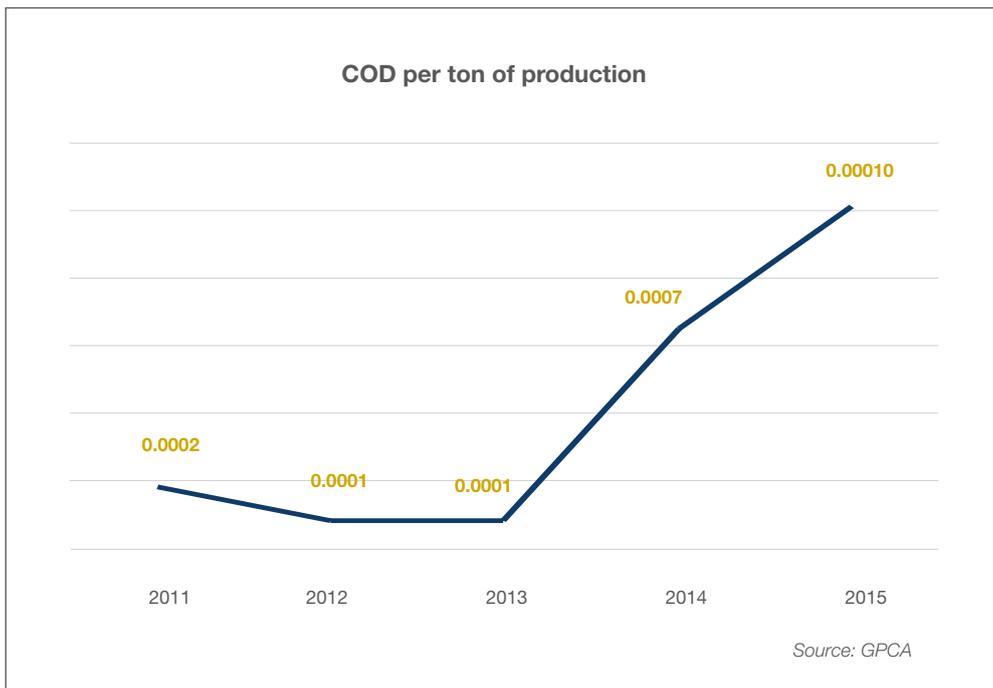
Five-year average waste water discharge normalized to tonnage of production for each year is illustrated in the graph below:



Chemical oxygen demand

Chemical oxygen demand is a measure of the amount of oxygen required for the chemical oxidation of compounds in water. This is therefore an important metric in determining the efficiency of the waste water treatment process. Average COD has remained

within an acceptable distribution, ranging between 313 and 3192 MT of O₂ per year in produced water with its lowest in 2013 at 313.66 and 3192 in 2015. A five year trend of COD normalized against production of reporting member companies each year has been shown below;



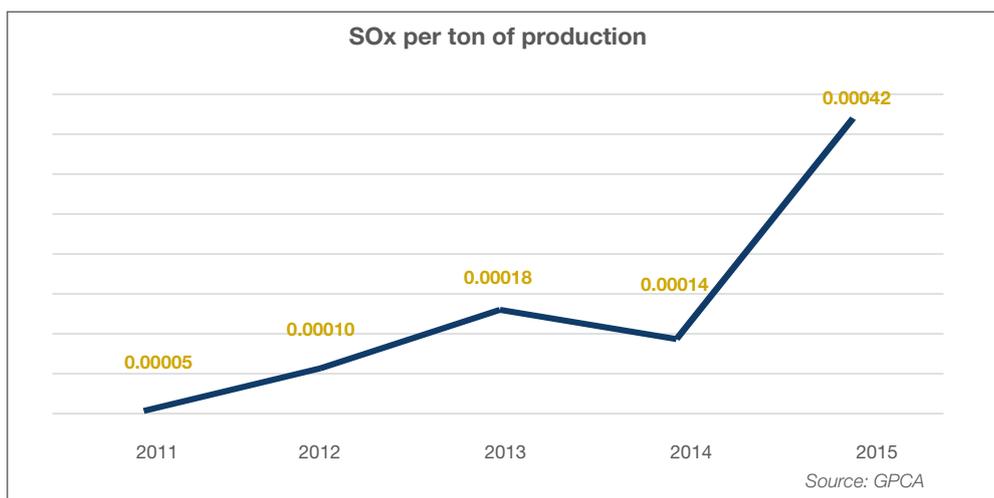
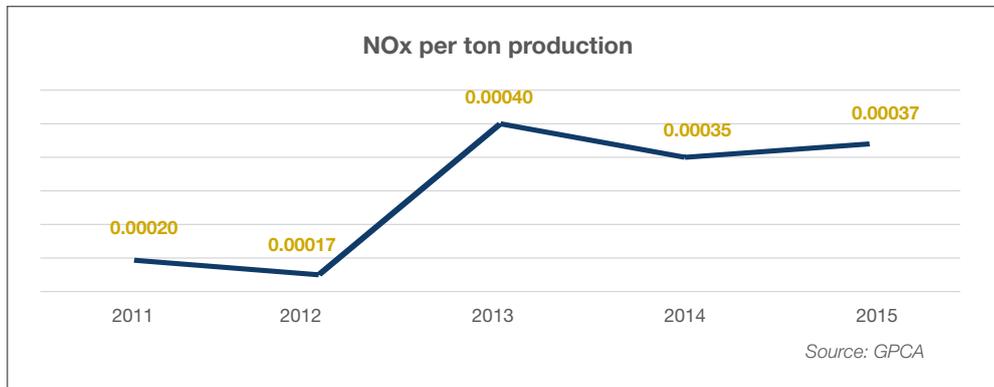
Atmospheric emissions

Nitrogen oxides (NOx) and sulphur oxides (SOx) are the most significant pollutants emitted by industrial manufacturing processes and are regarded as core environmental indicators.

Average levels of annual NOx over the five-year reporting period are relatively stable, with no significant change in the reported averages from the previous year (2014 – 2015). Data is reported

in metric tons per member and is 1192 tons average for the 2015 reporting year. The graph below shows tons of NOx with respect to tons of production over last five years.

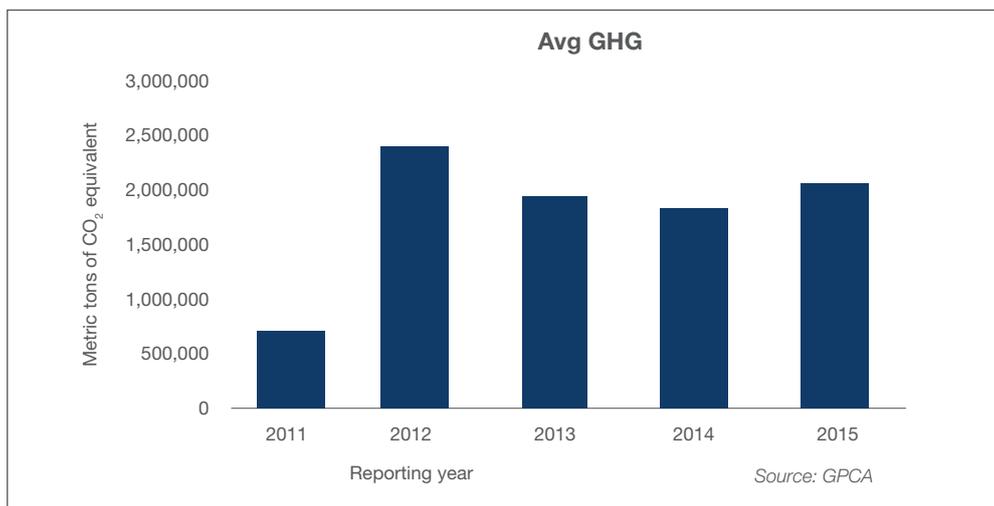
Conversely, the reported data for SOx has been on a steady increase over the five year reporting period with the 2015 data point showing the highest average per member company at 1,358 metric tons. The amount of SOx per ton of product over a five year period, is shown below.



Greenhouse gases

Total greenhouse gases (GHG) emissions continue to be reported in equivalent metric tons CO₂ and this year are also presented as an average figure for all member companies.

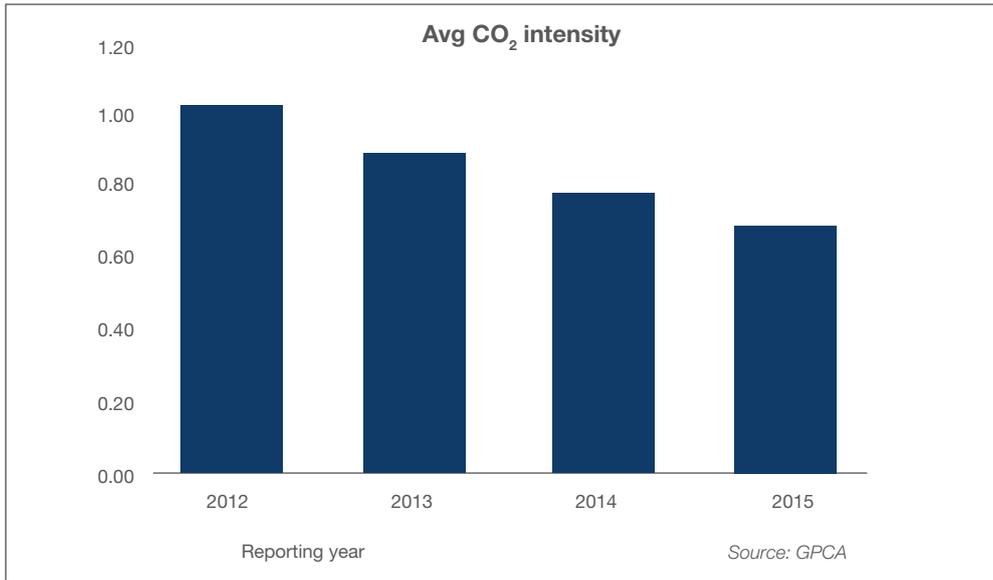
Reported figures have also shown relative stability within the five-year reporting period, with the 2015 average being reported as just over 2 million metric tons CO₂ equivalent. This is an increase of approximately 11% on the 2014 figure and 5.5% on the 2013 figure. The five-year trend is shown in the bar chart below.



Average CO₂ Intensity

The final metric in this set is average CO₂ detailing the ratio of carbon dioxide produced to equivalent metric ton of production.

This is slightly reduced from the 2014 figure, at 0.71 tons per equivalent ton of production:

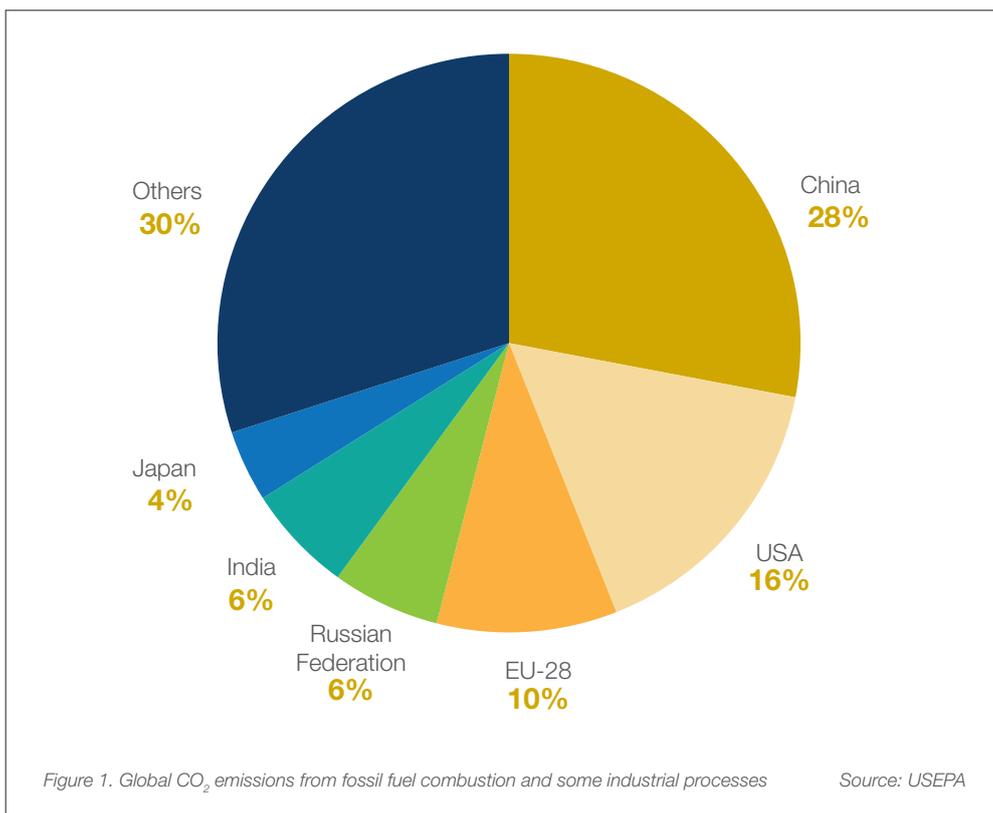


A VIEW FROM OUR INDUSTRY: WHAT THE PARIS AGREEMENT (COP 21) MEANS TO INDUSTRY

By the end of 2015 the world leaders from 195 nations converged in Paris, France for the 21st Conference of Parties (COP 21), an annual meeting of nations that make up the United Nations Framework on climate change. The purpose of the meeting was to negotiate a new global agreement aimed

at limiting the global warming by reducing greenhouse gas emissions - the primary driver of man-made climate change.

The outcome of the conference was an agreement to keep global warming below what most scientists say is the critical threshold of 2 degrees Celsius of warming. This target is challenging, and will take significant reductions in emissions in the near future, especially from the world's largest emitters (Figure 1), and will require commitments to sustainable development from all.



COP 21 is mainly focused on national plans to reduce greenhouse gases known as 'Intended Nationally Determined Contributions' (INDCs). The INDCs will largely determine whether the world achieves this collective agreement and is therefore put on a path toward a low-carbon, climate-resilient future.

INDCs are the primary means for individual governments to declare their intended plan to address climate change, reflecting each country's ambition for reducing emissions, considering specific domestic circumstances and capabilities. The agreement also encourages countries to collaborate with each other in order to adapt to climate change impacts, encourage others to adopt low-carbon pathways and to build climate resilience.

Commitment in the Arabian region

All the GCC countries have submitted their INDC commitments prior to COP 21:

| | |
|--------------|---|
| Bahrain | Sets out a number of policies and actions that will contribute to "low greenhouse gas emission development." It highlights its economic vision 2030, which seeks to diversify the country's economy and reduce its dependence on oil and gas |
| Saudi Arabia | Commitment to 130 million tons of carbon reduction by 2030 |
| Kuwait | Reduction of GHGs will be estimated later based on proposed projects such as Clean Fuel (by 2020), generated energy from solid waste (by 2020), use of renewable energy (by 2030), and the railway network |
| Oman | Control its expected GHG emission growth by 2% during the period 2020 - 2030 |
| Qatar | Non-committal INDC; focuses on actions that will bring about economic diversification that will also cut emissions, although does not set a reduction target. Qatar plans to diversify its economy away from fossil fuels and towards clean energy sources such as solar and the exportation of liquefied natural gas as a clean energy |
| UAE | Limit emissions and increase the share of "clean energy" in the energy mix to 24% by 2021, from a baseline of 0.2% in 2014 |

Implications and way forward for the petrochemical and chemical industry

The implications of climate change for the industry are manifold. It is a strategic issue at the executive level of political, public, economic and business agendas. In addition, the industry is impacted by the emerging increase of government regulations, public perception, changes in customer preferences, institutional investors and competitors with low carbon solutions. In summary, every aspect of business starting from supply chain to marketing is and will continue to be impacted by climate change.

Leading businesses are already taking action to build a prosperous low-carbon economy of the future; setting their own internal emissions reduction targets, increasing energy efficiency, innovating new materials, products and services, and working with suppliers to reduce emissions throughout their supply chains.

Climate change has emerged as a business risk, but companies must rise to the challenge of turning risk into opportunities and competitive advantage for the business. At present, companies with research and development capability are targeting technologies that will enable society to move toward a low-carbon economy, through innovative more sustainable products as well as improving existing processes to reduce energy consumption and improve efficiency. For example, carbon capture storage and utilization, is being considered, where practical and feasible.

The Paris Agreement (COP 21) provided a window into the industry perspective on climate negotiations. It was well attended by industry leaders around the world. Many of the attendees acknowledged that more can be done and called for appropriate climate change policies from the governments and regulators. They favor integrating climate risks into their company strategic planning and to engage an independent organization dealing with climate change risks and opportunities.

The industry should quantify its greenhouse gases emissions as the first step towards management. The industry is also expected to actively engage with external stakeholders, for example, by supporting public awareness campaigns or studies.

In summary, it is in the industry's interest for it to be at the forefront of carbon management to capitalize on opportunities and manage risks posed by the climate change.

SUCCESS STORIES

IBN RUSHD – SABIC AFFILIATE: ENERGY & GHG REDUCTION

At Arabian Industrial Fibers Company (Ibn Rushd), the aromatics plant went through a major project to improve its process configuration and technology to an advanced energy and GHG emissions efficient process. The plant previously used CYCLAR technology to produce its products while consuming huge amounts of energy, and emitting a significant amount of greenhouse gases. The CYCLAR unit has been replaced with a new SULFOLANE unit (SULFOLANE process technology) provided by UOP and as a result, energy consumption has reduced to around 70%, and GHG emissions to 55% compared to 2010 figures.

The UOP CYCLAR process is a moving bed catalytic process designed to convert LPG (propane and butane) into aromatics BTX (benzene, toluene and xylenes) using a single catalyst system. The major reactions are paraffin dehydrogenation, followed by dimerization and cyclization.

The overall reaction from LPG to aromatics is endothermic therefore, the CYCLAR process uses multiple reactors with inter heaters to achieve optimum conversion and selectivity to aromatics products. In addition to its multiple heaters, it uses

660 tons of steam per hour. Continuous flaring was one of the consequences of this technology as excess off-gas was produced on continues manner.

In 2012 the aromatics plant was revamped to process purchased reformat (traditional refining of hydrocarbon mixtures aromatics and non-aromatics) with the same technology provider, using Sulfolane extraction process to extract and recover high-purity aromatics BTX (p-xylene, benzene, heavy aromatics and toluene). Using the SULFOLANE technology in place of CYCLAR process has improved the plant configuration to a more economical configuration, energy and GHG efficient enabling Ibn Rushd to use less steam (50 % reduction) for process heating compared to turbine drivers for compressors and pumps.

Additionally, decommissioning of five process charge heaters used in CYCLAR unit has led to significant reductions in flaring and emissions volumes. The resultant improvement was also due to reduction in steam boiler load; approximately 50 % of design load.

Energy & GHG improvement

- » GHG emissions reduction by 55 % from 2010 to 2015.
- » Energy consumption reduction by 70 % from 2010 to 2015.



SADAF: FLARING CONTROL

SADAF is an affiliate of SABIC and one its products is ethylene dichloride (EDC).

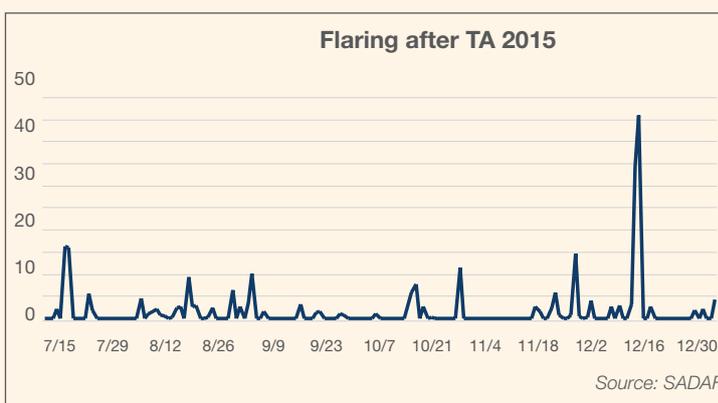
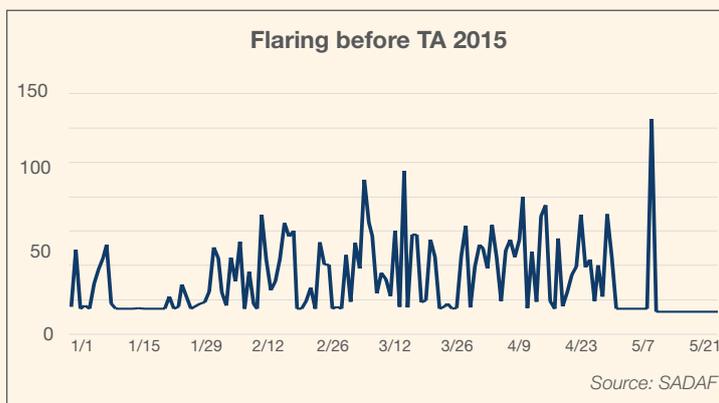
In the event of a process upset and emergency in the EDC section, the dry vent will be diverted to the flare system through a dry vent pressure controller. There has been a chronic issue of dry vent header pressure fluctuations in the past due to liquid accumulation in the dry vent header drain lines. This has resulted in frequent extended flaring specifically before the unit turnaround.

The dip leg of vessel 34V34 was modified during the turnaround after focused troubleshooting, resulting in the flaring reduction

significantly; with an overall contribution of 31% reduction in EDC plant flaring. The change was captured following applicable SHEM procedure.

Improvement impact on **specific EDC flaring KPI** (in percentage)

- Flaring reduced significantly by almost 31% compared to flaring events before implementing the change positively contributed to GHG reduction in the EDC plant footprint.
- The panel operators were always at high alert and took away most of the focus due to the frequent fluctuations in dry vent header pressure and required operator intervention. After implementing the change the panel operator focus was shared in all the areas thus improving operation reliability.



SAFCO– SABIC AFFILIATE: REDUCTION IN CO₂ VENTING

Saudi Arab Fertilizer Company (SAFCO) is an affiliate of Saudi Basic Industries Corporation (SABIC) and manufactures urea granules and anhydrous ammonia.

Currently, SAFCO has four ammonia and five urea plants including Ibn Al-Baytar (IBB) ammonia urea complex as well as a single train standalone urea plant which is utilizing all excess CO₂ from its other contemporary SAFCO ammonia plants as well as CO₂ from United which is another affiliate of SABIC.

Prior to the commissioning of SF-5 urea plant, vents in the SF-2 ammonia plant were kept approximately 25% open, while controlling pressure at 0.8 kg/cm². By doing so, approximately 15 tons per hour of CO₂ was being vented, contributing adversely to greenhouse gas emissions. After SF-5 commissioning, the SF2 team has successfully managed to close the CO₂ near to 0% opening. This has helped to save 31% of produced CO₂ from wastage.

Improvement in **sustainability footprint KPI's**

- GHG reduction by 90% from SF-2 ammonia plant.
- Material waste reduction by 90% from SF-2 ammonia plant.

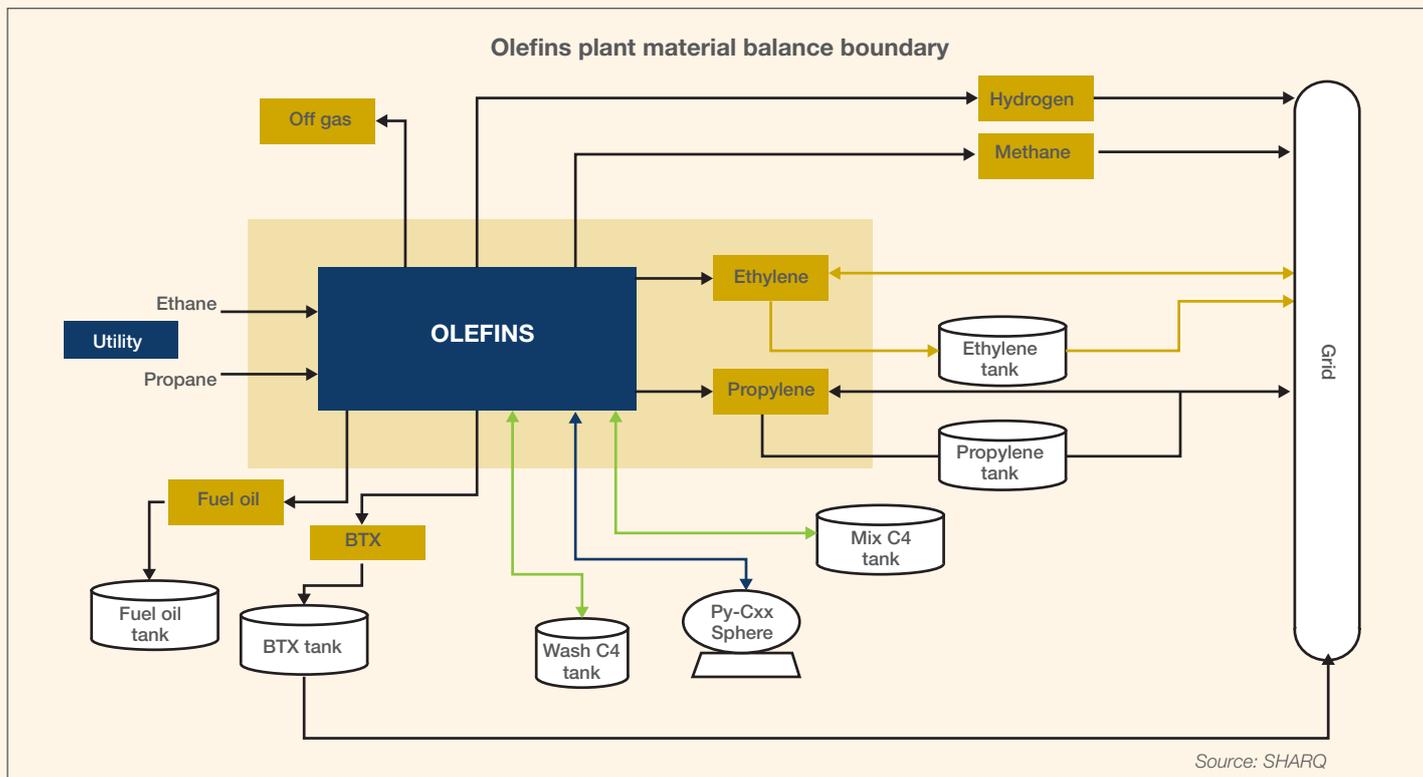


SHARQ SUCCESSFULLY REDUCES FLARE GAS IN ITS OLEFIN PLANT

SHARQ is a joint venture company equally owned by SABIC and the Saudi Petrochemical Development Corporation (SPDC), situated in Jubail Industrial area. Ethylene is the main feedstock to produce ethylene glycol and poly ethylene. Part of the ethylene required is produced by SQ's own olefin plant (capacity 1300 KTA), which was commissioned in 2009, and the rest is received

from an ethylene common grid. The total design production volume of SQ is 5000 KTA.

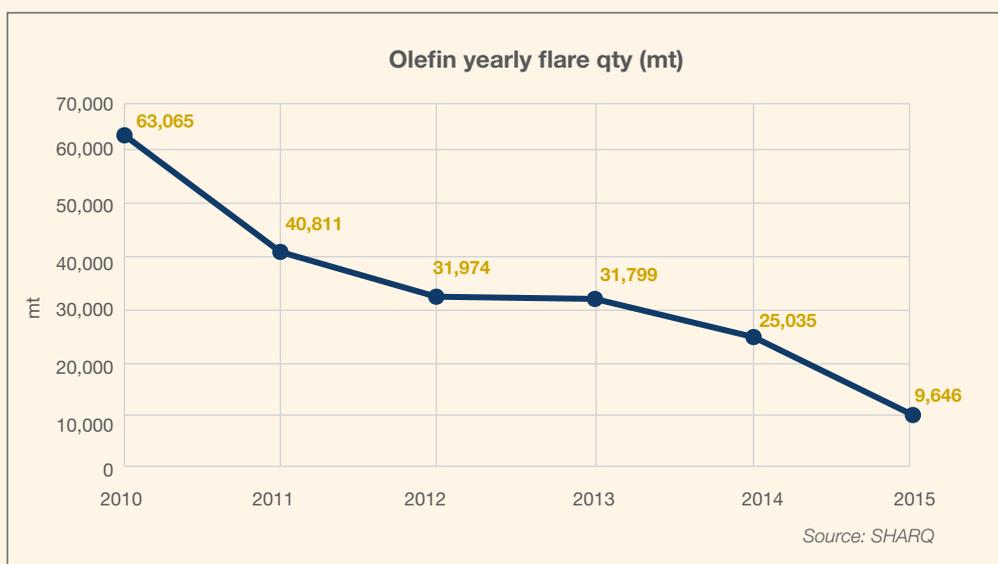
The olefin plant's flare quantity is determined by overall material balance. For IN streams, feedstock, fuel gas backup, make-up from product grids and reprocessing streams are considered; and for OUT streams, main products, by-product and inventory are considered, as shown in the diagram below:



After start-up, flaring quantity in the olefin plant was high due to shut down and stabilization however, equipment reliability has improved with time. This, coupled with operator training, process optimization and an installed APC system, has reduced spurious plant trips and reduces overall flaring volumes. Further improvements realized have been zero shutdown in the SQ olefin plants.

The graph below shows 84.71 % reduction in flare quantities from the base year 2010, which contributes to the reduction of GHG and material effectiveness by 15.55 % & 8.5% respectively.

Up to Y-2015 SQ has achieved GHG and material effectiveness reduction from base year 2010 by 13.21 % and 28.75% respectively compared to SABIC minimum requirement of 8.35 %/16.2 % respectively.



UNITED CO₂ PLANT – A BOOST TO SUSTAINABILITY

UNITED is an affiliate of SABIC and operates a grassroots petrochemical complex and manufactures:

- Ethylene (1350 kta of Ethylene),
- Ethylene Glycol - 575 & 525 kta Mono-ethylene Glycol (MEG) and other higher glycols (DEG and TEG respectively)
- Linear Alpha Olefins Plant (150 kta).

UNITED has reduced carbon dioxide emissions to atmosphere by constructing and operating highly efficient CO₂ purification and liquefaction plants to recover the CO₂ from the vent gas

of the ethylene glycol plants and remove unwanted impurities. This facility recovers and purifies carbon dioxide up to the grade which is being used as feedstock in methanol and urea production within SABIC affiliates, which has improved SABIC's sustainability performance. Moreover, it has also improved the overall specific consumption of utilities, energy and waste generation. Food grade CO₂ is also sold to local customers, reducing overall emissions further.

The project was initiated in June 2013 and successfully started production (1067 ton / day) in July 2015.

United overall CO₂ reduction is shown in the table below:

| | CO ₂ e | Energy | Water | Waste | Production |
|-----------------------|---------------------------|----------------------|-------------------|---------------------------|------------------------|
| 2010 | 2,356,211 tons/yr | 33,369,766 GJ/yr | 2,802,822 tons/yr | 661,542 tons/yr | 3,010,643 tons/yr |
| 2010 | 0.7826 | 11.0839 | 0.9310 | 0.2197 | |
| From CO ₂ | (-303,839) tons/yr | 151,912 GJ/yr | 0 tons/yr | (-335,664) tons/yr | 335,664 tons/yr |
| After CO ₂ | 2,052,373 tons/yr | 33,521,677 GJ/yr | 2,802,822 tons/yr | 325,877 tons/yr | 3,346,307 tons/yr |
| After CO ₂ | 0.6133 | 10.0175 | 0.8376 | 0.0974 | |
| % improve | 21.6% | 9.6% | 10.0% | 55.7% | |

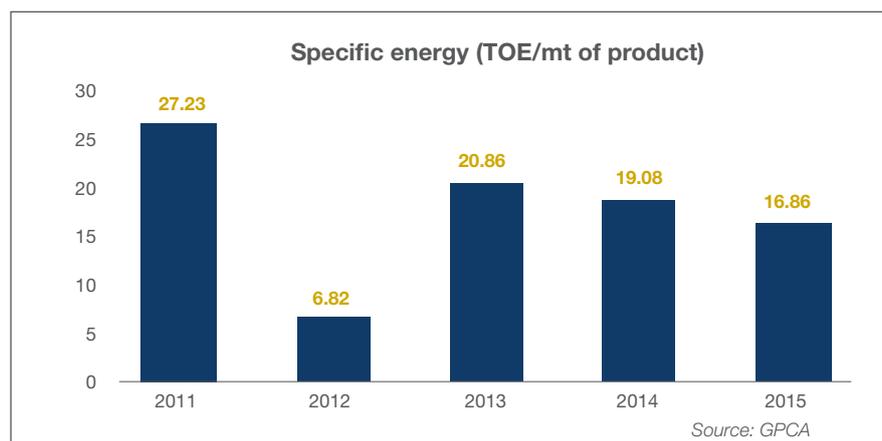
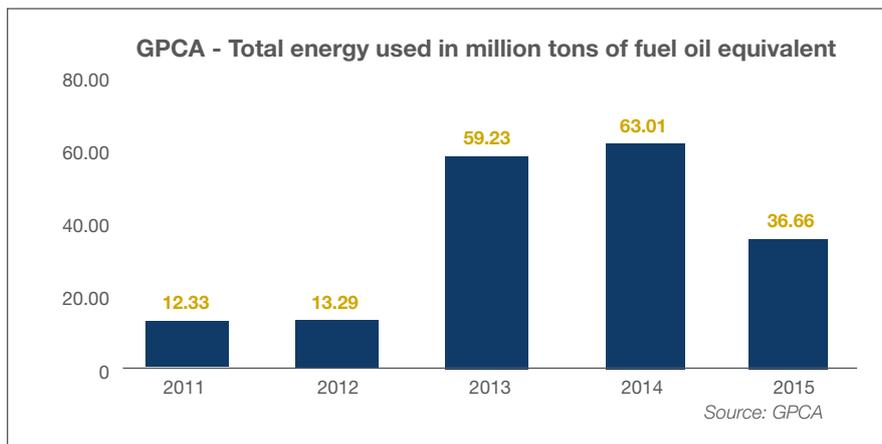
Resource utilization

Why is this important?

Chemical production processes resource intensive by definition. Investing in process and technology improvements are critical components to reducing overall usage of fuel and water, and to ensure maximum efficiency when using resources in our production processes.

The primary measurement of process efficiency within member companies is total energy usage. Measured in million tons of fuel oil equivalent, this is a good metric in measuring overall efficiencies in the production process. As a measurement it is however susceptible to fluctuating process conditions and improvements cannot always be attributable to a specific improvement, or initiative. Total energy used in the reporting year 2015 is 36 million TOE, as shown in the graph below.

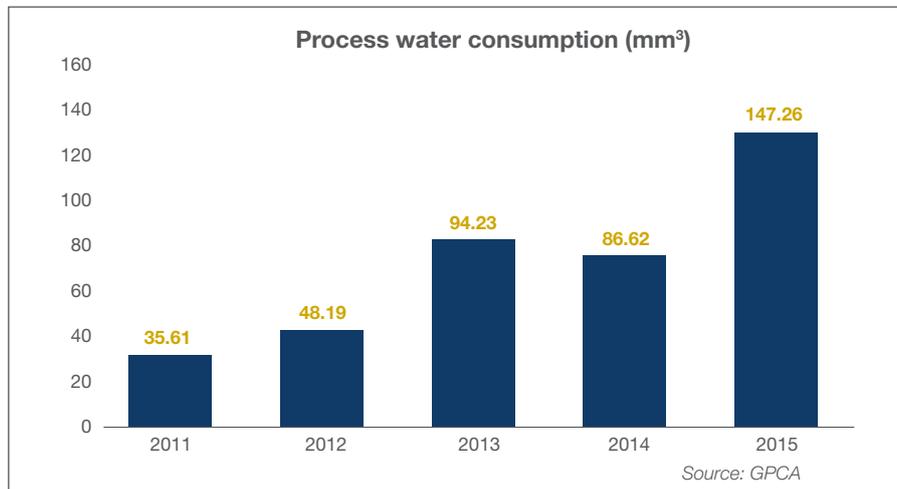
Similarly, process efficiency is also measured as a specific energy figure, tons of oil equivalent, per million tons of product. This allows for a more direct year-on-year comparison since production volumes are normalized. The 2015 metrics show a moderate improvement in efficiency from 2014, with a total of 16.86 TOE per million tons of product. The relative stability of this metrics over the last three years gives further confidence to the data accuracy and is shown in the trend below.



Efficient use of water is of particular importance to our industry and is a particularly important measure in the GCC, where industry relies on energy-intensive processes to provide desalinated water for production as well as domestic use. Water scarcity issues are also a global concern. As can be seen from the graph below, process water consumption increased sharply in the last year to 147 million cubic metres, up from 68 million cubic

metres in 2104. If this trend continuous, the region could have a significant concern.

The relative fluctuation in these metrics shows the importance of using technology and efficient production processes in ensuring less resource intensive production processes. Three examples of such initiatives are presented on the following pages and are reproduced courtesy of Albayroni and SADAF.

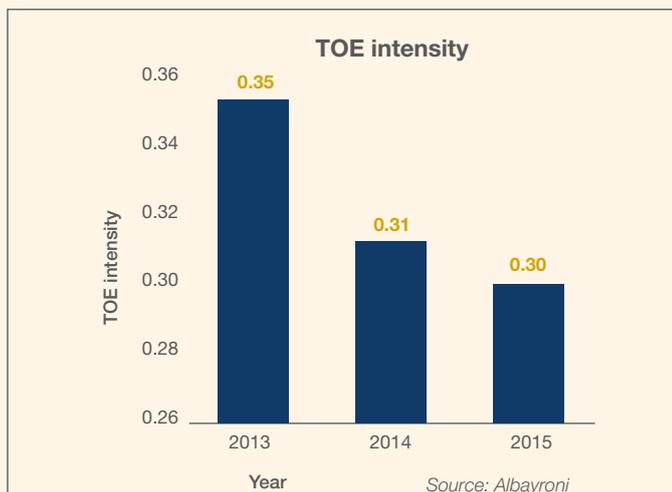


SUCCESS STORIES

ALBAYRONI SUCCESSFULLY OPTIMIZES ENERGY USE

Al-Jubail Fertilizer Company (Albayroni) is a SABIC affiliate which operates supplied package boilers, two of which are fired by natural gas and a third by natural gas and waste liquid fuel. The plant has been operational since 1983 and its energy consumption has always been high.

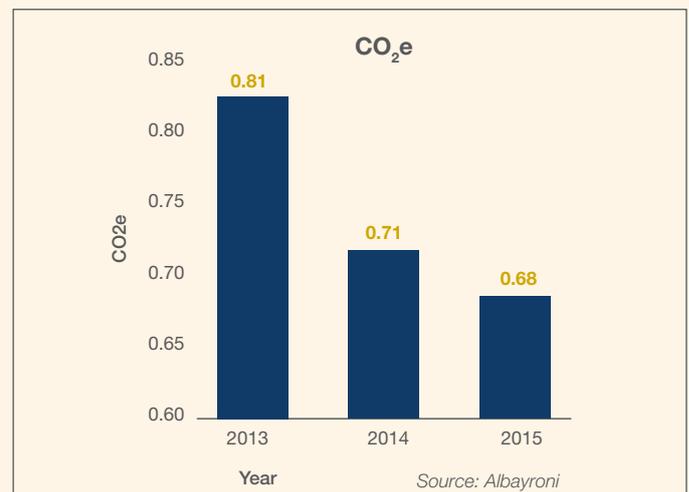
The potential for energy savings, and associated reduction in GHG emissions were evaluated through an independent study. Based on the findings of the study, modifications have been proposed to realize energy and GHG savings at the ammonia plant and steam import from packaged boilers.



The modifications to the ammonia furnace reduce venting of the LP stream, steam turbines, HP steam header temperature and pressure, and provide energy savings in the CO₂ removal system and syngas compressor. In the packaged boilers, installation of an economizer and related mechanical equipment was proposed.

The entire modification was completed in the ammonia plant and in two boilers in the first quarter of 2013, with the third boiler modification being completed in 2014.

The results of energy optimization in the ammonia plant production and steam-generating units have had significant energy savings and subsequent GHG emissions, as shown in the graphs below:



SADAF – SABIC AFFILIATE: WATER INTENSITY REDUCTION

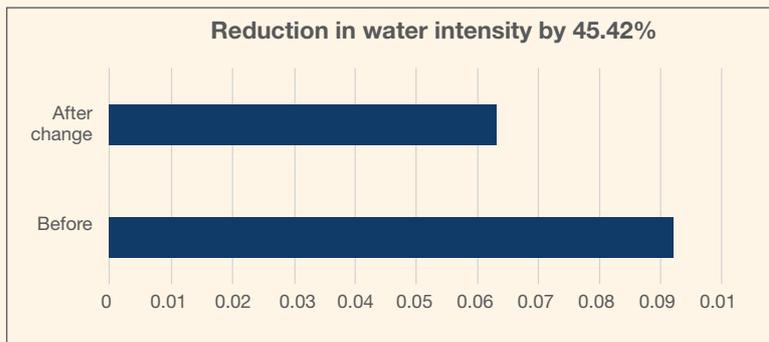
SADAF has had high water intensity figures since measurements related to its sustainability program started in 2010. It has also been the highest water consuming affiliate in SABIC for last two years.

The SADAF team developed a detailed action plan to overcome this challenge, the main action being to retrieve and commission the Evap condensate stream from EDC plant to UDD. The idea was studied by the team and they proceeded with an action plan to improve the quality of this stream and utilize it in the demin unit instead of losing it in SWR.

The following specific actions were taken:

1. The demister bed for caustic evaporators was the main contributor for off spec. evaporated condensate. The demister bed was fixed and extensive efforts have been exerted during the last EDC turnaround to rectify this issue and retrieve the system to the original condition.
2. To improve the reliability, the demister bed was tag welded with support in order to avoid falling any demister segment during normal operation and impacting condensate quality.
3. A new on-line analyser has been implemented in UDD side to ensure the stream quality meets the specification at all times.

The table below presents the actual saving and benefits:



| Parameters | Previous | Present |
|----------------------------|-------------|------------|
| Potable water from Marafiq | 17 KMTD | 15.5 KMTD |
| Evap. stream flow | batch basis | 1.5 KMTD |
| Potable water to demin | 10.5 KMTD | 9 KMTD |
| Cost saving | | 1 MM USD/Y |

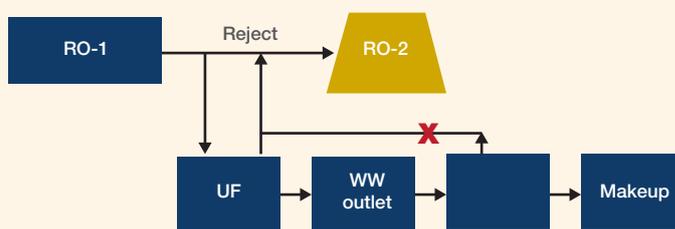
Source: SADAF

EQUATE – MAKING BEST USE OF OUR NATURAL RESOURCES

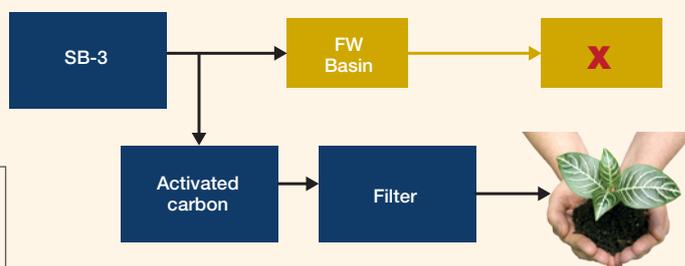
On 14th July 2015, EQUATE produced process quality distilled water by recycling wastewater through the new wastewater treatment plant, at its Shuaiba plant in Kuwait. This was a result of EQUATE's commitment to its corporate vision "To be a highly efficient energy saving organization working towards achieving a cleaner environment, by adopting global green operation concepts, initiatives covering GHG emissions reduction and water conservation, as well as being, a valued neighbour through leveraging best practices to surrounding community."

The two part project involved:

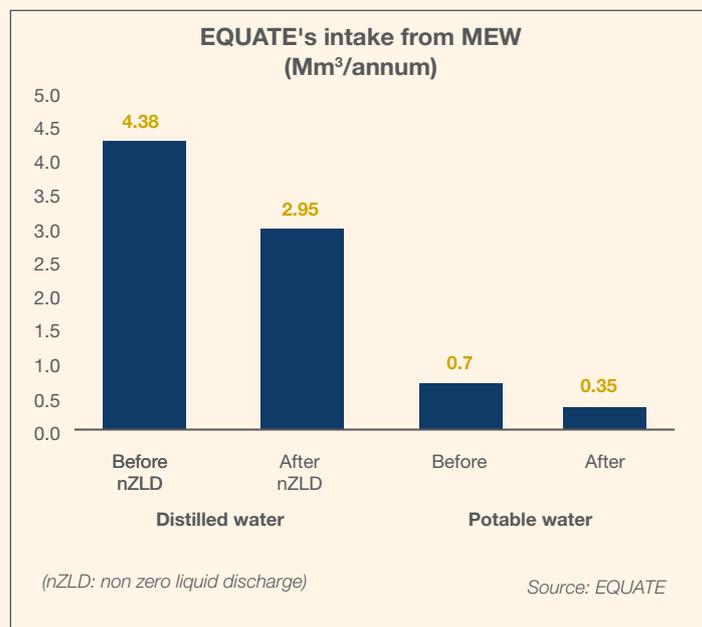
1. Recycling plant waste water to re-use as distilled water



2. Storm water filtered for re-use as irrigation water

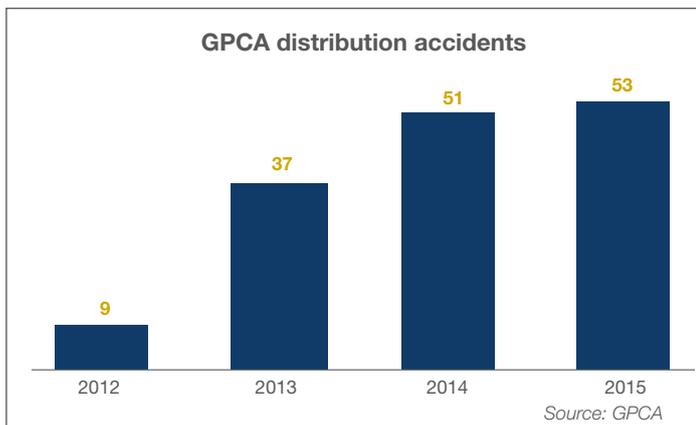


Source: EQUATE



Distribution

The Responsible Care and Gulf SQAS Committees are currently developing a plan to expand the scope of Responsible Care in the GCC to include Logistic Service Providers. The goal is to establish a collective culture of continuous improvement of EHS&S standards throughout the chemical supply chain and to improve our performance related to the 'Distribution' aspect of the RC metrics. This is currently only measured through the number of product distribution incidents per year, as shown in the table below:



The rising number of product distribution incidents clearly shows that this needs to be an area of focus for members and GPCA. It is also clear that measuring distribution incidents alone is a reactive measurement of consequence and a more holistic approach will be required to improve EHS&S performance throughout the chemical supply chain.

In order to develop a more all-encompassing set of performance metrics for LSPs, a review has been carried out, including reference to the GCC manufacturers and European logistics sector. The following list summarizes the potential performance metrics, subject to a forthcoming pilot study and will be included as part of the Responsible Care requirements for LSP's.

| Performance metric category | Number of metrics |
|-----------------------------|-------------------|
| Occupational safety | 6 |
| Process safety | 3 |
| Emissions and discharges | 5 |
| Resource utilization | 3 |
| Product distribution | 6 |

Source: GPCA

It is expected that through measuring and transparent reporting, GPCA shall have the capability to better analyze and identify areas for collective improvement. This will be another step forward towards development of regional improvement in the various aspects of Responsible Care pertaining to LSPs.

RESPONSIBLE CARE BEYOND THE FENCE – FURTHER ENHANCEMENTS PLANNED FOR LSP'S

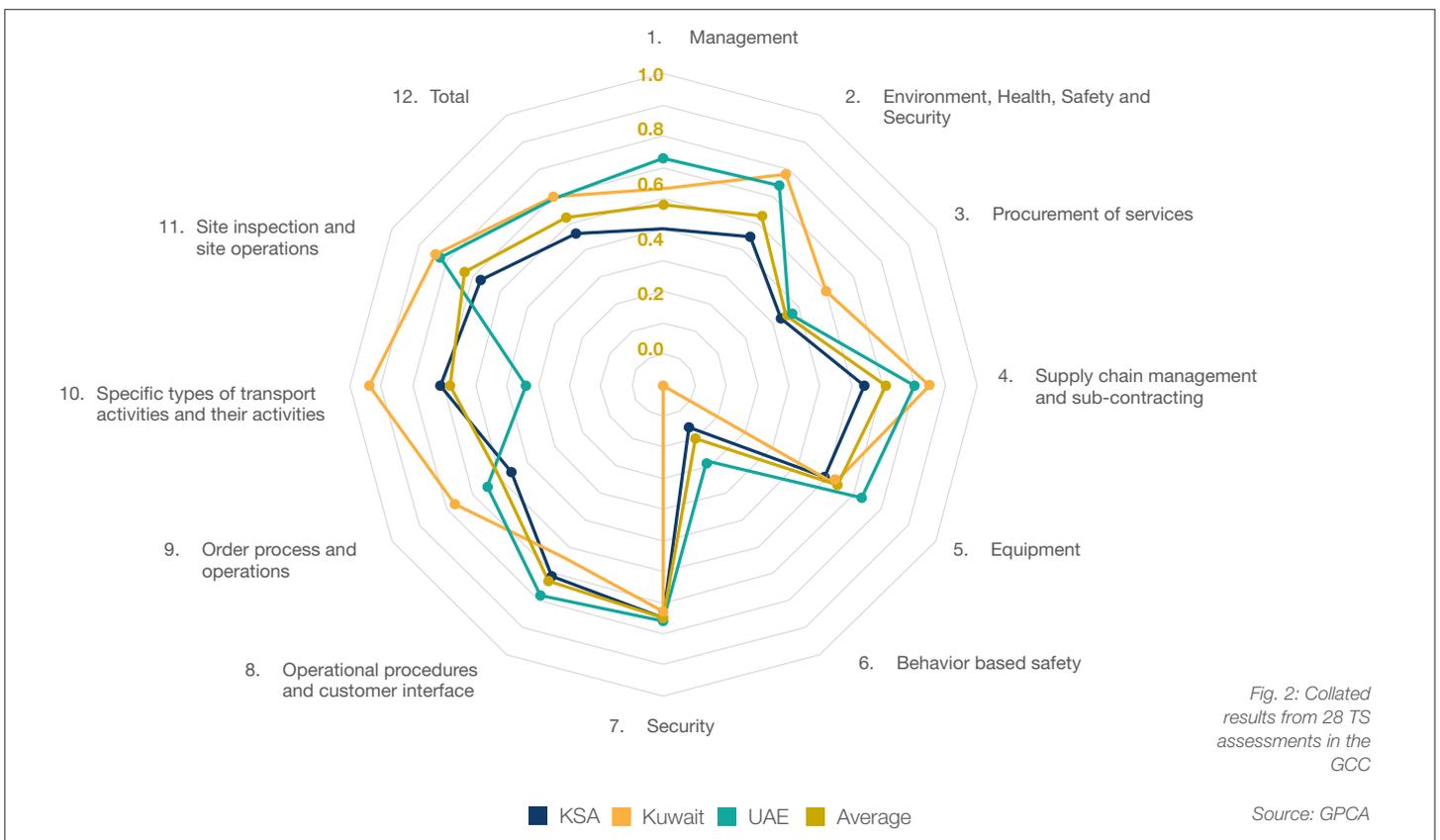
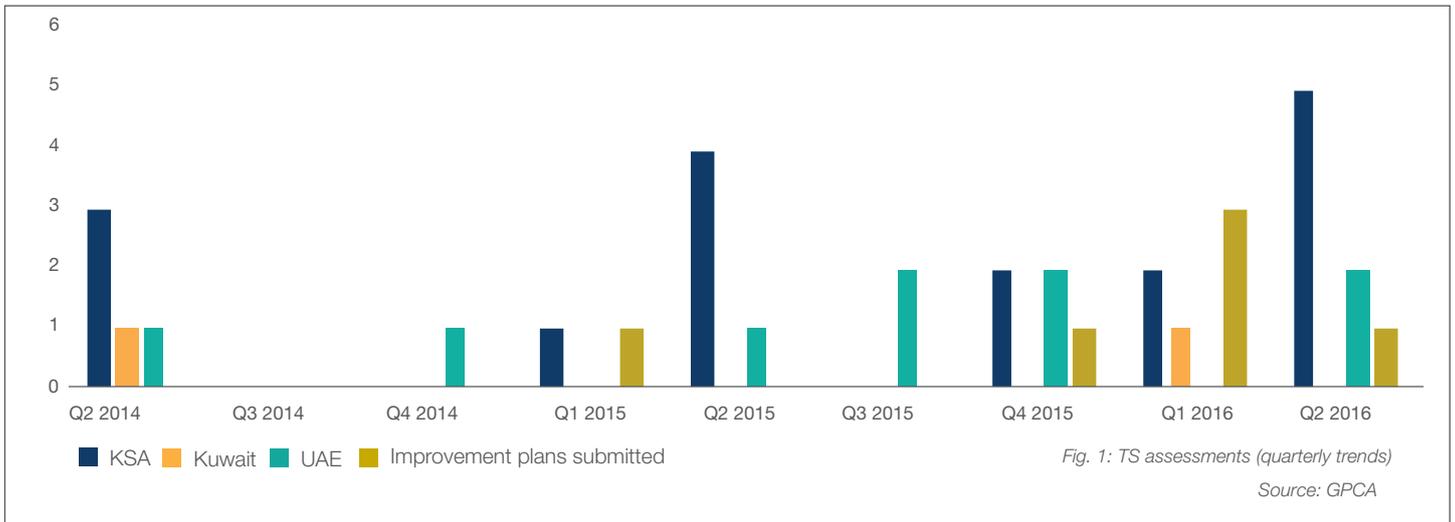
GPCA adopted the Gulf Sustainability and Quality Assessment (Gulf SQAS) program in 2014, which is based on the SQAS program of the European chemical industry. The program aims to improve the Environment, Health, Safety, Security and Quality (EHSS&Q) performance of land-based chemical logistics in the GCC, an industry with increasing magnitude of operations and risks.

The Gulf SQAS program takes Responsible Care beyond the fence and into the operations of chemical Logistics Service Providers (LSPs), an aspect not directly controlled by manufacturers. Replacing multiple audits, the program seeks a single assessment every three years that is uploaded to a central database and is accessible to all manufacturers.

The program has four modules, i.e. Transport Services (Trucking), Warehousing, Tank Cleaning stations and Rail. After a successful pilot in April-May 2014 where five LSPs participated, the Transport Services (TS) module was launched in August 2014 and has grown at a healthy rate as the awareness of its benefits has increased over time.

Since the second quarter of 2014, twenty-eight assessments have been completed. The reports uploaded to the database until June 2016 indicate that a greater density of the assessments have taken place in KSA and UAE. The number of assessments has grown from six in 2014 to twelve in 2015. In the first half of 2016, already ten assessments have been completed with five currently in the planning phase.

A key aspect for an LSP, post-assessment, is the development of an improvement action plan that details improvement actions to resolve the operational gaps identified by the assessment. Six companies have already submitted their improvement action plans and a further six are in the process of doing so.



The core questionnaire contains three sections, Management, EHS&S and Procurement of services) and is common to all four modules. The transport services questionnaire contains eight sections covering the various operational aspects of a LSP. As indicated in Fig.2, the total average across the twenty-eight assessments stands at a respectable 62% with Kuwait at 70%, UAE at 69% and Saudi Arabia at 56%. It should be noted that one of the major LSP's from Saudi Arabia who scored 18% during the pilot made significant investment in improving their operations and when re-assessed eighteen months later, increased their score to 87%. This is one of the success stories for Gulf SQAS.

Also noticeable from Fig. 2 are the low scoring areas of behaviour based safety (average 20%) and procurement of

services (average 45%). In particular, Behaviour Based Safety (BBS) remains a challenge for the region. BBS focuses on ensuring the training of staff on safe driving, loading and unloading, its monitoring and analysis. It also asks the LSP to promote and monitor BBS principles amongst its service partners.

To further maximize the benefits of Gulf SQAS, regular and effective viewing of assessment reports is paramount:

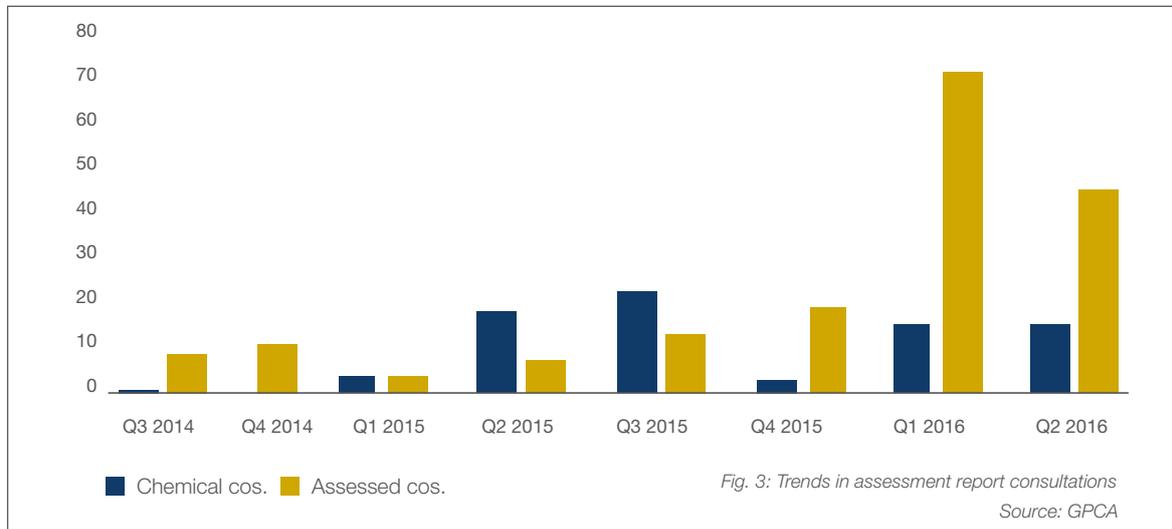
- **Assessed company:** Review operational gaps and work to resolve them
- **Manufacturing company:** Imperative from a procurement standpoint and also to ensure that contracted LSP's are

following the set standards that enable the safe storage, transport and handling of products

As awareness on the program continues to grow and more manufacturers integrate Gulf SQAS assessments as a mandatory requirement in their procurement contracts, we're seeing an upswing in the number of times assessment reports are being

viewed on the database. Fig. 3 illustrates the growth experienced over the last few quarters.

Gulf SQAS is now firmly established as the leading program for manufacturers and logistics companies to work collaboratively in order to improve the EHSS&Q standards of logistics operations throughout the GCC.



EXTENDING RESPONSIBLE CARE TO THE CHEMICAL LOGISTICS SECTOR

The Responsible Care and Gulf SQAS committees are currently developing a plan to expand the scope of Responsible Care in the GCC to include LSP's. The goal is to establish a collective culture of continuous improvement of EHS&S standards throughout the chemical supply chain.

The concept and criteria for being recognized as a Responsible Care logistics company has been endorsed by the GPCA Board, discussed and fully supported by the ICCA -RCLG.

Similar to the manufacturer program, a logistics company must comply with following set criteria to attain the title of a "Responsible Care Company";

- GPCA associate membership;
- Commit to the core principles of Responsible Care through a signed executive declaration, tailored to the needs of the logistics sector;
- Complete a Gulf SQAS assessment and submit an improvement plan for all applicable facilities;
- Provide Responsible Care (EHSS) performance metrics on an annual basis

In fulfilling all above aspects, an LSP will be entitled to use and display the Responsible Care logo with pride.

In order to develop a suitable set of performance metrics for LSP's, a review has been carried out, including reference to the GCC manufacturers and European logistics sector. The following

list summarizes the potential performance metrics (subject to a forthcoming pilot study) and will be included as part of the Responsible Care requirements for LSP's:

| Performance Metric Category | Number of Metrics |
|-----------------------------|-------------------|
| Occupational Safety | 6 |
| Process Safety | 3 |
| Emissions and Discharges | 5 |
| Resource Utilization | 3 |
| Product Distribution | 6 |

It is expected that through measuring and transparent reporting, GPCA shall have the capability to analyze and identify areas for collective improvement. This will be another step forward towards development of regional improvement in the various aspects of Responsible Care pertaining to LSP's.

Definitions: *Gulf SQAS: Gulf Sustainability & Quality Assessment System*

LSPs: Logistic Service Providers

ICCA: International Council of Chemicals Association

RCLG: Responsible Care Leadership Group

Responsible Care priorities for 2016 and beyond

This report is testament to the number, and quality of sustainability initiatives that are ongoing in our industry and it is a fantastic showcase of our members' commitment to EHS performance improvement in the GCC chemicals and petrochemicals industry. The range of success stories presented in this report represent a far wider range of initiatives than previous, whether that be plant modifications based on engineering excellence, dealing with

issues 'beyond the fence' or developing programmes aimed at behavioural change and safety culture improvement.

We are also very proud to announce that GPCA, with the support of the Responsible Care Committee is working on a number of initiatives to support the RC Program. Should you wish to hear more about any of these projects, please contact rc@gpca.org.ae.

Data validation & IT platform

GPCA will implement an online reporting platform for performance metric reporting and analysis. Once completed, this platform will replace the manual data collection process and will be visible to all members via the GPCA website. This will bring significant efficiency gains, support the transparency of data reporting and help to clean up legacy data issues through data validation.

Responsible Care for LSPs

The Responsible Care and Gulf SQAS committees are currently developing a plan to expand the scope of Responsible Care in the GCC to include LSP's. The goal is to establish a collective culture of continuous improvement of EHS&S standards throughout the chemical supply chain.

LSP's will soon be conducting assessments of their performance and developing action plans. In addition, they will report against a tailored set of RC performance metrics.

GHPS regime is coming

In 2012, the international Council of Chemical Associations (ICCA) tasked its Responsible Care Leadership Group (RCLG) to establish a globally harmonized approach to process safety. The global metric and reporting process approved by the ICCA board is being launched this year. RCLG associations worldwide including GPCA will be asked to report 'total number of process safety events (PSE).' 2016 performance metrics reporting program will reflect this change.

Peer review programme launching

The Responsible Care committee is excited to report that an RC peer review process is to be established to support the implementation of members' RC programs. Whilst the mandate is still to be fully defined, it is expected that knowledge sharing will be paramount

Acknowledgements

GPCA sincerely acknowledges the commitment and support of the performance metrics subcommittee in the production of this report. The sub - committee is responsible for overall coordination of the report content and selecting the company success stories for inclusion in the report.

Our members are the backbone of the report content and we gratefully acknowledge their hard work in the timely submission of complete and accurate PM data, which this report relies on. We also thank all members for their active sharing of their success stories. Whilst we cannot reproduce them all, we are grateful for each and every submission

GPCA is also grateful for the continued support of **Lloyd's Register** for editing this report.



www.gpca.org.ae

www.gpca.org.ae/committees/responsible-care/introduction/

GPCA Performance Metrics sub-committee team members

- » Maher Al Dughaim – Chemanol - Chairman
- » Jassim Darwish – GPIC - Vice Chairman
- » Sudhir Sivarajan – Borouge – Member
- » Omar Al Omar – S-Chem – Member
- » Qasim Yunus – Sabic – Member
- » Andrew Blue – Lloyd's Register – Member
- » Ridha Behbehani – Equate – Member
- » Kashif Rasheed – GPCA - Member

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- » Dr. Ahmad Al Hazmi for “A view from Our Industry – what does Paris agreement (COP21) means to industry.
- » Ajit Patil - Specialist Health (Borouge) & Ridha Behbehani - Industrial Hygienist (Equate) for “A View from Our Industry: Occupational Health and Wellbeing”.
- » Alan Izzard for “Extending Responsible Care to the Chemical Logistics Sector” and
- » Udit Arora (GPCA) for “Responsible Care Beyond the Fence”.

Reporting members:





The Gulf Petrochemicals and Chemicals Association (GPCA) represents the downstream hydrocarbon industry in the Arabian Gulf. Established in 2006, the association voices the common interests of more than 250 member companies from the chemical and allied industries, accounting for over 95% of chemical output in the Gulf region. The industry makes up the second largest manufacturing sector in the region, producing over US\$ 108 billion's worth of products a year.

The association supports the region's petrochemical and chemical industry through advocacy, networking and thought leadership initiatives that help member companies to connect, to share and advance knowledge, to contribute to international dialogue, and to become prime influencers in shaping the future of the global petrochemicals industry.

Committed to providing a regional platform for stakeholders from across the industry, the GPCA manages six working committees - Plastics, Supply Chain, Fertilizers, International Trade, Research and Innovation and Responsible Care - and organizes six world-class events each year. The association also publishes an annual report, regular newsletters and reports.

For more information, please visit www.gpca.org.ae

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