4C HSE Conference Agenda for Chemical Plants

Training Classes – February 19 – 21, 2020

LDAR - Beyond Basics and Underneath the Rules - Brian Whitley, EMSI
Liquids Fuels Terminals – Basics of Environmental Permitting and Compliance - Al Reich, Corey Mead, and Tony Shoberg, Barr Engineering
Spill Prevention, Control, and Countermeasures - Chris Perry – EPA
EPCRA/TRI Training - Bob LaRosa, Aarcher Inc
Operations Troubleshooting of Biological Treatment in Refineries and Petro Chemical Facilities - D'Ann Wilkins & Todd Lusk, SLR Consulting
Drone 3D Modeling, Mapping and Photogrammetry Course Utilizing Pix4DMapper - Kwasi Perry, UAV Survey Incorporated
FAA Part 107 - Drone Certification - Uzkar Ibrahim, 4C Marketplace/Sage EHS China
Flares Essentials - Troy Boley, Herman Holm and Rishabh Jaishankar, Spectrum Environmental Solutions
Flare for Experts: Flare Control - Dan Johnson, BakerHughes, A GE Company/Panametrics
Surviving an LDAR Audit - Greg Sherman, Ben Hopkins, Jeremy McLeod - GuideWare Systems
Mass Spec Gas Analyzers: Operation and Maintenance - Chuck DeCarlo, Jim Brenner & Haley Gabor, Extrel
Microsoft Excel Best Practices for Plant Professionals (and Others) - John Beath – JBE
Fenceline Monitoring: Training & Updates - ESC - Brian Fowler
Refinery Fenceline Monitoring Root Cause Analysis: How To Conduct and Then Develop An Effective Corrective Action Plan - Robert Opiela – NaviKnow
Practical Dispersion Modeling - Robert Opiela, Naviknow
Intermediate Air Permitting - Johnny Vermillion, Leah Pulin, Aaron Hebert & Robert Osborn, Spirit Environmental

Schedule Continued on Next Page

4C HSE Conference Agenda for Chemical Plants

Air Permitting for Experts - Johnny Vermillion, Leah Pulin, Aaron Hebert, Robert Osborn & Scott Hyden, Spirit Environmental

Quantitative Optical Gas Imaging - Yousheng Zeng & Jon Morris, Providence Photonics

BWON Fundamentals - Implementing a Comprehensive BWON Program - Trihydro Corporation - Erin Novini

Workshop on Bolting & Joint Assembly Related Topics - Hytorc - Chris Krantz

LDAR Auditing - Graham "Buzz" Harris & Mark Kelsey, Tricord Consulting

Stack Testing Essentials - Paula Metz & Jordan Laster, Alliance Source Testing

PSM Excellence/PHA Best Practices

Continuous Emissions Monitoring Systems (CEMS) Fundamentals - Tim Kuiken, M&C TechGroup, Brian Fowler, ESC, Paula Metz, Alliance Source Testing

Continuous Emissions Monitoring Systems (CEMS) For Experts - Tim Kuiken, M&C TechGroup, Brian Fowler, ESC, Paula Metz, Alliance Source Testing

Essentials of Air Permitting & Compliance for Chemical Plants

GuideWare Software Workshop - Greg Sherman, Ben Hopkins, Jeremy McLeod - GuideWare Systems

Process Heater and Boiler Tune Up Training - TRC Solutions, AlphaThree Consulting-LLC - John Bacon and Mike Sanders

BWON Auditing for Experts - Ken Garing, Steve Probst, 4C Marketplace, Cal Niss, Trihydro

Tanks Essentials

SPCC Training - Bison Engineering


HSE Leadership Excellence - Frank Burgard - Big Spring Refinery

Detailed Agenda Continues on Next Page
4C HSE Conference Agenda for Chemical Plants

Breakout Presentations – Thursday February 20, 2020

- **Ethylene MACT Comments** - Eric Swisher - ALL4
  - 10:30 AM – Room 416A – Chemical
  - Abstract Coming Soon.

- **Upcoming MACT Residual Risk and Technology Reviews – What to Expect and Lessons Learned from the Refinery Sector Rule (RSR)** - Rose E. Waypa - Barr Engineering
  - 11:00 AM – Room 412 – Air Permitting
  - EPA has proposed multiple updates to rules following a residual risk and technology review (RTR) that will incorporate 2015 Refinery Sector Rule (RSR) requirements into rules affecting the chemical and petrochemical industries, including facilities subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing (MON), Organic Liquids Distribution (OLD), and Ethylene Production. Proposed rule updates include incorporating new work practice standards (i.e., pressure relief devices and maintenance vents), developing innovative outside-the-unit monitoring techniques (i.e., fenceline monitoring), establishing comprehensive control device operating requirements (i.e., flares), addressing startup and shutdown operations against continuous emissions limits, and modernizing reporting and recordkeeping requirements (i.e., CEDRI and ERT), all consistent with the final RSR updates. This presentation will focus on lessons learned from the implementation and the first year of compliance with the final RSR updates, and how those lessons learned can be applied to the industries affected by the latest RTRs. The presentation will include a step-wise approach to identifying compliance gaps, developing a work plan, and implementing new monitoring equipment and compliance procedures.

- **Assessing the Human Health Risks to Fugitive Airborne Ethylene Oxide Emissions** - Benjamin Chandler - GHD Services
  - 11:30 AM – Room 412 – Air Permitting
  - A recent study by the US EPA Integrated Risk Information System indicated an increased carcinogenic potential for community exposures to airborne Ethylene oxide (EtO) around facilities using EtO. The resulting changes to the EtO risk criteria by the US EPA have increased public scrutiny for EtO users to reduce emissions and ensure healthy conditions within neighboring communities. This presentation will focus on strategies for measuring ambient levels of EtO in outside air for the purpose of determining potential human health risks. Integrated air sampling methodologies will be discussed along with predictive air dispersion modeling capabilities and emission control solutions. A brief history of the EPA rule changes for Texas will also be presented as the basis for regulatory compliance.

- **Methods for Enhancing Fugitive Emissions Prevention in Chemical Process Pipelines** - Dale Rice - VSP Technologies
  - 1:00 PM – Room 412 – Air Permitting
  - Most fugitive emission reduction / elimination efforts in the industrial community, especially at chemical and refining facilities have been focused on component monitoring with the
implementation of LDAR (Leak Detection and Repair) programs. USEPA studies have shown that the vast majority (between 80 and 90%) of fugitive emissions are associated with valve and connector leaks. While necessary, LDAR programs are, by definition, concerned with fixing leaks when they are encountered, not preventing them. Further, it could be argued that the greatest contribution to lowering fugitive emission rates from connectors and valves is through the use of consistent time-tested assembly and maintenance procedures, and the selection of the best available technology in terms of lowest emission valve packings, gaskets, torquing equipment, and other equipment. An overview of best practices for achieving lowest fugitive emission rates for bolted flange connectors and valves including a fugitive emissions model for gasketed connectors will be presented.

- **Vista Analytical Lab - Martha Maier - Vista Analytical Lab**
  - 1:30 PM – Room 412 – Air Permitting
  - Abstract Coming Soon.

- **Emerging Trends in Owner Compliance - George Perrett - ISTC - Industrial Safety Training Council**
  - 2:00 PM – Room 412 – Air Permitting
  - Safety Councils work for petrochemical plants and their contractors to facilitate innovative ways to reduce incident rates resulting in a 95% reduction in recordable accidents. 2018 marked an evolution in deliverables, slowly migrating away from training to develop new workforce compliance and risk management processes. Working within the industry we developed several internationally recognized Best Practices for contractor compliance, risk management, labor cost management. The petrochemical industry consortium, ISTC, made up of downstream and midstream operators, collaborated with contractors bringing years of quantitative data to identify problems that are developing or have occurred in the workplace and formulating solutions, cost structures and most importantly compliance management to combat future issues. The presentation, outlines several of the best practices in contractor compliance and provides insight toward the direction of future efforts associated with hiring, compliance, auditing, accident response and even Department of Homeland Security, CFATS inspections. Specific industry incidents and actual cases are highlighted to demonstrate the reasoning behind the emerging trends and seeks input from audience members on the potential impact to their business operations. Recently adopted across a variety of global operational excellence teams, Emerging Trends in Workforce Compliance is designed to serve as a barometer of future downstream, and midstream compliance requirements.

**Air Permitting – Thursday February 20, 2020**

- **A False Sense of Security - Shifts in EPA’s Implementation of PSD Capable of Accommodating Determination and The Demand Growth Exclusion - Everard Ashworth - Ashworth Leininger Group**
  - 10:30 AM – Room 412 – Air Permitting
4C HSE Conference Agenda for Chemical Plants

- The 2002 NSR Reforms provided additional flexibility to exclude emissions from existing operations; however, EPA provided little guidance as to how this emissions calculus is to be performed. Come hear the insight gained by the presenter during recent experience in performing a complex and detailed PSD applicability evaluation in the context of utilizing the Demand Growth Exclusion.

- **Upcoming MACT Residual Risk and Technology Reviews – What to Expect and Lessons Learned from the Refinery Sector Rule (RSR) - Rose E. Waypa - Barr Engineering**
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- **Serving Two Masters; Understanding Texas and EPA Permitting Programs - Johnny Vermillion - Spirit Environmental**
  - 11:30 AM – Room 412 – Air Permitting
  - Ever Googled the differences between the state and federal regulatory agency requirements and how to meet both requirements? Well…good luck! Rid yourself of the internet nonsense and come learn some gems of knowledge from Johnny Vermillion, PE. Johnny will decipher the twisted similarities and differences between the two agencies. He will bring clarity to the cloudiness and help you avoid potential pitfalls with his explanation of the two sets of expectations. Johnny has roughly 30-years of first-hand knowledge with this exact topic. He retired from the TCEQ over a year ago and joined Spirit as an expert in our field. He has many years of experience when it comes to working and coordinating efforts between the State (TCEQ) and Federal (EPA) air permitting programs.

- **Recent TCEQ Permitting and Modeling Changes – Lessons Learned and Future Strategies - Frank Dougherty - ALL4**
  - 1:00 PM – Room 412 – Air Permitting
  - The Texas Commission on Environmental Quality (TCEQ) has enacted impactful changes to the way it requires permitting and modeling projects to be completed and submitted. These changes,
most of which are required by June 2019, include the introduction of several new air permitting and modeling spreadsheets designed to streamline the air permitting process. During this presentation, we will summarize, review lessons learned, and provide examples on how to use these new workbooks, which are intended to significantly reduce the amount of TCEQ spends reviewing applications.

- **Air Quality Tools for the 21st Century - Robert Opiela - Naviknow**
  - 1:30 PM – Room 412 – Air Permitting
  - The air quality permitting process is a data-driven process. Federal permit applicability (do you trigger PSD?), netting calculations, rule applicability, emission calculations, etc. require input data. A permit application cannot be prepared or reviewed without access to the necessary information required by the rules and regulations. Finding, retrieving, and manipulating the dozens of available data sets adds days, even weeks to the processes to prepare and review the permit application. Do you really want to expedite the air quality permit process? NaviKnow Solutions has developed 21st century tools where you can easily locate, access, and download the information needed to complete or review air quality permit applications ALL in one location. We have also developed tools to significantly automate the application review. See how a significant amount of time can be shaved off the air quality permit application process without having to pay for an "expedited" permit application review.

- **Photochemical Modeling for Ozone Inter-Precursor Trading - Qi Zhang - GHD Services**
  - 2:00 PM – Room 412 – Air Permitting
  - In Nonattainment New Source Review (NNSR) projects, the industry applicant needs to offset the project emissions of ozone precursors (nitrogen oxides [NOx] or volatile organic compounds [VOCs]) with emission reduction credits (ERCs). Due to the fact that ERCs for one precursor being unavailable or too expensive, the applicant may choose to conduct an inter-precursor trading (IPT) which offsets one precursor with another. Photochemical modeling is required for IPT to demonstrate that the trading will not adversely affect the area's attainment demonstration. This presentation will briefly describe the modeling process and provide an update to the recent successful modeling and trades.

- **New Building Downwash Options in AERMOD - Sergio Guerra - GHD Services**
  - 2:30 PM – Room 412 – Air Permitting
  - The presentation will cover the new building downwash options included in the August 2019 version of AERMOD. The current Plume Rise Model Enhancements (PRIME) formulation in AERMOD has a number of theoretical flaws that have been documented on the treatment of downwash in AERMOD. A renewed interest and scrutiny of these downwash shortcomings fueled a parallel, yet complementary, effort led by industry and EPA. These efforts led to the new experimental Alpha options available in the new version of AERMOD. These Alpha options were developed by the PRIME2 committee and EPA’s Office of Research and Development. The current presentation will cover the new Alpha options developed along with the implications of this new process to add new science to the regulatory model.

- **EPA NSR Reforms: How to Capitalize Now and Later - Kristin Gordon - ALL4**
4C HSE Conference Agenda for Chemical Plants

- **3:30 PM – Room 412 – Air Permitting**
  - This presentation will provide an overview of the most challenging issues posed by the New Source Review (NSR) construction permitting program for expansion projects. The key aspects of NSR will be summarized along with how they fit in with real world projects (and what makes them most challenging for real world projects). The discussion will then lead to the common sense regulatory and policy reforms that are needed to address these challenges. Finally, we will discuss the current status and anticipated implementation of upcoming reforms to the NSR program by Congress and U.S. EPA. This presentation could serve as an overview for those following the regulatory reform process and also as a primer to those that are attending the in depth NSR workshops.

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**Best Practices – Thursday February 20, 2020**

- **MPV, PRD & MSS Best Management Practices at Refineries & Opportunities for Chemical Plants - Troy Knutson - Sinclair Oil**
  - 10:30 AM – Room 412 – Best Management Practices
  - Abstract Coming Soon

- **Integrating Speciation Data For Chemical Plants and Refineries - John Beath - JBE**
  - 11:00 AM – Room 412 – Best Management Practices
  - A surprising number of reports rely on chemical speciation data for purchased chemicals, feedstocks, intermediate streams and products. Recent experience with an EPA NEIC inspection underscored the value in centralizing this data for consistency. Calculations related to quantities present onsite (Tier Two), release reporting and threshold determinations (EPCRA/SARA), emissions calculations (EI/TRI), TSCA Manufacturing Inventory (coming in 2020), RMP (Maximum Intended Inventory), PSM (operator process information), OSHA Hazard Communication, and permit applications could benefit from a carefully orchestrated process. Imagine if the system you develop internally could answer simple questions for emergency situations like what’s the composition of the material in that drum, or that heat exchanger; and imagine if a process was in place to keep all of the content revised as process changes occur.

- **Leak Management - LeakDAS Case Study - Derrick Reese - ExxonMobil**
  - 11:30 AM – Room 412 – Best Management Practices
  - Abstract Coming Soon.

- **How Do You Feel About Storing Your Emissions Data in the Cloud? - Matthew Radigan - REGS, LLC**
  - 1:00 PM – Room 412 – Best Management Practices
  - Cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. In order to implement a cloud solution, you need some basic tools to connect your data source(s) to the Internet. Connection to the cloud storage needs to be secure, reliable and accessible. Turn on any new WiFi enable device, click through some prompts and you are connected. Technology made it so easy that it doesn’t even require a conscious thought...
to participate. Will the same environment that drives my social life translate to my workplace and more importantly, help me successful manage my critical air emissions compliance data. Required tools, feasibility and practicality of using cloud computing for compliance applications will be covered during the presentation.

- **Boiler and Process Heater Tuning as a Best Management Practice - John Bacon - TRC Consulting**
  - 1:30 PM – Room 412 – Best Management Practices
  - While most facilities perceive 40 CFR 63 Subpart DDD (Boiler and Heater MACT, or MACT DDD) as costly regulation, four years of data compiled from the annually and biennially recurring tune-ups indicates the opposite is true. In fact, regular boiler and process heater tuning for natural gas fired sources can lead to considerable cost savings related to fuel use and a simple payback on the tune-ups services within months. The purpose of this presentation is intended to enlighten the audience on the benefits of boiler and process heater tuning, using data compiled from tune-ups performed on nearly 600 combustion sources, and conducted in accordance with the Boiler MACT work practice standard. Also, how a facility can further benefit from the regular performance of these services beyond the regulatory framework.

- **Process Burner Flames: The Good, the Bad, and The Ugly - Doug Basquez & Charles Baukal - HollyFrontier Corporation & John Zink Co. LLC**
  - 2:00 PM – Room 412 – Best Management Practices
  - John Zink Hamworthy Combustion field personnel inspect thousands of burners each year. Too often those flames are not only bad but sometimes potentially dangerous. There are a number of conditions needed for good flames. Burners should be operating at or near their design conditions which includes the excess air and draft levels, and the design firing rate (fuel pressure) and fuel composition. The combustion air must be properly distributed, the fuel must be clean, and both the air and fuel must be properly controlled. The burner and its associated equipment (e.g., tile and pilot) must also be properly installed and maintained. There are some visual indicators that should be checked for proper burner operation. These include uniformity (all flames in a given heater should normally look about the same), proper flame color, no leaning between flames or into process tubes, no pronounced hot spots or dark spots on the burner tiles, no irregular flame movement (e.g., no pulsing), and no unusual sounds (e.g., flashback). Bad flames can lead to increased pollution emissions, reduced thermal efficiency, and unplanned shutdowns. Common reasons for bad flames include improper burner maintenance and operation. Dirty fuel is particularly problematic as it can cause fuel injectors to plug which can create multiple problems. Ugly flames can be dangerous and need to be corrected as soon as possible. Examples of these irregular flames include flame impingement, huffing or pulsing, or severely lifted flames. The purpose of this presentation is to discuss proper burner operation and what good flames look like and then to contrast that with lots of examples of improper burner operation including the causes and corrections. This information can be used in the risk-based inspection and performance monitoring processes. Typically, equipment has a function statement (primary/secondary) and performance objectives and ranges. The
4C HSE Conference Agenda for Chemical Plants

consequences when the function of the equipment has failed is documented in the earlier processes.

- **Contractor Management - Ric Hartung - Process Safety Solutions, LLC**
  - 2:30 PM – Room 412 – Best Management Practices
  - Currently there are a large number of facilities covered by Process Safety Management (PSM) that either use a third party or manage their own contractor safety programs. Numerous compliance audits and National Emphasis Program (NEP) inspections has revealed a serious gap. While these third parties may do an adequate to good job in obtaining contractor information, evaluating statistics, and managing documentation, most fail to meet the requirement outlined in the PSM Regulation regarding contractor evaluations and verification. This gap leaves the host employer vulnerable to significant OSHA & EPA violations and fines. At issue, is the requirements outlined in several sections in the PSM regulation starting in sub-section (f)(4) stating that “the employer shall develop and implement safe work practices to provide for the control of hazards during operations such as lockout-tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees” (emphasis added). This indicates that the host employer’s safe work practices apply to not only its own employees, but also to the contractors that perform work in the covered process. The host employer responsibilities are further outlined in subsection (h)(2)(v) such that “The employer shall periodically evaluate the performance of contract employers in fulfilling their obligations as specified in paragraph (h)(3) of this section. For the host to fulfill PSM obligations regarding contractors, it must verify that the contractor has received safe work practice training, including site-specific requirements, such as but not limited to, the potential hazards that may be present in the facility. The contractor may use their own safe work practices, but this would need to be agreed upon beforehand and the host “must” evaluate each safe work practice to ensure that they are equivalent or more stringent, than their own.

- **Conforming to ASTM-D7036: Self-Declaration vs. Third-Party Accreditation - David Fricker - A2LA**
  - 3:30 PM – Room 412 – Best Management Practices
  - Confidence in test data is paramount to acceptance, and both users and customers want assurance of quality. In general, testing bodies that choose accreditation rather than self-declaration demand a higher quality of work to maintain that accreditation and strive to produce more reliable results. In turn, customers have greater confidence in the accuracy and validity of the data from these testing bodies. Accreditation also provides the industry with confidence that a testing body is subject to regular oversight as a motivator to continually improve their operations. The ongoing verification of compliance ensures that the testing body’s results are consistently dependable and defensible.
4C HSE Conference Agenda for Chemical Plants

BWON – Thursday February 20, 2020

● On-Going BWON Compliance Concerns - Ken Garing - Ken Garing & Associates
  ○ 10:30 AM – Room 412 – Best Management Practices
  ○ Compliance issues with the BWON requirements have evolved since the regulation was introduced in the 90’s. In the early 2000’s, numerous deficiencies, ranging from the identification of regulated waste streams to the proper operation of control equipment, resulted in enhanced BWON requirements being included in the refinery global consent decrees. Since that time, a tremendous amount of work has been directed to this effort and the refining sector has made great strides in improving compliance with the BWON regulation. Mr. Garing will present his thoughts on where current efforts could be focused to further improve compliance.

● A Wastewater Solution for an Air Pollution Problem - Todd Lusk - SLR Consulting
  ○ 11:00 AM – Room 412 – Best Management Practices
  ○ The regulatory requirements for managing benzene- and VOC-laden streams from wastewater treatment units require refineries to implement vapor control technologies that are often expensive to implement and/or operate. This session presents another option – the VOC BioTreatTM process, an alternative control technology that utilizes unit operations already in place at most wastewater treatment facilities and can substantially reduce the costs associated with BWON compliance. The presentation will provide information on the necessary steps to evaluate, model, test, and implement the VOC BioTreatTM process, and will describe case studies to support the economic and environmental benefits.

● BWON Auditing - Bart Leininger - Ashworth Leininger Group
  ○ 11:30 AM – Room 412 – Best Management Practices
  ○ The National Emission Standard for Benzene Waste Operations (BWON or Subpart FF) is a complex regulation that is difficult to assess in the context of a due diligence assessment. These assessments are conducted within compressed schedules, essential documentation is typically limited or unavailable, and the liabilities for non-compliance are significant. Given the complexity of the BWON regulation, even a seasoned practitioner can miss a significant compliance issue, which could result in a costly corrective actions and potential enforcement exposure for a new owner. Further complicating the due diligence are Subpart FF enhanced requirements mandated in Consent Decrees. Assessing compliance with these enhanced requirements is just as important as compliance with the regulation itself. Given this complex backdrop, Subpart FF assessment during a due diligence must have a laser focus on those requirements of most importance for the acquisition. This presentation draws upon the presenter’s experience in performing detailed Subpart FF assessments in the context of a due diligence and from litigation related to BWON compliance. The presentation uses case study examples to illustrate key areas of inquiry that should be part of the assessment, and provides helpful and practical recommendations for evaluating key aspects of a Subpart FF compliance program. This presentation will also be of interest to BWON professionals with ongoing...
operations as it provides a “mental checklist” of areas of potential exposure in their BWON compliance program.

- **BWON Masterclass - Steve Probst - 4C Marketplace**
  - 1:00 PM – Room 412 – BWON
  - Abstract Coming Soon.

- **Benzene Waste Operations NESHAP In the FLIR Age - Calvin Niss - Trihydro**
  - 1:30 PM – Room 412 – BWON
  - Abstract Coming Soon.

- **Vapor Lock Scrubber Technology Reducing Carbon Usage for BWON Compliance and Temporary Tank Storage - Sean Kirkpatrick - Vapor Point**
  - 2:00 PM – Room 412 – BWON
  - Vapor Point’s VaporLock™ control technology has been utilized within many areas of BWON operations, while also providing for the elimination of other HAPs such as Hydrogen Sulfide and Ammonia. Common applications include API Sumps and Separators, Dissolved Air/Nitrogen Floatation Systems, Tank Vent Emissions Controls, Sludge Processing Operations, Vacuum Truck and Frac Tank Controls and we have even designed equipment for the complete by-pass of existing sump systems.

- **Downstream Confirmation of Benzene Loading - Kati Petersburg - Trinity Consultants**
  - 2:30 PM – Room 412 – BWON
  - Downstream flow rates and concentrations can reflect the characteristics of the total wastewater throughput managed at the facility, where all sewered wastewaters have come together into one stream. Experience indicates that downstream characterization can provide the most accurate values for facility wastewaters. However, the BWON citations emphasize the need to characterize wastes upstream, at the points of generation (POGs), because the rule-writers were concerned that benzene could volatilize from the waste as it flowed through the waste management system. Thus, the TAB quantification must be based on the upstream POG characterizations. It is valuable to assess the accuracy of POG results by comparing the downstream values with the sum of upstream POG values in the sewered streams. Although benzene is dynamic in a refinery sewer system—potentially volatilizing or transferring between the oil and water phases—it is reasonable to expect downstream loadings to be similar to the values derived from summing POG numbers. Agreement in the upstream-downstream evaluation lends confidence to the TAB quantification, the 6BQ or 2-Mg quantification (if needed), and the overall claim of the facility that the BWON wastes were properly identified.

- **BWON Compliance Sampling - Chad Vogele - Think Environmental**
  - 3:30 PM – Room 412 – BWON
  - Abstract Coming Soon.

- **BWON Compliance Post Consent Decree Era - Kati Petersburg - Trinity Consultants**
  - 3:30 PM – Room 412 – BWON
  - The refinery Consent Decrees added “enhanced provisions” to the BWON. Refineries complied by doing more than the BWON citations required, with the enhanced provisions sometimes
dominating compliance demonstration. So what will happen as the Consent Decrees are terminated? Will all those enhanced provisions become a thing of the past? Or will it perhaps be advisable to retain some of them with as much attention as ever? The speaker brings decades of BWON compliance experience to a strategic analysis of what to do in the post-CD era.

**CEMS – Thursday February 20, 2020**

- **Live Demo: Improving Sample Probe, Chiller and Filter Performance - Donny Klotz - M&C TechGroup North America, Inc.**
  - 10:30 AM – Room 412 – CEMS
  - Live demonstration to teach the audience about the many ways in which various Continuous Emissions Monitoring System components can be improved, optimized and properly specified for various applications. We'll discuss sample transport and conditioning considerations associated with extractive probe configurations, gas chiller options, filtration materials and temperature controls, and help end-users identify and overcome common CEMS challenges.

- **Common CEMS RATA Failures and Risks - Paula Metz - Alliance Source Testing**
  - 11:00 AM – Room 412 – CEMS
  - This presentation will focus on thing that may cause a CEMS RATA to fail and what can be done on the facility side and by the stack tester to reduce the potential for failures.

- **CEMS Lessons Learned - Ty Smith - Cemtek Environmental**
  - 11:30 AM – Room 412 – Best Management CEMS
  - CEMTEK KVB-Enertec is a System Integrator and full service organization that builds & supports continuous emissions monitoring systems (CEMS) to meet EPA 40 CFR Part 60, 64, & 75 regulatory requirements and process control monitoring systems on a variety of applications and sources including chemical, cement, glass, refinery, power, biomass, paper, and many others. In this paper we will discuss lessons learned when testing, purchasing and deploying new monitoring technologies to measure NOx, SO2, CO, HCl, NH3, H2S, HF, HCN using lasers & DOAS compared to conventional technologies ranging from Dry Extractive, Dilution, Hot Wet, and In-situ for compliance and process monitoring.

- **Reporting of Component and System IDs During Missing Data Periods - Brian Fowler - ESC**
  - 1:00 PM – Room 412 – CEMS
  - As part of EPA’s ongoing efforts to improve both the quality of reported emissions data and streamline the reporting process itself, EPA has identified several issues with respect to the tracking of unit/stack operating hours and required QA. To correct these issues, the 2019 Q3 ECMPS release will include several updates to improve the accuracy of emissions evaluations, reduce the number of incorrect errors and/or messages, and result in an overall more efficient reporting process with better data quality. All new related check results will be informational messages. EPA will monitor these results and change the severity of the error messages to Critical Level 1 in the future.

- **Common CEMS Program Audit Findings - Eric Wiley - VIM Technologies**
  - 1:30 PM – Room 412 – CEMS
4C HSE Conference Agenda for Chemical Plants

○ Issues of non-compliance and poor system performance are frequently discovered during CEMS program audits. The presentation will also focus on best practice implementation that can assist facilities in ensuring that their CEMS programs are compliant with applicable regulatory requirements and help utilize limited resources as efficiently as possible. Real world examples of CEMS audit findings will be outlined and ways to avoid such issues will be discussed.

● Simplifying CEM Reporting: The Revolution in Data Acquisition & Handling - Brian Fowler - ESC 2:00 PM – Room 412 – CEMS
   ○ This session will provide a quick overview of current pressures that are requiring earlier and more accurate data validation, compliance averaging and recordkeeping. Then we’ll look at how a Data Acquisition and Handling Systems (DAS or DAHS) makes validated averages available immediately after acquisition for CEMS, COMS and CPMS. How does this change the flow and use of compliance data? Finally we’ll dig into passages from the RSR changes to MACT CC to examine the details of how different the recordkeeping and reporting for this rule will be as we enter the first year of compliance. Whatever solution you are planning to use, this session should provide helpful insight.

● Measuring Low Level Particulate and Eliminating Positive Bias with OTM-37 - Justin Sullivan - Alliance Source Testing 2:30 PM – Room 412 – CEMS
   ○ Certain sources emit particulate matter (PM) at rates which render traditional particulate testing methods (EPA Methods 5, 201A, & 202) inadequate. Another class of sources finds positive bias in EPA method 202 measurements for condensable particulate matter (CPM) as a result of compounds present in process streams. Recently promulgated OTM-37 makes accurate measurement of particulate from these previously problematic source types possible. Larger particles are collected in PM cyclones, and smaller and condensable particulate matter are collected on a 47-mm filter. The sample gas is diluted with cool, dry air to avoid artifact formation while still allowing the measurement of CPM. OTM-37 measurement sensitivity is in micrograms, as opposed to milligram sensitivity in EPA Method 5, 201A, & 202.

● Comprehensive CEMS Stack 102: Process Optimization - Dean Kotecki - Envea 3:30 PM – Room 412 – CEMS
   ○ Continuous monitoring instruments for bag–house filter performance control, bag leak detectors, flue gas & solid flow moisture monitoring, level detection, reagent injection control, etc. allowing the optimization of your processes: raw material & energy savings, reduction of environmental impacts.

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<th>Emerging Technology – Thursday February 20, 2020</th>
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<td>● Location Awareness – Improving Safety with Wireless Monitoring - Marcio Donnangelo - Emerson Automation Solutions 10:30 AM – Room 417B – Emerging Technology</td>
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Schedule Continued on Next Page


Hilton Downtown – Austin, TX – Thursday February 20, 2020
4C HSE Conference Agenda for Chemical Plants

○ Think you’re covered? Radios aren’t always enough. Once a wireless infrastructure is deployed, then a new universe of occupational safety applications can be easily implemented, such as Location Awareness, using industrial wireless technology, that in many cases has already been implemented, is not only cost–effective but can provide instant alerts and quick and effective response time.

● Meeting Flare Emissions Regulations with BTU Measurement - Tom Watson - AMETEK Process Instruments
○ 11:00 AM – Room 412 – Room 417B – Emerging Technology
○ Learn how mass spectrometer technology can be used to meet emissions requirements by measuring BTU in the flare gas. This session will cover the methods of BTU determination and will outline the advantages of a mass spectrometer analyzer - speed, accuracy, range, etc. - while discussing application specifics, and total cost of ownership and maintenance needs. There will also be a review of mass spectrometry technology, components, and functions.

● How Digital Transformation Can Impact Compliance for Environmental and Safety Regulation - Marcio Donnangelo - Emerson Automation Solutions
○ 11:30 AM – Room 412 – Room 417B – Emerging Technology
○ This presentation will give you an overview of how Digital Transformation is eliminating layers of complexity to bring pre–interpreted field data directly to those who need to make decisions and take action. Two examples will be highlighted: • Environmental reporting involves flow measurements which must be verified to be accurate. Discovery of an inaccurate measurement can be costly for operators as they may pay fines from the last date they can prove accurate measurement. Meter verification tools make it simple and convenient to prove accuracy over time. Operators will be notified of problems immediately to avoid misreporting and allowing for immediate corrective action. • PRVs are no longer isolated mechanical devices that rely on manual rounds as part of a preventive maintenance program. Release and leakage alerts can be wirelessly monitored, and then integrated into reporting and analytical systems. Powerful tools are now available to interpret these patterns and predict future releases before they occur.

● Advanced Data Collection Technologies for Rugged Field Work - TBD - Juniper Systems
○ 1:00 PM – Room 417B – Emerging Technology
○ Abstract Coming Soon.

○ 1:30 PM – Room 417B – Emerging Technology
○ ASTM D7520-16 and US EPA Alternative Method 082, have revolutionized Visible Emission Management practices over the last 7 years. Community Air Quality Awareness has become a litigation boiling pot, as smart phones, and low cost Particulate and Ozone monitors, have flooded the monitoring markets, making monitoring readily available to everybody everywhere. The exponential growth of the community monitoring market over the last two years will be reviewed and strategies to embrace community monitoring as a means of compliance assurance will be discussed in this presentation.
4C HSE Conference Agenda for Chemical Plants

● Wireless H2S Monitoring - Marcio Donnangelo - Emerson Automation Solutions
  ○ 2:00 PM – Room 417B – Emerging Technology
  ○ The toxicity of H2S gas is extremely high. Its flammable level is actually much lower than its toxic level for humans. Fortunately, having the distinct odor of rotten eggs allows plant workers to detect H2S gas in the relatively safe range of parts per billion. This is well below the danger level, however exposure to very low concentrations (30 parts per million or greater) can actually paralyze a workers ability to smell H2S. Training for rig and plant personnel includes extensive coverage of H2S gas dangers and what to do if detected but in some cases all the training in the world cannot help with a sudden high level exposure.

● How IoT and Blockchain Technology Can Transform Environmental Monitoring - Philip Black - Wood Group
  ○ 2:30 PM – Room 417B – Emerging Technology
  ○ This presentation will give you an overview of how Digital Transformation is eliminating layers of complexity to bring pre-interpreted field data directly to those who need to make decisions and take action. Two examples will be highlighted:● Environmental reporting involves flow measurements which must be verified to be accurate. Discovery of an inaccurate measurement can be costly for operators as they may pay fines from the last date they can prove accurate measurement. Meter verification tools make it simple and convenient to prove accuracy over time. Operators will be notified of problems immediately to avoid misreporting and allowing for immediate corrective action. • PRVs are no longer isolated mechanical devices that rely on manual rounds as part of a preventive maintenance program. Release and leakage alerts can be wirelessly monitored, and then integrated into reporting and analytical systems. Powerful tools are now available to interpret these patterns and predict future releases before they occur.

● Improving Safety with Wireless Safety Shower Monitoring - Marcio Donnangelo - Emerson Automation Solutions
  ○ 3:30 PM – Room 417B – Emerging Technology
  ○ Think you’re covered? Radios aren’t always enough. Find out how to improve safety by monitoring safety shower and eye–wash stations, as well as comply with OSHA without incurring complex installation and deployment costs. A safety shower system integration using wireless technology is not only cost–effective but can provide instant alerts and quick and effective response time.

Fenceline Monitoring – Thursday February 20, 2020

● Fenceline Monitoring with OP–FTIR - Troy Boley - Spectrum Environmental Services
  ○ 10:30 AM – Room 417B – Fenceline Monitoring
  ○ Spectrum's WaveRunIR–OP transmits a safe infrared beam through the air along a clear path. Gas–phase compounds are detected as they drift across the path Systematic data validation, periodic onsite instrument challenges, and quality assurance audits ensure optimum performance and data quality. WaveRunIR–OP is a versatile and highly efficient means of air monitoring.
4C HSE Conference Agenda for Chemical Plants

- **New Applications in Fenceline Monitoring** - Jesse Miller - CAMSCO  
  ○ 11:00 AM – Room 412 – Room 417B – Fenceline Monitoring  
  ○ Fenceline Monitoring via passive samplers is a robust, highly sensitive and accurate monitoring technique. While Fenceline Monitoring is best known for Method 325 (Refinery Fenceline Monitoring), this technology is now used in a wide variety of new monitoring applications. We will discuss the history, equipment used (Thermal Desorption, Sampling or Sorbent Tubes) as well as current real-world scenarios, other than refineries, utilizing Fenceline Monitoring.

- **Avoiding Under-Reporting and Over-Reporting of Fenceline Plant Emissions** - James Shinkle - Optical Scientific  
  ○ 11:30 AM – Room 412 – Room 417B – Fenceline Monitoring  
  ○ Using a point measurement wind sensor for fenceline applications will result in under or over-estimating large body wind movement from your plant. OSI’s Long-baseline Optical Anemometer provides path-averaged wind data to give you an honest and accurate picture of plant emissions and can be a valuable tool in the case of an accidental release.

- **TCEQ Fenceline Monitoring: Past, Present, & Future.** - Sabine Lange - TCEQ  
  ○ 1:00 PM – Room 417B – Fenceline Monitoring  
  ○ On December 1, 2015 the EPA finalized the Risk and Technology Review for petroleum refineries. Among other things, the finalized rule requires petroleum refineries to conduct fenceline monitoring on a continuous basis. Benzene is the target compound, and an annual average, action level of 9 µg/m³ is established, triggering a refinery lead root cause analysis and corrective action. The fence-line monitoring provisions found in 40 CFR 63.658 describe the use of a network of passive diffusive tube samplers placed along the refinery’s boundary as the primary method for detecting fugitive emissions of benzene. The fence-line monitoring provisions allow a refinery owner or operator to submit a request for an alternative test method, such as open-path instrumentation. The use of this type of technology presents the opportunity to meet the requirements of the rule in a way that is more simplified and cost effective, while offering advantages in terms of potentially identifying and eliminating data points corresponding to outside emission sources. A field validation study has been conducted using latest generation, open-path UV-DOAS technology manufactured by Argos Scientific Inc., to detect benzene at a refinery fence-line on a continuous basis. The study includes a case study on the lessons learned in developing this program.

- **New and Emerging Fenceline Monitoring Technologies** - Peter Zemek - Montrose  
  ○ 1:30 PM – Room 417B – Fenceline Monitoring  
  ○ Abstract Coming Soon.

- **SPOD: Continuous VOC Monitoring for Targeted Grab Sample Acquisition** - Jacob Melby - SENSIT Technologies  
  ○ 2:00 PM – Room 417B – Fenceline Monitoring  
  ○ The SENSIT® SPOD is solar–powered fenceline monitoring system for VOCs. This low–powered, easily deployable system combines wind and VOC measurements to identify and locate emission sources in real–time. When combined with the highly configurable sample
4C HSE Conference Agenda for Chemical Plants

- Portable GC for Fenceline Monitoring - Chris Chopkoff - SGS
  - 2:30 PM – Room 417B – Fenceline Monitoring
  - Abstract Coming Soon.

- Calibration Gas for Fenceline Monitoring - Phil Midgett - Airgas
  - 3:30 PM – Room 417B – Fenceline Monitoring
  - The presentation will review the latest updates to the benzene fenceline monitoring refinery sector rule, as stated in the Approved Test Method (ATM–122), as well as practical lessons learned for refineries and consultants engaged in compliance.

LDAR – Thursday February 20, 2020

- Understanding Cooled vs Uncooled Optical Gas Imaging - Craig O’Neill - FLIR
  - 10:30 AM – Room 400 – LDAR
  - For over a decade, FLIR Systems has manufactured infrared cameras to visualize gas leaks of various kinds. These optical gas imaging (OGI) cameras are developed to “see” a variety of gases including hydrocarbons, carbon dioxide, sulfur hexafluoride, refrigerants, carbon monoxide, ammonia and more. These imagers are used to mitigate emissions, increase production efficiency, ensure safe work environments and more by a variety of industries. One great advantage of OGI cameras compared to other inspection technologies is the speed in which the technology can locate leaking components while not interrupting the industrial process. Historically OGI cameras have been designed with cooled infrared detectors that offer several advantages over uncooled thermal detectors but often come with a higher cost. Advancements in the technology of uncooled detectors have allowed the OGI camera manufacturers like FLIR to design and develop lower cost OGI solutions for these industries. While these are often lower in cost, there are some limitations versus imagers with cooled detectors. This paper will explain the differences in the two detector technologies and compare advantages/disadvantages of both.

- Turnaround LDAR Best Management Practices - Jeff Diehl - Think Environmental
  - 11:00 AM – Room 400 – LDAR
  - Abstract Coming Soon.

- Advantages of Hot-Filter Cooled OGI technology for Leak Detection and Quantification - Ram Hashmonay - Opgal
  - 11:30 AM – Room 400 – LDAR
  - The ability to manually replace or automatically swap filters in an OGI camera provide many advantages for various OGI applications. This presentation reviews several OGI applications, where swapping the filter provides better detection sensitivity, longer range, compounds’ classification, and more accurate quantification.

- EPA AWP Update - Karen Marsh - EPA
4C HSE Conference Agenda for Chemical Plants

- 1:00 PM – Room 400 – LDAR
  - Abstract Coming Soon.
- Cloud Based LDAR Solutions for Fugitive Emissions Compliance - Christopher Tucker - InspectionLogic
  - 1:30 PM – Room 400 – LDAR
    - Abstract Coming Soon.
- The Transformation of LDAR: Predictive Leak Management Software - Brian Whitley - Emission Monitoring Service, Inc. (EMSI)
  - 2:00 PM – Room 400 – LDAR
    - Abstract Coming Soon.
- Enhanced LDAR Training; An Unconventional Approach to Training LDAR Technicians - Todd Morrison - Insight Environmental
  - 2:30 PM – Room 400 – LDAR
    - Is your LDAR training up to date with modern technology? This presentation will detail the process of incorporating technology such as 3D modeling and virtual and augmented reality into your LDAR training.
- Opening up the opportunities for performance verification and reliability enhancement of valves. - Dave Anderson - Score Valve
  - 3:30 PM – Room 400 – LDAR
    - Most fugitive emission reduction / elimination efforts in the industrial community, especially at chemical and refining facilities have been focused on component monitoring with the implementation of LDAR (Leak Detection and Repair) programs. USEPA studies have shown that the vast majority (between 80 and 90%) of fugitive emissions are associated with valve and connector leaks. While necessary, LDAR programs are, by definition, concerned with fixing leaks when they are encountered, not preventing them. Further, it could be argued that the greatest contribution to lowering fugitive emission rates from connectors and valves is through the use of consistent time-tested assembly and maintenance procedures, and the selection of the best available technology in terms of lowest emission valve packings, gaskets, torquing equipment, and other equipment. An overview of best practices for achieving lowest fugitive emission rates for bolted flange connectors and valves including a fugitive emissions model for gasketed connectors will be presented.

Flare Instrumentation & Analyzers – Thursday February 20, 2020

- Flare Guardian Project - Clayton Francis - Zeeco
  - 10:30 AM – Room 408 – Flare Instrumentation & Analyzers
    - Eliminate the inaccuracies and delayed results inherent to indirect flare monitoring. Directly monitors flare performance in real-time rather than determining compliance and combustion
efficiency through a time-consuming, repetitive process of measuring inputs, assuming reactions and velocities, and arriving at an assumed operating status.

- **Meeting Flare Emissions Regulations with BTU Measurement - Tom Watson - AMETEK Process Instruments**
  - 11:00 AM – Room 408 – Flare Instrumentation & Analyzers
  - Learn how mass spectrometer technology can be used to meet emissions requirements by measuring BTU in the flare gas. This session will cover the methods of BTU determination, and will outline the advantages of a mass spectrometer analyzer - speed, accuracy, range, etc. - while discussing application specifics, and total cost of ownership and maintenance needs. There will also be a review of mass spectrometry technology, components, and functions.

- **Optical Flow Sensors for Environmental Compliance and Process Control - Donn Williams - Optical Scientific**
  - 11:30 AM – Room 408 – Flare Instrumentation & Analyzers
  - OSI's Optical Flow Sensor (OFS) can help you comply with EPA’s Organic Liquids Distribution MACT, RSR and Ja regulations. Unaffected by temperature, pressure, density or gas concentration, OFS makes drift-free flow measurements on flare stacks, thermal oxidizers and a host of similar routine and extreme processes alike with no shutdown needed to install.

- **Flare System Control and Optimization at Refineries and Chemical Plants - Dan Johnson - Baker Hughes**
  - 1:00 PM – Room 408 – Flare Instrumentation & Analyzers
  - The new Refinery Sector Rule (RSR), passed by the EPA in December 2015, extends and strengthens the regulations governing stationary emission sources, specifically flares in refineries. It calls for the control and monitoring of flare systems, including, for example, meeting the specific requirements of Net Heating Value in combustion zone gas (NHVcz), smokeless combustion and actual flare tip velocity (Vtip) for steam assist flare systems and additional Net Heating Value dilution parameter (NHVdil) for air assist flare systems. A flare control design, which takes live input of speed of sound from flare meters, was implemented to achieve real-time control using measurement of average molecular weight of an unknown hydrocarbon mixture from the sound of speed. This information can be used by the control system to determine the net heating value of vent gas as well as provide a dynamic ratio control for steam, this provides for a more efficient and responsive control scheme. Combined with the requirement of vent gas NHV imposed by Vtip, a continuous, efficient flare operation of supplemental gas will be demonstrated. By utilizing real time control via the speed of sound measurement provided by the flare meter, the risk of having a block of non-compliance is mitigated. Flare control systems using other schemes, such as controls based on feedbacks from Gas Chromatograph (GC) or calorimeters, were discussed in the paper. Practical implementation of this methodology and data are also discussed in this paper.

- **Measurement & Speciation Using Mass Spectroscopy Flare Gas Composition - Chuck de Carlo - Extrel**
  - 1:30 PM – Room 408 – Flare Instrumentation & Analyzers
4C HSE Conference Agenda for Chemical Plants

- As refineries continue to optimize their approach RSR 63.670 compliance, new regulations for flare emissions are set to hit a broad range of industries over the next five years. The goal is to ensure the destruction of Hazardous Air Pollutants (HAPs) prior to release into the atmosphere, but drastic changes in vent gas composition make controlling that efficiency difficult. Getting the full composition of the vent gas quickly allows operations to apply corrections as soon as possible. Flare gas mass spectrometers measure hydrocarbons, carbon oxides, hydrogen, sulfurs, moisture and various volatile organics, and report concentrations and Net Heating Value (NHV) to the control system in seconds. Examples from recent ethylene flare gas regulations and MON sites will be covered in the discussion, along with data from oil refinery flare events.

- **Flare Gas Measurement Lessons Learned from Refineries & Future of Chemical Plants - Arnold Griswald - Fluenta Inc**
  - 2:00 PM – Room 408 – Flare Instrumentation & Analyzers
  - EPA’s Refinery Sector Rule is about to come online. The new rule will cover all aspects of combustion efficiency to ensure the flare operation is done in a manner that is safe for the environment and safe for the operation of the facility. Refineries will undoubtedly need to take some actions irrespective of whether they use steam or air assisted flares in order to ensure heating values of at least 300 BTU/scf of gas at the flare. This can be done by monitoring gas composition, steam/air flow and flare gas flow rate. As flow rate is part of the calculation supplied to meet the requirements put forward by the EPA, a gas flow meter will need to be used to provide that piece of the puzzle. This presentation will discuss how ultrasonic flow meters have been used to determine the flow rates in refineries and other facilities. A discussion will follow focused on how this technology helps the facility operator comply with the existing and new EPA regulations, and on how much more can be done from the metering perspective to help the implementation of the new EPA rule.

- **Does CZNHV Track Flare Performance? - Yousheng Zeng - Providence Photonics**
  - 2:30 PM – Room 408 – Flare Instrumentation & Analyzers
  - The new Refinery Sector Rule (RSR) promulgated on December 1, 2015 requires facilities to continuously monitor Combustion Zone Net Heating Value (CZNHV) and flare tip velocity as a way to ensure high combustion efficiency (CE) and destruction efficiency (DE) of flares. The deadline for complying with these new requirements will be January 30, 2019. An experiment has been conducted on a steam assisted flare and an air assisted flare to evaluate CE under various vent gas and steam/air assist conditions with varying CZNHV and flare tip velocities. The CE was measured by both extractive sampling method and a new remote and continuous flare CE monitoring method – Video ImagingSpectro-Radiometry (VISR). The CE measured by both methods were examined along with the associated CZNHV. The results show that high flare CE can be achieved with low CZNHV, much lower than the regulatory limits established in the RSR. The effectiveness of CZNHV as a suitable surrogate parameter for flare CE is examined within the regulatory context of the RSR regulations.

- **Flare Panel Moderated by Spectrum Environmental Services**
  - 3:30 PM – Room 408 – Flare Instrumentation & Analyzers

Schedule Continued on Next Page


Hilton Downtown – Austin, TX – Thursday February 20, 2020
4C HSE Conference Agenda for Chemical Plants

○ The presentation will review the latest updates to the benzene fenceline monitoring refinery sector rule, as stated in the Approved Test Method (ATM–122), as well as practical lessons learned for refineries and consultants engaged in compliance.

Flares for Regulatory Compliance – Thursday February 20, 2020

● The Proposed Flare Requirements of Ethylene MACT – Latest Update - Troy Boley - Spectrum Environmental Solutions, LLC
  ○ 10:30 AM – Room 406 – Flares for Regulatory Compliance
  ○ Abstract Coming Soon.

● Reduce Turnaround Duration By Eliminating Flare/Flare Gas Recover Using New Scrubber Technology - Jim Woodard - Vapor Point, LLC
  ○ 11:00 AM – Room 406 – Flares for Regulatory Compliance
  ○ The refining industry is challenged with the development of alternative technologies to control hazardous and regulated emissions such as Hydrogen Sulfide and Total VOC compounds. Federal Agencies, through rule promulgation and Consent Decree, have emphasized a highlighted effort to minimize flare usage as a control device. The current rule promulgation of NSPS subpart Ja, Refinery MACT, and the Refinery Technology Rule each will provide challenges to perform de-inventory and decontamination phases of turnarounds in a timely manner. The direct impact of regulatory action is on the shoulders of those responsible for the planning, execution, and management of turnaround activities. Vapor Point will present case histories on projects at multiple refineries and multiple process units requiring various control requirements. Presentation will demonstrate very common challenges that refiners face under the new EPA regulations and solutions that have been successfully deployed in the field with the new scrubber technology package.

● Natural Draft Low-Emissions Combustors - TBD - Ashcor & Clearsign Combustion
  ○ 11:30 AM – Room 406 – Flares for Regulatory Compliance
  ○ ASHCOR’s Low Emissions Combustor, powered by ClearSign Core™ technology, achieves the industry’s lowest NOx and CO emissions while maintaining a greater than 99.99% destruction efficiency. All units are equipped with ASHCOR flame arresters and Profire burner management controls that improve site safety and add a sense of reliability to the constant risk in the oil and gas industry.

● Ultra-Low NOX Burners - Chris Ferguson - Honeywell UOP Callidus
  ○ 1:00 PM – Room 406 – Flares for Regulatory Compliance
  ○ Abstract Coming Soon.

● Eliminating H2S & SO2 Emissions at SRU, Coker and Other Sulfur Handling Units of Refineries - Sean Kirkpatrick - Vapor Point, LLC
  ○ 1:30 PM – Room 406 – Flares for Regulatory Compliance
  ○ "Vapor Point applies high efficiency liquid scrubbing systems to eliminate Hydrogen Sulfide (H2S), Sulphur Dioxide (SO2) other Sulfur Species as well as other Hazardous Air Pollutants
(HAPs) and Volatile Organic Compounds (VOCs). Specially designed temporary vessels for liquid and vapor phase product management have also been developed and are key elements in some applications. These control system concepts and resulting proven processes were developed with input from refining personnel who needed alternative technologies that would offer operational flexibility eliminating the various sulfur contaminants. The vapor phase emission control systems and specially designed process vessels have met the needs of the refining industry with numerous field implementations.

- **Ultra-Low Steam Consumption, High Capacity Smokeless Flare - Clayton Francis - Zeeco**
  - 2:00 PM – Room 406 – Flares for Regulatory Compliance
  - This paper will introduce the technology behind, test data for, and industry challenges addressed by a new Ultra-Low Steam Consumption, High Capacity Smokeless Flare design developed by Zeeco, Inc. This flare technology is designed to further improve flaring efficiency and reduce steam consumption while continuing to meet the EPA Code of Federal Regulations, Chapter 1, Subchapter C, Part 63, Subpart CC requirements. We will focus on how the design addresses known industry challenges in high capacity, low steam consumption flaring, such as needing the ability to operate at low flare gas pressure since many applications have a maximum flare gas pressure at the flare tip of 3 psig. The paper will detail how this new design can achieve as low as 0.17 lbs. steam / lbs. flare gas at 20% of maximum flow rate, with the maximum flow rate achieved at a flare gas pressure of 3 psig. The above data is based upon a 5 mph wind with less than Ringlemann 1 opacity and a flare gas that is 100% propylene. For smokeless operation with propylene, other current steam assisted flare designs require approximately 0.5 lbs. steam / lbs. flare gas and/or a much higher flare gas pressure at maximum flaring capacity. Ultra-Low Consumption Steam Assisted Flaring is very important since any reduction in the required steam flow rate saves not only money, but also reduces the emissions produced from the production of the required higher steam flows. A key feature of this technology is that the air and steam mixture leave the flare at the same elevation as the flare tip exit, meaning no pre-mixing of air into the flare stream. Other current industry designs mix the air and steam with the flare gas prior to exiting the flare tip, negatively impacting the NHVcz according to the new calculation parameters required by MACT CC. Zeeco’s design more efficiently mixes the steam and air together and then mixes the resulting stream with the flare gas, creating a final mixture with a significantly increased volume of air. When the resulting mixture interacts with the flare gas at the tip exit, the increased air volume is readily available for combustion, meaning the flare is less likely to smoke. Since the design more efficiently mixes the air and steam together, less steam is required to achieve smokeless operation. Furthermore, the inherent efficiency of the mixing delivers a design less dependent upon using flare gas pressure to achieve smokeless operation. The flare can successfully operate at lower gas pressures at maximum flow rate.

- **MSS Support Services - TBD - Gem Mobile**
  - 2:30 PM – Room 406 – Flares for Regulatory Compliance
4C HSE Conference Agenda for Chemical Plants

○ GEM has developed a wide variety of vapor control solutions to assist customers with Maintenance Startup & Shutdown (MSS) permit compliance. Our comprehensive emission management program offers multiple customized options to meet individual facility needs.

● Flare Panel Moderated by Spectrum Environmental Services
  ○ 3:30 PM – Room 406 – Flares for Regulatory Compliance
**Tanks – Training Classes**

**Friday February 21, 2020**

- **Tanks Essentials – Jim Miller – Big Spring Refinery**
  - **8:00 AM – Room 416B – 8 Hours**
  - When it comes to storage tanks, sorting through the applicable requirements and calculation options can be very confusing and we are here to help you get it right. This Tanks Essentials Workshop is ideal for anyone who has responsibility for complying with or enforcing air permits/regulations for storage tanks. We cover topics ranging from tank design and control technologies to emissions estimating to rule compliance.

- **EPCRA/TRI Training – Bob LaRosa – Aarcher Inc**
  - **1:00 PM – Room 412 – 4 Hours**
  - The course covers current EPCRA applicability and reporting requirements, including multiple chemical lists, applicability thresholds, required reporting, deadlines, available reporting tools, and mandatory documentation. Practical applications of the requirements are provided for various industry sectors and for Federal agencies. Illustrative scenarios are presented on industrial and Federal agency reporting under EPCRA Section 313 to provide a clear understanding of where to focus attention and how to apply the complex guidance of the Toxic Release Inventory (TRI) requirements to actual facility operations.

- **Upstream Oil and Gas Emission Inventory Calculations – TCEQ**
  - **8:00 AM – Room 602 – 1 Hour**
  - This Presentation will cover Upstream Oil and Gas Emissions Inventory Calculations with a Focus on Storage Tanks: Sampling, Analyzing Data, Determining & Reporting Emissions. Covers direct measurements, modeling, and TANKS calculations.

- **SPCC Training – Mark Severson – Bison Engineering**
  - **8:00 AM – Room 415 – 4 Hour**
  - Description Coming Soon.
Tanks – Breakout Presentations

Thursday February 20, 2020

- **Do you have the Right Tank? Thief Hatch?** – James Van Horne – SLR
  - Abstract Coming Soon.

- **Opening up Opportunities for Performance Verification and Reliability Enhancement of Valves** – Dave Anderson – Score Valve
  - Most fugitive emission reduction / elimination efforts in the industrial community, especially at chemical and refining facilities have been focused on component monitoring with the implementation of LDAR (Leak Detection and Repair) programs. USEPA studies have shown that the vast majority (between 80 and 90%) of fugitive emissions are associated with valve and connector leaks. While necessary, LDAR programs are, by definition, concerned with fixing leaks when they are encountered, not preventing them. Further, it could be argued that the greatest contribution to lowering fugitive emission rates from connectors and valves is through the use of consistent time-tested assembly and maintenance procedures, and the selection of the best available technology in terms of lowest emission valve packings, gaskets, torquing equipment, and other equipment. An overview of best practices for achieving lowest fugitive emission rates for bolted flange connectors and valves including a fugitive emissions model for gasketed connectors will be presented.

- **Vapor Lock Scrubber Technology Reducing Carbon Usage for BWON Compliance and Temporary Tank Storage** – Jim Woodard – Vapor Point, LLC
  - Vapor Point’s VaporLock™ control technology has been utilized within many areas of BWON operations, while also providing for the elimination of other HAPs such as Hydrogen Sulfide and Ammonia. Common applications include API Sumps and Separators, Dissolved Air/Nitrogen Floatation Systems, Tank Vent Emissions Controls, Sludge Processing Operations, Vacuum Truck and Frac Tank Controls and we have even designed equipment for the complete by-pass of existing sump systems.

- **Contractor Management** – Ric Hartung – Process Safety Solutions
  - Currently there are a large number of facilities covered by Process Safety Management (PSM) that either use a third party or manage their own contractor safety programs. Numerous compliance audits and National Emphasis Program (NEP) inspections has revealed a serious gap. While these third parties may do an adequate to good job in obtaining contractor information, evaluating statistics, and managing documentation, most fail to meet the requirement outlined in the PSM Regulation regarding contractor evaluations and verification. This gap leaves the host employer vulnerable to significant OSHA & EPA violations and fines. At issue, is the requirements outlined in several sections in the PSM regulation starting in sub-section (f)(4) stating that “the employer shall develop and implement safe work practices to provide for the control of hazards during operations such as lockout-tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees” (emphasis added). This indicates that the host employer’s
safe work practices apply to not only its own employees, but also to the contractors that perform work in the covered process. The host employer responsibilities are further outlined in subsection (h)(2)(v) such that “The employer shall periodically evaluate the performance of contract employers in fulfilling their obligations as specified in paragraph (h)(3) of this section. For the host to fulfill PSM obligations regarding contractors, it must verify that the contractor has received safe work practice training, including site-specific requirements, such as but not limited to, the potential hazards that may be present in the facility. The contractor may use their own safe work practices, but this would need to be agreed upon beforehand and the host “must” evaluate each safe work practice to ensure that they are equivalent or more stringent, than their own.

- **How Do You Feel About Storing Your Emissions Data in the Cloud? – Matt Radigan – REGS, LLC**
  - Cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. In order to implement a cloud solution, you need some basic tools to connect your data source(s) to the Internet. Connection to the cloud storage needs to be secure, reliable and accessible. Turn on any new WiFi enable device, click through some prompts and you are connected. Technology made it so easy that it doesn’t even require a conscious thought to participate. Will the same environment that drives my social life translate to my workplace and more importantly, help me successful manage my critical air emissions compliance data. Required tools, feasibility and practicality of using cloud computing for compliance applications will be covered during the presentation.

- **Integrating Speciation Data For Chemical Plants and Refineries – John Beath – John Beath Engineering**
  - A surprising number of reports rely on chemical speciation data for purchased chemicals, feedstocks, intermediate streams and products. Recent experience with an EPA NEIC inspection underscored the value in centralizing this data for consistency. Calculations related to quantities present onsite (Tier Two), release reporting and threshold determinations (EPCRA/SARA), emissions calculations (EI/TRI), TSCA Manufacturing Inventory (coming in 2020), RMP (Maximum Intended Inventory), PSM (operator process information), OSHA Hazard Communication, and permit applications could benefit from a carefully orchestrated process. Imagine if the system you develop internally could answer simple questions for emergency situations like what’s the composition of the material in that drum, or that heat exchanger; and imagine if a process was in place to keep all of the content revised as process changes occur.