



Perf Newsletter

June 2012 Issue

Included:

- Summary of Spring 2012 Meeting
- Announcement of Fall 2012 Meeting
- Announcement of September Remediation Workshop
- Updates on Projects and Proposals
- Updated Membership Lists





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PERF Background

The Petroleum Environmental Research Forum (PERF)* is a research and development joint venture, formed to provide a stimulus to and forum for the collection, exchange, and analysis of research information relating to the development of technology for health, environment & safety, waste reduction and system security in the petroleum industry. PERF is a non-profit organization of Members which are corporations engaged in the petroleum industry that recognize the importance of a clean, healthy environment and are committed to support cooperative research and development. PERF does not itself participate in research projects but provides a forum for Members to collect, exchange, and research information relating to practical and theoretical science and technology concerning the petroleum industry and a mechanism to establish joint research projects in the field.

**The name Petroleum Environmental Research Forum and its acronym PERF are registered service marks*





Highlights from the Spring 2012 85th PERF Meeting in Saudi Arabia

The 85th PERF Meeting was hosted by Saudi Aramco at their corporate headquarters in Dhahran, Saudi Arabia on March 10 and 11, 2012. This was the first PERF meeting held outside of North America and Europe and also one of the best attended. More than 150 attendees heard 29 presentations related to the two themes of “Water Conservation: Preserve, Reduce, Recycle & Reuse” and “Waste Minimization and Management from Upstream and Downstream- Challenges and Opportunities”.

The following project proposals were generated in the meeting. Champions were selected for each proposal idea to follow-up and arrange a conference call with interested PERF members.

- 2012-01: Offshore sheen versus natural seepage: baseline data plan
- 2012-02: Standard wastes and recyclables in developing countries
- 2012-03: Guidance document for environmental strategy in refinery waste management
- 2012-04: Optical sensors for monitoring waste water
- 2012-05: Minimization and optimization of flaring associated with upstream operations
- 2012-06: Assess technologies to eliminate product tank drainage

The meeting attendees also enjoyed a Middle Eastern feast with traditional music and dancing at a local restaurant. Following the meeting, the PERF board of directors visited King Abdullah University of Science and Technology north of Jeddah on the Red Sea. King Abdullah University of Science and Technology is an international, graduate-level research university established in 2009.

Upcoming Events

Fall 2012 PERF Meeting: Air Emissions Estimating, Modeling, and Monitoring Strategies

The 86th PERF meeting is scheduled for November 7 and 8, 2012, and will be hosted by ExxonMobil Research and Engineering Company at The Mason Inn on the George Mason University campus in Fairfax, VA. The theme is “Air Emissions Estimating, Modeling, and Monitoring Strategies” and the agenda will be posted on the website when complete. For each focus area (Estimating, Modeling, Monitoring), experts will present an overview of the practices, challenges, objectives, weaknesses, threats, and improvement efforts from both a technical and regulatory perspective. In each area, several case studies will be presented by practitioners, which include PERF members, industry groups, universities, and third party subject matter experts. A reception is planned for the evening of November 7th. Registration for the meeting is required by October 6, 2012, and can be completed via the link which will be posted on the PERF website in June. Additional logistical details will also be posted on the PERF website as the event approaches. For more information, contact Meredith Gustafsson (meredith.b.gustafsson@exxonmobil.com).

Fall 2012 Remediation Workshop: Remediation of Refinery Sites

Chevron is hosting the 2012 remediation workshop, September 25 and 26, 2012 on the topic of remediation of refinery sites. The meeting will be held at the Former Texaco Refinery Site, Lawrenceville, Illinois. Topics include free product recovery, vapor intrusion, brownfield redevelopment, safety, NRD negotiations and settlements, pond closures, community relationship, constructed wetlands and phytoremediation. The workshop aims to foster a network among oil companies regarding approaches and technologies for remediation of refinery sites. The format of the workshop will be two days of presentations in the mornings, followed by site tours in the afternoons, with an evening reception on Tuesday. For more information contact Veronica Blackwell (Vblackwell@chevron.com).



Active Project Proposals

The following section describes project proposals being championed by PERF members. To join a project, contact the proposal contact.

PERF 2011-02

Online Monitoring in Effluent Treatment Plans

The objective of this PERF project is to increase refining wastewater treatment plant reliability and compliance assurance by sharing company experience on various on-line monitoring approaches, engaging vendors to understand the current state-of-the-art on-line monitoring equipment, and possibly testing monitoring systems at refineries. Project focus is on early warning monitoring (NH₃, TN, BOD, TOC, etc.) on the front end of an effluent treatment plant to increase operation reliability; and on the back end, process monitoring (DO, ORP, N/C ratio, etc.) to increase compliance assurance. The scope will be limited to more developed, ready-to-deploy on-line monitoring technologies. The project will commence shortly. To date 6 PERF members have expressed interest in joining the project. Contact Dong Li (dxli@chevron.com) for more information.

PERF 2011-04

Effluent Treatment Plant Hazardous Air Pollutants

The object of this project is to improve understanding of biodegradation rates of key hazardous air pollutants in refinery effluent treatment systems to support advocacy. This project will add value in the short term by aiding evaluation and advocacy efforts related to recent ICR and EPA draft Wastewater Uniform Standard. ICR submittals for Hazardous Air Pollutants from wastewater treatment were based on assumptions from the EPA RWET tool. We suspect real data and more accurate modeling would show much lower emissions than what the RWET tool calculated. This project will add value in the long term by enabling better understanding of degradation rates/air stripping of compounds in our effluent treatment plants which will enable more accurate modeling and performance prediction. The project frame and scope were agreed upon by interested parties and a consultant was identified to perform the studies. The contract has been circulated to companies with expectation of execution by 2Q 2012 and completion by end of 2012. For more information, please contact Jim Russell (Jim.Russell@chevron.com).

PERF 2011-05

Comparison of Dispersion Models for Offshore Exploration & Production Activities

The objective of this project is to conduct a comparison among the models currently being used by E&P companies by examining modeling results which arise from a common set of input data, applied to different models, and comparing those to the validation test studies derived from the literature. The project originated due to the complexity of numerical modeling of produced water and drilling muds and cuttings discharges, and a shared interest amongst E&P companies to better understand the results of marine dispersion models. As regulations become more stringent globally and the demand for risk management for marine discharges grows, reliable model results and an understanding of the variability in modeled results are needed.

The models to be included in this project are CORMIX, OOC, and DREAM. Produced water and drilling muds and cuttings discharges will be modeled, including six discharge scenarios for each discharge type to capture a range of discharge conditions. Modeling will be conducted by consultants. Chevron is leading the project, and the total cost for consultants will be split three ways between Chevron, TOTAL, and BP. ExxonMobil will participate by contributing in-kind assistance in the selection of validation test studies and expert input during the study. It is anticipated that the PERF contract between the four participating companies will be completed in June 2012 and the project will kick-off in June or July of 2012. For more information, contact Maggie Monahan at MaggieMonahan@chevron.com or Lily Baldwin at LilySBaldwin@chevron.com.





Active Project Proposals

PERF 2011-06

Improve Estimation Methods of Air Emission from Cool Towers

At the November PERF meeting, we will be seeking member feedback about the following proposed projects for 2013: (1) Analyze wealth of new monitoring data to (a) develop new emission factors for use outside of the US, and/or (b) develop guidance to consistently estimate speciated emissions from new monitoring data for TRI reporting and other purposes (within US and internationally), and (2) Perform comparative tests with the Modified El Paso Method (MEPM) and the water sampling methods to determine which type of sampling is most representative, especially for heavier components.

Cooling tower emissions research is being driven by regulations. The Heat Exchanger (Cooling Tower) MACT was finalized in October 2009 and refineries must be in compliance by October 2012. As part of this ruling refineries will be using the MEPM air stripping apparatus and reporting a lot of new VOC data. The MACT could be replaced by the Cooling Tower Uniform Standard that EPA has drafted. The Uniform Standard includes water sampling methods (SW 846 Methods 8260 and 8270) in addition to the MEPM.

For more information contact Beverly Coleman (BevColeman@chevron.com) or Dave Fashimpaur (dave.fashimpaur@bp.com).

PERF 2011-07

Best Flaring Practices

Driven by locally stringent regulatory conditions, US petrochemical plants are under tight scrutiny and pressure to control and reduce VOCs emission at the flare. As there is room for interpretation of the impact of the emitted substances on environment and specifically on air quality, it is consequently possible that there is also some room for interpretation of the threshold values which could be considered as protective for the environment. There is a significant risk that this would trigger excessively rigorous requests from the administration, and incur excessive cost with no benefit for the environment.

This project aims to aid compliance with current and future regulations by management of flaring operating practices in order to best adapt these practices to local conditions and take into account the objectives of flaring under those conditions, i.e highest rate of combustion, duration of flaring, use of gas, flare instrumentation vs global evaluation. The reference document will present proper flaring management practices and recommendations for selected objectives corresponding to locally defined conditions to come up with proactively defined emission threshold values, based on current knowledge of flaring techniques and operations for flaring VOCs and HR VOCs.

For more information regarding this project contact Frederic Perie (Frederic.Perie@total.com).

PERF 2012-01

Baseline Environmental Surveillance Plan of Offshore Sheens

With more and more deep water drilling activities, how to distinguish the natural seeps from spilled oil will play an important role in future offshore exploration. This project will try to capture baseline chemical composition data of natural seeps together with sheening samples from various locations to test whether commercial standard or advanced methods could serve the goal. This pre-proposal is seeking potentially interested industrial and academic parties. To join the discussion, please contact Chevron's project coordinator, Deyuan (Kitty) Kong (deyk@chevron.com).





Active Project Proposals

PERF 2012-02

Stranded Wastes and Recyclables in Developing Countries

The opportunity is to share and develop ideas and methods for waste minimization, treatment, reuse, and recycling in developing countries where there are several barriers to traditional methods. Challenges in these areas include remote location, scarce availability of infrastructure, lack of quality third-party waste management and recycling facilities, poor economy of scale, lower capacity limits for small on-site facilities, and lack of advanced technical and operations skills.

This project could include a variety of approaches such as: a) a meeting or workshop at which companies can share experiences, identify and discuss common issues, and share success stories and alternatives evaluated or tried; b) sharing of related documents such as white paper studies and project implementation information; c) joint funding for a consultant or research organization to find, develop, and/or research new methods of dealing with wastes and recyclables in developing countries.

For more information regarding this project please contact Evan Sedlock (EvanSedlock@chevron.com)

PERF 2012-03

Guidance for environmental strategies in refinery waste and wastewater management

The aim of this project is to provide advice, document best practices, and describe innovative strategies for the management of waste and wastewater from refining operations. Many guidance documents are procedural in nature and some simply state standard technologies and practices that have been in use over more than a couple of decades. Emerging operational issues with the processing of heavier crude slates; further restrictions on contaminants such as dissolved solids, selenium, mercury, and nutrients; concerns about VOC emissions; scarcity of water supplies; and, limitations on waste and wastewater disposal options, present new challenges to refiners worldwide.

The deliverable will attempt to describe a higher level of thinking and strategic approaches to minimizing environmental liability and managing waste and wastewater in an integrated manner to accomplish cost effective and environmentally friendly mitigation measures. The document will include the following: a) current practices and lessons learned; b) merging challenges; c) gaps and needs; d) integrated management strategies for the future.

Contact Jamal Shamas (Jamal.Shamas@CH2M.com) for more information.





Active Projects

PERF 2011-01

Ultra Low Nutrient Control in Wastewater Effluents

This program is exploring technical options to achieve ultra-low nutrient discharge by both sharing existing methodologies for control / removal of nutrients from wastewater as well as summarizing the current state of the technologies and their feasibility specifically related to the petroleum industry. The goal is to identify cost-effective methodologies or end-of-pipe technologies to achieve low nutrient discharges. A third party contractor has been identified to assist with the technology study, the participation agreement has been executed and the work has begun. For more information contact Meredith Gustafsson, meredith.b.gustafsson@exxonmobil.com.



ARAMCO Office Building, Saudi Arabia

PERF 2010-07

Understanding Biodiesel in Total Petroleum Hydrocarbons (TPH)

This PERF project will be the first approach to understanding the impact of biodiesel to EPA analytical methods for TPH-D measurement. This project will evaluate different extraction and chromatographic techniques to determine suitable modification on method 8015B. The project will work closely with commercial lab, TestAmerica USA, for the method development as well as all interested petroleum industrial parties. The project team is composed of Shell, TestAmerica(USA), Petrobras and Chevron. The project proposes to submit a modified analytical method (8015d) to EPA under 40CFR136.4 and 40CFR210.21 to share findings with Federal Agency. The team has finished the legal contract and detailed experiment design. Phase I-baseline experiments have initiated and finished in 2Q of 2012 at TestAmerica USA-Pensacola Lab. The project team is proposing to meet at the 2012 Fall PERF meeting. For more information, please contact Chevron's project coordinator, Deyuan (Kitty) Kong (deyk@chevron.com).

Recently Completed Project

PROJECT 2010-06: Air Emissions Cooperative

The objective of this project was to improve emission factors (EF) and emissions inventory data by initiating a gap analysis for petroleum refinery VOC and air toxics estimation procedures. The project was completed in October 2010. The project reviewed current EF procedures to identify inconsistencies, areas for improvement, existence of emission factor data, quality of emission factor data, and coordination with ongoing API and CONCAWE workgroups on emission factors. The gap analysis identified a dozen high priority source areas and additional issues within these source areas for future follow-up work by API, CONCAWE, and/or EPA.

Project members: API, BP, ExxonMobil, Suncor Energy, Total. For more information contact Dave Fashimpaur (dave.fashimpaur@bp.com)





Contact PERF

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