

Petroleum Environmental Research Forum Overview



- To provide a stimulus for cooperative research and development of technology for the petroleum industry in the areas of:
 - Environment
 - Health
 - Safety
 - waste reduction
 - system integrity
- To provide a forum to discuss and develop proposals for cooperatively funded projects relating to these areas.



PERF

Established in 1986 to Stimulate
Cooperative Research &
Development of Technology for
Environmental Pollution
Control & Waste Treatment for
the Petroleum Industry



- Differentiated from other joint-industry efforts by focusing on O&G industry-specific technical R&D (not advocacy, guidance, etc.)
- Ability to respond quickly to initiate R&D to meet specific needs of member companies (not all companies need to join projects so consensus is not needed)
- Leveraged funding so can conduct projects of broader scope and technical expertise than achievable by individual companies
- Technical knowledge sharing among diverse, international companies



- PERF membership covers:
 - Participation in discussion groups and meeting theme and agenda generation
 - Access to all current and prior meeting materials: www.PERF.org
 - Note that participation in meetings and workshops is open to non-members
- Different Levels of Membership:
 - Members: O&G companies that are voting members of PERF, can serve on Board
 - Associate: For-profit companies that vote on all matters coming before the general membership but do not serve as officers or directors
 - Liaison: Non-profits, non-voting status, e.g. National Labs
- Membership fees (for members and associate members):
 - Annual membership fee is \$5,000
 - One-time initiation fee of \$2,000
- Contact PERF Chairman:
 - Todd Ririe: todd.ririe@bp.com for information



Member Companies:

- Amerada Hess
- Saudi Aramco
- BP
- Chevron
- ConocoPhillips
- ExxonMobil
- Petrobras
- RepsolYPF
- Shell
- Statoil
- Suncor
- Total
- Syncrude Canada

Associate Members:

- Champion Technologies, Inc.
- Canadian Petroleum Products Institute
- The QUESTOR Centre
- Veolia Water North America Operating Services Inc.

Liaison Members:

- American Petroleum Institute
- Argonne National Laboratory
- US Department of Energy
- Electric Power Research Institute
- Energy & Environmental Research Center
- Gas Technology Institute
- Lawrence Berkeley National Laboratory
- International Association of Oil & Gas Producers
- Oak Ridge National Laboratory
- University of Manchester Institute of Science and Technology
- Water Environmental Research Foundation
- World Ocean Council
- VITO - Flemish institute for technological research
- CEDRE
- RTI International



- Project Types:
 - Sharing of information and/or
 - Funded by company contributions
- Who Can Participate:
 - Anyone who can meet the requirements of the participation agreement established for that project.
- Generation:
 - Scope out a rough idea with objective, project type, potential deliverables
 - Circulate amongst member companies to gauge interest
 - Host a teleconference to further scope out and decide whether to proceed
 - Develop “Exhibit Bs” – deliverables from each company
 - Execute contract and begin work



83 PERF projects with a value of > \$68 million have been completed

Examples of recently completed PERF projects:

- 07-05 Membrane Bioreactor Demonstration
- 06-07 Arsenic Cooperative
- 04-06 Reducing Desalter Environmental Impacts
- 03-03 Managing Waste in Countries with Little Infrastructure
- 03-01 Mercury Cooperative
- 02-02 Bioremediation Sharing Project
- 01-08 Downstream Waste Management
- 00-03 Next Generation Lo-NOx Burner Performance Testing

Note that project materials are not posted to the PERF website.

Project participants must be contacted for information.

PERF Projects: Active



Project Name	Brief Description	Type of Project (funded, sharing)	Cost
In-Situ Chemical Oxidation	Use of Chemical Oxidation (ChemOx) at the Interface Between Permeability Contrasts in Aquifers to Reduce Contaminant Emissions to Groundwater from Hydrocarbon Residuals in Lower-Permeability Zones	Sharing & Funded	Each of 5 oil companies paying \$10,000
Understanding Biodiesel in Total Petroleum Hydrocarbons (TPH)	The project proposal is to submit a modified TPH analytical method to EPA for Biodiesel.	Funded	\$15,000 per company

PERF Projects: Current Active Proposals



Project Name	Brief Description	Type	Contact
Drilling waste best practice/ guidance	Develop comprehensive guidelines, applicable to all international drilling operators, for the management of Drilling and Workover wastes. These guidelines should build upon existing guidance documents from API, UNEP, etc	TBD	SaudiAramco, Ramzi Hejazi
Air Emissions Cooperative	Emissions inventory, gap analysis, data sharing, wastewater, treatment emissions (API), PM 2.5, method development	Funded	BP, Dave Fashimpaur
Refinery Wastewater Online Monitoring	To increase effluent treatment plant reliability and operability by understanding the state-of-the art of online monitoring of refinery wastewater by: <ol style="list-style-type: none"> 1. Sharing company experience on various monitoring systems; 2. Engaging vendors to understand state-of-the-art; 3. Possibly testing some monitoring systems at refineries (Phase 2) 	Sharing	Chevron, Dong Li
Development of an Industry Consortium to Study PAH Bioavailability to Humans	<ol style="list-style-type: none"> 1. develop a better understanding of the factors influencing the bioavailability of polycyclic aromatic hydrocarbons (PAHs) in soils; 2. develop a simple, reproducible in vitro extraction method that correlates with relative bioavailability as measured in vivo, and 3. develop dermal absorption estimates for PAHs in soil that reflect known interactions between PAHs and site soils. 	Funded	Chevron, Eric Stine
Ultra Low Nutrient Control in Wastewater Effluents	Explore technical options to achieve ultra-low nutrient discharge requirements that are developing in some areas by <ol style="list-style-type: none"> 1. Sharing company experience on existing methodologies for controlling / removing nutrients from wastewater; 2. Engaging a consultant to summarize current state of the technologies and understand their capabilities and feasibility to achieve; 3. Possibly doing some testing of technologies and/or completing bench testing to better understand challenges 	Funded	ExxonMobil, Meredith Gustaffson



NEXT MEETING: Emerging Environmental Challenges & Risks
November 9-10, 2011 at ConocoPhillips Technical Center, Bartlesville, OK

Date	Host	Location	Theme
February 2007	Champion Technologies	Houston	Chemical Treatment of Water
June 2007	QUESTOR	Belfast	Advanced Biotechnology
November 2007	ConocoPhillips	Bartlesville	Environmental Challenges of Heavy Crude Oil
February 2008	Flemish Water Institute (VITO)	Antwerp	Water Management & Re-Use
November 2008	ExxonMobil	Philadelphia	Biofuels
April 2009	Shell	Amsterdam	Innovative Approaches to Managing Water Resources
November-09	Saudi Aramco	Houston	Industry-University Collaboration
April 2010	BP	London	Drilling Waste Management
November 2010	Chevron	Houston	Marine Oil Spill Research
April 2011	Total	Paris	Managing Environmental Risks



Position	Name
Chair	Todd Ririe, BP
Vice Chair	Meredith Gustaffson, ExxonMobil
Secretary/Webmaster	Aurelie Michel, Total
Former Chair	Dave Fashimpaur, BP
At-Large Members	Veronica Blackwell, Chevron Bruce Randolph, ConocoPhillips Jill Kerr, ExxonMobil Paulo Negrais, Petrobras Ramzi Hejazi, Saudi Aramco
Legal Counsel	Joe Gormley, Baldwin, Kagan & Gormley LLC

Note that PERF is a volunteer organization with no staff other than legal support