The 62nd PERF meeting will be hosted by TOTALFINAEElf in Paris, FRANCE on June 3-4, 2003. The Board of Directors plans to meet on Monday, June 2nd. The general meeting will focus on air quality issues and challenges, both in the upstream and downstream segments of our industry. For more details on the agenda, please consult our website www.perf.org where a draft agenda will be posted shortly.

This a great opportunity to meet with our colleagues in Europe to compare approaches, regulations, and research needs.

Hold the Dates for Our Annual European PERF Meeting!

The Spring 2003 PERF meeting will be hosted by PERF in San Antonio, TX on March 13 & 14, 2003. The focus of this meeting will be on mercury issues impacting both upstream and downstream oil and gas operations. There is a full agenda, with eleven presentations on various aspects of mercury in the environment. The objectives of the PERF meeting are to summarize what we as an industry know about the problems caused by mercury in upstream and downstream operations, summarize the current R&D efforts, and to summarize the potential R&D needs of the future.

In addition, the traditional PERF Upstream and Downstream discussion groups will meet to develop future projects. The upstream discussion group will include a presentation by Terralog on slurry-fracture injection technology for waste disposal.

Spring Meeting in San Antonio
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Current PERF Research Proposals

Proposals are presented at each quarterly meeting and e-mailed to all PERF representatives. The project coordinator then generates a project contract specific to the proposal and e-mails it to all representatives who have expressed an interest in the proposal. It typically takes 6 to 12 months for contracts to be signed and the project to kick-off.

<table>
<thead>
<tr>
<th>Proposal</th>
<th>Title</th>
<th>Status</th>
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<tbody>
<tr>
<td>2002-14</td>
<td>NAF cuttings cleaning with supercritical carbon dioxide</td>
<td>ExxonMobil</td>
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<tr>
<td>2002-13</td>
<td>Water management cooperative</td>
<td>ExxonMobil</td>
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<tr>
<td>2002-12</td>
<td>Novel solidification/stabilization technology for oily wastes</td>
<td>ChevronTexaco</td>
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<td>2002-11</td>
<td>Monitoring ecological restoration at impacted sites</td>
<td>ChevronTexaco</td>
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<td>2002-10</td>
<td>Hydrocarbon detecting using remote sensing</td>
<td>ChevronTexaco</td>
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<td>2002-09</td>
<td>Crude oil filtration</td>
<td>PetroCanada</td>
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<td>2002-08</td>
<td>Water reuse - Water as resource for irrigation</td>
<td>Shell</td>
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<tr>
<td>2002-07</td>
<td>Remote Leak Detection using Alternative Technologies</td>
<td>BP / API</td>
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<tr>
<td>2002-06</td>
<td>Best practices in produced water injection systems</td>
<td>Shell</td>
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<tr>
<td>2002-05</td>
<td>Best Management for Produced Water Treatment &amp; Disposal</td>
<td>Marathon</td>
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<tr>
<td>2001-06</td>
<td>FCC O₂ Enrichment for NOₓ Reduction</td>
<td>BOC</td>
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<tr>
<td>2001-05</td>
<td>E&amp;P Discharges – sediment impacts and restoration</td>
<td>Shell</td>
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<tr>
<td>2001-02</td>
<td>Flashed Gas / VOC Emission Estimation from Produced Water</td>
<td>Shell</td>
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<tr>
<td>2001-01</td>
<td>Dimpled Tube Technology For Process Heaters</td>
<td>BP</td>
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Note that details of all of the projects performed under the PERF umbrella since our formation in 1986 are presented on our website. Also note that specific results of projects are generally not published, as these often remain proprietary to the participating companies.

Highlights of Fall Meeting in Washington, D.C.

The meeting was co-hosted by ExxonMobil and the American Petroleum Institute in Washington, DC. The purpose of this quarterly meeting was to bring together PERF member companies and API staff. Meeting participants had the opportunity to learn more about current PERF and API environmental research programs. Potential environmental research synergies between PERF and API were identified and action plans to pursue these projects crafted. The agenda for the meeting along with all the presentations are available at http://www.perf.org.
PERF Success Story

One of the benefits of PERF is the sharing of information - this is the hallmark of PERF. A direct benefit of joining PERF projects is that you can gain instant access to information, reports, and/or data that can be put to use within your company. Unocal had an immediate need for bioremediation guidelines to satisfy the Indonesian government demands for a detailed plan for continued treatment of hydrocarbon-impacted soils and sludges. Because Unocal was a member of a PERF project where bioremediation guidelines from other companies were available, we were able to utilize that information to prepare our own guidelines. This facilitated a quick response that met the Indonesian regulators expectations.

– Todd Ririe (Unocal)

Summary of PERF Project 99-01

ChevronTexaco has coordinated PERF Project 99-01 which has addressed ecological risk issues at exploration and production sites, including spatial scale impacts of spills, development of ecological significance criteria, and the potential impacts of TPH and PAHs to ecological receptors. Project participants are ExxonMobil, BP, Unocal, ChevronTexaco, the American Petroleum Institute (API), and Lawrence Livermore and Oak Ridge National Laboratories. Some of the results of this project will be published in 6 papers in a special edition of the journal Human and Ecological Risk Assessment (a publication of the Society for Environmental Toxicology and Chemistry) in 2004. API also plans to publish a primer on ecological risk assessment at E&P sites using some of the results of this project in 2003. This project has been a very successful collaboration between industry, national laboratories funded by the Department of Energy, and API.

New PERF Project 02-02 – Bioremediation Cooperative

 ExxonMobil is coordinating this new project on bioremediation. To date, ChevronTexaco and Unocal have joined this project. BP and Aramco are in the process of joining. Their contributions are diverse and explore both field implementation and identification of novel processes. For example, both ExxonMobil and ChevronTexaco are contributing their in-house manuals on how to implement bioremediation, Aramco’s planned contribution will be results from a study in the Gulf of Arabia to determine the effectiveness of bioremediation of oil spills that resulted from the Gulf war, and Unocal will contribute results of a phytoremediation study that investigated the contribution of microbes using novel molecular techniques. It’s not too late to join this great project! Please contact Jill Kerr (jill.m.kerr@exxonmobil.com) if you would like to join.
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 analyze research information relating to practical and theoretical science and technology concerning the petroleum industry, and a mechanism to establish joint research projects in that field.

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

PERF encourages external groups such as trade associations, national laboratories, and research institutes to join as Liaison members. PERF values the partnerships that we have with these external groups and they frequently join PERF projects and contribute valuable research. Liaison members appoint Representatives which have the right to attend and participate in meetings of PERF and its committees but they do not have the right to vote or to serve as an officer of PERF. Liaisons are not required to pay the fee paid by Members.

American Petroleum Institute (API)
Department of Energy (USDOE)
Gas Technology Institute (GTI)
Lawrence Berkeley National Laboratory (LBNL)
Water Environmental Research Foundation (WERF)
Argonne National Laboratory (ANL)
Electric Power Research Institute (EPRI)
International Association of Oil and Gas Producers
Oak Ridge National Laboratory (ORNL)

Member Companies & Representatives

Amerada Hess  
Gerry Bresnick
Aramco Services Co.  
Robert Finley
BP Amoco  
Edward Pinceratto
ChevronTexaco  
Davis Taggart
ConocoPhillips  
Sara McMillen
EniTechnologie  
Sung-I Johnson
ExxonMobil  
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John Wilkinson
PetroCanada  
Sergio Soares
Shell International E&P  
Bruce Kennedy
Statoil  
Zara Khatib
TotalFinaElf  
Per Gerhard Grini
Unocal  
Elisabeth Adam
Unocal  
Todd Ririe

Associate Members & Representatives

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Ram Ramachandran
Canadian Petroleum Products Institute (CPPI)  
Adolfo Silva
Petrozyme Technologies  
Bill Mullin
TNO  
Huub Rijnaarts