Overview of CONCAWE’s activities
CONCAWE’s Activities

Reproduction permitted with due acknowledgement

The Oil Companies’ European association for health, safety and environment in refining and distribution (founded in 1963)

CONservation of Clean Air and Water in Europe
CONCAWE Organisation

General Assembly
- Set overall strategy, rules, and by-laws
- Act on behalf of General Assembly to manage Association

Board of Directors
- Provide scientific and technical direction and ensure scientific integrity
- Manage and coordinate day-to-day activities

Scientific Council
- Carry out research programmes in areas of interest

Management Groups
- Propose research programmes in areas of interest

Special Task Forces and Ad Hoc Groups
CONCAWE Membership

- Open to companies owning refining capacity in the EU
- Currently 37 Members and 1 Associate Member
  - Representing 100% of European refining capacity

<table>
<thead>
<tr>
<th>CONCAWE Membership</th>
<th>Association is 100% funded by Member Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALMA</td>
<td>INA (Associate member)</td>
</tr>
<tr>
<td>API</td>
<td>INEOS</td>
</tr>
<tr>
<td>BP</td>
<td>IPLOM</td>
</tr>
<tr>
<td>CEPSA</td>
<td>Koch</td>
</tr>
<tr>
<td>Chevron</td>
<td>KPI</td>
</tr>
<tr>
<td>ConocoPhillips</td>
<td>LOTOS</td>
</tr>
<tr>
<td>DOW</td>
<td>Lukoil</td>
</tr>
<tr>
<td>ENI</td>
<td>MOL</td>
</tr>
<tr>
<td>ERG</td>
<td>Murco</td>
</tr>
<tr>
<td>ExxonMobil</td>
<td>Motor Hellas</td>
</tr>
<tr>
<td>Hansen &amp; Rosenthal</td>
<td>Neste Oil</td>
</tr>
<tr>
<td>Hellenic Petroleum</td>
<td>Nynäas</td>
</tr>
<tr>
<td>IES</td>
<td>OMV</td>
</tr>
<tr>
<td>Petrogal</td>
<td>Petroplus</td>
</tr>
<tr>
<td>Petroplus</td>
<td>PKN Orlen</td>
</tr>
<tr>
<td>Preem</td>
<td>Repsol</td>
</tr>
<tr>
<td>Rompetrol</td>
<td>Sara</td>
</tr>
<tr>
<td>SARAS</td>
<td>Shell</td>
</tr>
<tr>
<td>StatoilHydro</td>
<td>Tamoil</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
</tr>
</tbody>
</table>
CONCAWE Objectives

- Established as a non-profit, European association capable of carrying out quality research on environmental, health and safety issues related to the downstream oil industry

- Objectives (as per statutes):
  - Acquire adequate scientific, economic, technical and legal information on HSE issues
  - Improve the understanding of these issues by the industry, authorities and consumers

- Endeavour to promote the three principles of:
  - Sound science
  - Transparency
  - Cost-effectiveness

- Support EUROPIA’s advocacy activities
CONCAWE Working Principles

- Full understanding of scientific and economic factors
- Rational, logical approach to HSE issues
- Reliance on member companies’ expertise and data
- Dialogue and cooperation with scientific community and technical organisations
- Recognized technical and scientific integrity (a/o observer status within WHO, UN-ECE ...)

General Presentation of CONCAWE’s Activities
CONCAWE Funding

- The association is 100% funded by Member Companies’ contributions

- Annual average budget around 10 M€
  - Secretariat 4 M€
  - Research 3 M€
  - Risk assessments 3 M€
CONCAWE activity areas

- **Automotive Emissions and Fuels Quality**  
  Ken Rose ([ken.rose@concawe.org](mailto:ken.rose@concawe.org)) +32 2566 9169

- **Air Quality**  
  Pete Roberts ([pete.roberts@concawe.org](mailto:pete.roberts@concawe.org)) +32 2566 9171

- **Refinery Technology Support**  
  Jean-François Larivé ([jeanfrancois.larive@concawe.org](mailto:jeanfrancois.larive@concawe.org)) +32 2566 9167

- **Water/Soil Quality and Waste**  
  Klaas Den Haan ([klaas.denhaan@concawe.org](mailto:klaas.denhaan@concawe.org)) +32 2566 9183

- **Oil Pipelines**  
  Jean-François Larivé ([jeanfrancois.larive@concawe.org](mailto:jeanfrancois.larive@concawe.org)) +32 2566 9167

- **Safety**  
  Klaas Den Haan ([klaas.denhaan@concawe.org](mailto:klaas.denhaan@concawe.org)) +32 2566 9183

- **Health Science**  
  Gary Minsavage ([gary.minsavage@concawe.org](mailto:gary.minsavage@concawe.org)) +32 2566 91 63

- **Petroleum Products and Risk Assessments**  
  Bo Dmytrasz ([bo.dmytrasz@concawe.org](mailto:bo.dmytrasz@concawe.org)) +32 2566 9165

- **Implementation of REACH & GHS**  
  Alexander Merck ([alexander.merck@concawe.org](mailto:alexander.merck@concawe.org)) +32 2566 9185

info@concawe.org  
www.concawe.org
Road fuel demand steadily shifting from gasoline to diesel

Heavy duty diesel demand expected to grow while light duty peaks

Global Diesel/Gasoline Demand Ratios

- Diesel/Gasoline demand ratios are higher in Europe than in the rest of the world, projected to increase over the next decade.
Automotive Emissions and Fuels Quality
Emissions Legislation and Fuel Specifications

Ensure that fuel legislation and standards are fit for purpose and cost effective

- EU Commission legislative proposals and other initiatives
  - Vehicle emission standards, Fuels Quality Directive, Renewables Directive, Non-road fuels
- Build understanding of relationships between after-treatment technology, emissions, and fuel quality, including biofuels
- Address fuel quality issues of common interest to the industry
  - Biofuels implementation issues
- Provide technical support to CEN and CEC developments
  - CEN: European Committee for Standardisation
    - CEN TC19: Fuel Specifications
    - CEN TC383: Bioenergy Certification
  - CEC: Coordinating European Council (development of engine test methods)
Ensure future compatibility and optimisation of vehicles and fuels

- Fuels for Advanced Gasoline Combustion
  - Impact of Ethanol on Gasoline Evaporative Emissions (JEC)
  - Impact of Biofuels on Emissions & Fuel Consumption (JEC)
- Fuels for Advanced Diesel Combustion
  - LD/HD Particulate Measurement Programme (PMP)
  - Impact of Biofuels on Emissions & Fuel Consumption
  - Homogeneous Charge Compression Ignition (HCCI)
- Well-to-Wheels analysis and Biofuels Programme (JEC)
- European Technology Platforms:
  - Road Transport (ERTRAC)
  - Biofuels (BIOFRAC)

JEC = JRC-EUCAR-CONCAWE Collaboration
Air quality

- One of the oldest activities of CONCAWE
- Air quality improvement has been on the environmental, political and legislative agenda for many years
- A large suite of European and international legislation
    - 1st AQ Daughter Directive: NOx, SO\textsubscript{2}, PM\textsubscript{10}, Pb 1999/2001
    - 2nd AQDD: CO, benzene 2000
  - 3rd AQDD: Ozone target value 2002
  - Integrated Pollution Prevention and Control Directive (IPPC) 1996
    - Broad scope
  - National Emission Ceilings Directive (NECD)
    - SOx, NOx, VOC, NH\textsubscript{3} 2001
    - Ozone 2002
  - Large Combustion Plants Directive (LCPD)
    - SOx, NOx, PM 2001
  - Sulphur in Liquid Fuels 1999
  - VOC Stage I 1994
  - UN-ECE Convention on Long-Range Transboundary Air Pollution CLTRAP, signed 1979, in force 1983
  - Gothenburg protocol, 1999, not ratified yet. Now being reviewed
Other activities

- Sulphur in marine bunker fuels
  - A very hot topic handled at both EU Commission and international level (IMO)
  - Outcome can have a major impact on refining industry

- European version of UN Pollutant Release and Transfer Register (E-PRTR)
  - CONCAWE report with very complete list of emissions factors for our industry
  - Development of ‘Toolkit’ software for our Members

- Particulate matter source attribution
  - Studying chemical composition of PM
Refinery Technology Support

- Gate-keeping on refinery technology developments
- Maintenance of a sophisticated LP model of European refining
  - Up to 9 regions, each represented by an aggregate refinery
  - Capacity and supply/demand database covers EU-27 as well as neighbouring countries
  - Capability to dig deeper into a single region (up to 9 refineries)
- Studies on
  - Impact of legislative measures on EU refineries in terms of costs and CO₂ emissions
    - Sulphur-free fuels
    - PAH reduction in diesel
  - Potential implications of residual marine fuel sulphur reduction
  - Consequences of oil product demand changes on EU refineries
- Work on CO₂ European Trading Scheme (EU ETS) mostly in support of EUROPIA’s advocacy
  - CO₂ monitoring and reporting Guidelines
  - Benchmarking performance for permit allocation
  - Impact of ETS on refineries
- CCS: potential applications in refineries
EU refineries will need an estimated total investment of 13.8 G€ to reach the reference 2015 case
- This is in addition to a yearly average “stay-in-business” investment in the order of 1.5 G€ (Solomon)
- Further increase of the gasoil/gasoline ratio could double the required investment
The number of topics under WQMG has expanded considerably.

On 11 – 12 March a workshop was held in CONCAWE to discuss this:
- 30 people representing 13 Member Companies attended.

Outcomes:
- Inventory of work areas
- Development of a working structure with clear accountabilities and Mgt structure
- Clear definition of tasks and responsibilities of the MG, STF and Project Delivery Teams
- Agree work plans for 2010 – 2011
- A proposal for a new name for this Mgt Group that better reflects all the topics covered:
  - Water, Soil & Waste Issues Management Group
Legislative frameworks covered

- IPPC Directive (2008/1/EC)
- Waste Shipment Regulation ((EC) 1013/2006)
- Waste Incineration Directive (200/76/EC)
- REACH Regulation ((EC) 1907/2006)
- Environmental Impact Assessment Directive (97/11/EC)
- Natura 2000
- Soil Thematic Strategy
  - Draft Soil Framework Directive (March 2009)
- ..... And many more!!!!
A structure that might deliver

WSWIMG

STF 32
Biological effects & EQSs

STF 33
Soil & Groundwater

STF 34
Effluent mgt

STF 36
Waste mgt

STF 32?
Impact Assessment and Biodiversity

PDT-a
PDT-b
PDT-d
PDT-e
PDT-g
PDT-h
PDT-j
PDT-k
PDT-m
PDT-n
PDT-c
PDT-f
PDT-i
PDT-I
PDT-o

Internal STF organisation of the agreed work plans and projects

PDT = Project Delivery team
Oil Pipelines

- Annual survey of (on-shore) oil pipeline spills
  - the longest running CONCAWE activity (since 1971)
- 36-year overview report issued in 2007
- Pipeline operators exchange seminar every 4 years (2006-2010)
- Regular exchange of information on technical developments, incidents and near misses
- Cooperation with EU institutions and other international bodies (e.g. UN-ECE) on issues related to pipeline safety and integrity
- Development of guidelines and industry best-practice to reduce and limit the consequences of third party interference
What does “Safety” cover?

- **Product safety**
  - This is very much and regulatory and industry-wide issue rather than a company-specific issue, well suited to associative work
  - This is mostly covered by work under “Petroleum Products” (PPMG) and more particularly under REACH

- **Personal safety**
  - Each company has its own approach to management of personal safety but there are common areas e.g. common indicators such as LWI
  - CONCAWE contribute to this through collation and publication of annual accident statistics

- **Process safety**
  - Has been embedded in company practices for many years (a/o in design)
  - Has recently received much attention following a number of accidents
  - A number of calls for and initiatives to develop cross-industry indicators
SMG-meeting of 22 January

- Well attended with participants of 15 MCs (including SC-members)
- Discussion on the existence of the SMG resulted in the agreement to continue with this activity
  - SMG provides a unique forum for safety data gathering for the EU Oil refining and distribution Industry
  - Allows benchmarking internally and against other Industries
  - Provides longer term trend analysis opportunities
  - Demonstrates pro-active management of this sensitive item to third parties
- Discussions on the SMG structure and tasks have been fruitful and a working plan for the future has been agreed that should ensure better delivery
Safety statistics reporting
- Gathering of 2007 & 2008 data for reporting according to the former format
- A contractor has been identified to assist in this work that should lead to issuing the next Safety Statistics report in Q2-2009
- Alert member companies that for 2009 the safety data will be gathered early 2010 for enabling the release of the 2009 report in April-May 2010

Safety data gathering for 2010 and onwards
- Alignment with other organisations
- Selection of a consistent set of Safety Performance Indicators covering reactive and pro-active ones
  - API, CCPS or different
- A small Project team of SMG members will elaborate this item to timely inform the Membership on which indicators are to be reported for 2010 and onwards
  - Target for informing will be early Q3-2009
Major Leveraged Health Studies Underway

- **Bitumen fumes carcinogenicity assessment** - European asphalt workers
  - Previous studies indicated slight association between cancer and asphalt workers – however, confounders were an issue
  - Study led by IARC and researchers in NO, FI, F, DE, DK, NL
  - CONCAWE, Eurobitume, EAPA, NAPA, NRCA, ARMA sponsor
  - Study started in 2006; Reporting in 2009
  - Publish in peer-review literature to inform regulatory and advisory bodies
  - Basis for future IARC assessment to take place in 2009/2010 (worldwide implications for bitumen industries)

- **Benzene leukemia** – pool data from 3 existing studies of refinery and distribution workers
  - Previous studies insufficient to assess effects related to low exposures
  - Study by original study leaders (Imperial College – UK; Monash Univ. – Australia; ExxonMobil Biomed. Scien. Inc/IOL – Canada)
  - CONCAWE, API, APA, CPPI sponsor
  - Study started in 2006; Reporting in 2009
  - Publish in peer-review literature to inform regulatory and advisory bodies
  - Input for future revision of exposure limits and possible revision of unit risk estimate (linked to clean-up standards, air quality limit value)
  - Input to 4Q09 IARC re-review of benzene
REACH Support – Simplified Risk Assessment

- Risk is a function of hazard and exposure
  - Hazard relates to the potential of a material or situation to cause harm
  - If you are not exposed to a hazard, you have no risk

- Risk assessments may incorporate various types and qualities of input data, many assumptions and therefore require professional judgement
  - Toxicologists and Environmental Scientists – main role in hazard assessments
  - Occupational Hygienists/Exposure Scientists – main role in exposure assessments
  - Compilation of information needed to generate a risk assessments

- Risk assessments can inform risk management decisions
REACH Support (2008-2009): Key Activities

■ Health Hazard Assessments
  ■ Contractors (i.e., member company health professionals) submitted draft hazard assessment documents for product categories
  ■ Contractors to review and add additional studies recently received from member companies
  ■ TSG reviewing and needs to approve health hazard assessments
  ■ TSG reviewing and needs to reach consensus on classification proposals
  ■ TSG developing approach to calculate a derived no effect levels (DNELs)
  ■ TSG / Ecology developing approach to assess exposure to humans via the environment
  ■ TSG to provide health hazard data gap analysis

■ Exposure Assessments
  ■ H/STF-29 developing method for exposure assessment for classified product groups
  ■ H/STF-29 developing approach for suitable and sufficient Risk Management Measures for human health protection (workers in oil industry, customer industries, consumers)

■ Other Health-Related Activities for REACH
  ■ HMG providing guidance regarding first aid text to STF-22

■ All activities are a significant call on available company experts
HEALTH Impact of Air Quality
Objectives and Focus Areas

Main Objectives: to build partnerships with reputable and well established research institutes/programs both in and outside Europe and to seek possibilities to join projects funded through FP-7 thereby providing access to high impact research.

Focus Areas

- **Science integration & communication:**
  - improved coordination of research in this area
  - better and more frequent synthesis and interpretation of research findings, using methodologically more rigorous approaches to evaluate the weight of scientific evidence
  - the need to creatively link funding available from different sources (EU, non EU, national, institutional)
  - improve the science policy interface and perform accountability studies to track impact of policy interventions

- **New Tools & methods for risk assessment:**
  - development of toxicity screening approaches for emissions to air
  - improvements in cost-benefit analytical tools

- **Specific new studies (EU and non EU):**
  - European prospective cohort analysis, with exposure assessment on the individual level including such features as biomarkers
  - assessment of public health impacts of traffic emissions
  - refinement of particulate matter metric(s) to measure health impacts
  - elucidation of mechanisms of toxic action
Integration, Communication, & Method Development 2007-2010

- Systematic reviews of literature
- European long-term PM exposure
  - WHO Air Quality Guideline for SO2
  - Diesel exhaust
  - Air pollution and carcinogenicity
- Develop understanding of models of cardiovascular disease
- Improve source apportionment approaches
- Field test ultrafine PM personal exposure sampler
- Field study of potential biomarkers of exposure
- Pooled analysis of existing EU-supported cohort studies
- Key events and workshops
  - Biofuels screening
  - 2009 CONCAWE Workshop