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The International Association for Stability, Handling and Use of Liquid Fuels, IASH, was founded in 1986. The purposes of the Association are to promote research and experimentation on the scientific and operational factors that affect the stability and handling of liquid fuels during their manufacture, blending, transportation, storage and use; and to provide a forum for the exchange of related ideas and information. Liquid fuels include crude oil and its refined products; products derived or processed from oil shale, tar sands, coal and natural gas; and reformulated fuels such as those containing oxygenated components.

To accomplish its purposes and to promote a better understanding of the problems associated with the stability and handling of liquid fuels, IASH publishes a biannual newsletter, sponsors international conferences and publishes their proceedings. The Newsletter provides members with a medium for publishing notes on research in progress, discussing a problem that has been encountered with the stability and/or handling of a fuel, or commenting on some related technical issue of a general interest. IASH is an international, non-governmental, interdisciplinary, volunteer association. Membership is open to all individuals and organizations subscribing to its purposes.

Further information pertaining to IASH, including membership and availability of past conference proceedings, is available from the secretariat:

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A Note from the IASH Chairman

By Graham C. Hill, ECHA Microbiology Ltd.

May I start by wishing you my very best wishes for the coming year. As I write this, I come to the final day of my two year tenure as IASH Chair, which itself is the culmination of a six year commitment through previous positions of 2nd Vice Chair and then Vice Chair. Time has certainly flown by and, as I reflect on the past two years, there are certainly more things I would like to have done to further IASH's standing, notably in broadening our international appeal. But, like all the volunteers who commit their time to IASH, it is a struggle to balance our aspirations for the Association with our time commitments to our day jobs. Nevertheless, I think we can look back with some satisfaction that IASH retains a great deal of esteem within the fuels community as a first class forum for dissemination of the latest technical information and research. I have thoroughly enjoyed every moment working with the IASH officers and administrators. It is particularly encouraging to read your feedback from the recent Prague Conference, the 11th in IASH's 27-year history. Overall, 64% of you rated the conference as excellent, 34% as good and 2% as fair. And most of that feedback was handed in before the Ufleki brewery reception on the last night! It was a challenging conference to organise economically but in the end the attendance exceeded expectations. I was particularly pleased to see a large proportion of new attendees and, judging from their comments, they left Prague with a very favourable impression of IASH and the IASH community. There were a few "grumbles" with regards to the cost and I am sure my successors, Bob and Anthony will take these on-board in their planning for the 2011 and 2013 events; however, it is a fact of life that in Europe only a limited number of venues are of suitable size for the IASH Conference and many of these are in the higher price bracket. If we want to maintain the event quality, there is an inherent cost premium and quality is one aspect I was not prepared to compromise.

It was not just the location and venue of Prague that proved a success. Bob Morris can be congratulated on pulling together an enlightening and informative technical programme with some lively discussion. You will read elsewhere that Steve Westbrook was presented with the Nahum Por Award and Vic Hughes and Stan Seto each received the IASH Lifetime Achievement Award. I would like to add my hearty congratulations to them for well-deserved recognition of their work.

Speaking of my successors, I know they are already working on their plans for future conferences and I offer them my best wishes and, if needed, help and support. I am sure we can look forward to another special conference in Sarasota in 2011 and, if the rumours are to be believed, the location of IASH 2013 will make this another conference worth an early entry in your diaries. I feel that IASH has probably never had a more important role in highlighting the technical demands and challenges we face, as we develop new, alternative fuels. From my own perspective, the problems caused by microbial growth in biodiesels will continue to keep me very busy for some time. That is no ground for complaint, as director of a small consultancy business but, as a scientist, it is sometimes frustrating that the industry is not more pre-emptive in addressing these problems. It is not as if they are entirely unpredictable. I think it was more than 15 years ago that we first published a paper highlighting the fact that by making "greener" more biodegradable fuels, you are likely to make them inherently more susceptible to microbiogical operational problems in storage and use. But such is the nature of industry that it is only when the problems become manifest that the solutions are seriously addressed. And such is the importance of IASH that, as the requirements for fuel type and quality change, driven by

political pressures, economics and by demands for cleaner, secure energy, we must continue to highlight the possible technical issues and, wherever possible, pre-empt these with solutions.

Well it only remains for me to thank you the membership, and particularly our sponsors and supporting and sustaining members, for your support. I have had a lot of help from IASH Officers past and present, Greg Hemighaus, Ron Osman, Bob Morris and Anthony Kitson-Smith, Steve Westbrook and Vic Hughes. I also must thank Melanie Thom and Mario Le Pera for their unsung work on the newsletter and website and, finally, a big thanks to Shirley who just holds the whole thing together. I will certainly be keeping a close involvement with IASH and I look forward to seeing you all in Sarasota.

1st Vice Chair's Article

By Robert E. Morris, Navy Research Laboratory

REFLECTIONS ON THE 11th CONFERENCE IN PRAGUE

What a difference a few months makes! Back in May of 2009 at the board meeting, there were many concerns expressed by many, including myself, about the combined impact of the declining US dollar and travel restrictions due to the anticipated swine flu pandemic. Registrations were slow to materialize and we were developing contingency plans, faced with the spectre of large financial losses. Now in looking back over the conference, these concerns were clearly unfounded. We received a resounding response to our call for papers and we saw a torrent of registrations come in during the final months before the Conference. While we lost some money on pre-negotiated conference expenses, with the generous support of our sponsors and some tax refunds, we remain in the black for the year.

Our excellent technical program is a tribute to the resilience and importance of fuel science and technology with respect to worldwide energy utilization. The decision by Graham and Shirley to change hotels late in the process was difficult, but proved to be well worth the effort. The hotel staff at the InterContinental Praha provided great service and the audio-visual services have never been better. We also enlisted the assistance of a local tour service, Conti Promotor, who we can thank for helping us find the venues and local entertainment for our exceptional social events, including the gala dinner. I don't think anyone would argue that our 11th Conference was a clear success.

CONFERENCE SUMMARY

The InterContinental Praha in Prague, Czech Republic was the venue for the 11th Conference organized by the International Association for the Stability, Handling and Use of Liquid Fuels. The conference began with an opening reception at the Zlata Praha Restaurant on the rooftop of the InterContinental Praha on Sunday, 18th October, and ended with a closing dinner at the Ufleki Brewery, the oldest brewery in Prague, on the 22nd October 2009. There were 148 delegates and 34 spouses/guests in attendance from 23 countries. Delegates viewed 14 poster presentations and 19 company exhibits at the conference.
Keynote addresses were given by William E. Harrison, III, of the US Air Force Research Laboratory on Alternative Fuels - Strategy and Results; and Vladimir Matejovsky, Independent Advisor to The Institute of Fuels and Lubricants in the Czech Republic on Automotive Fuels in the Czech Republic–Production, Distribution, Quality and Quality Assessment Systems. These

were excellent presentations relating to "Challenges for the Use of New Fuels for the 21st Century," the theme of the 11th Conference.

The third John D. Bacha Student Excellence Award was presented to Nelly Klinkspon, University of Heidelberg, Germany, for her paper entitled, Impact of Biodeterioration of Diesel Fuel Systems.

The Nahum Por Award was presented to Steven R. Westbrook, for his leadership and promotion of the association for the past few years. IASH Lifetime Achievement Awards were given to Stanford Seto and Vic Hughes for their dedicated efforts in this field throughout their lives. All awardees were present at the Gala Dinner to receive their awards.

Forty-eight presentations were given in ten sessions that included the following topics:

- Aviation Fuels
- Biofuels
- Additives & Additive Related Properties
- Fuel Filtration & Cleanliness
- Challenges in Fuel Distribution & Storage
- Synthetic & Alternative Fuels I
- Synthetic & Alternative Fuels II
- Middle Distillate Fuels and Heavy Oils
- Microbiological Contamination & Biodegradation
- Analytical Methodology

For the first time, the Conference Proceedings will be available on-line through the IASH web site at www.iash.net via an access code and password. The proceedings will also be available on CD-ROM. Please contact the IASH Administrator, Shirley Bradicich, at sbradicich@iash.net if you want to obtain the proceedings of the conference.

The Conference Chairman and the IASH Board of Directors would like to thank all of the presenters for their time and effort in producing excellent presentations and the delegates themselves for supporting the conference by their attendance and active participation.

Many thanks to the 23 sponsoring organizations and companies without whose financial support we would not have been able to stage such a memorable 11th Conference:

IASH OFFICERS FOR 2010-2011

During the Plenary Session of the IASH Conference held on October 22, 2009, the following members were elected as officers of the Association for the period January 1, 2010 through December 31, 2011.

Robert E. Morris, IASH® Chair
Naval Research Laboratory, USA

Anthony Kitson-Smith, IASH® First Vice Chair
ExxonMobil Aviation International, UK

Howard L. Chesneau, IASH® Second Vice Chair

Fuel Quality Services, Inc., USA

Ronald Osman, IASH® Secretary
Flint Hills Resources, USA

Edwin Corporan, IASH® Treasurer
U. S. Air Force, USA

The Board wishes to thank Greg Hemighaus for volunteering to serve as the Treasurer of the Association for the past three years. And, we bid a fond farewell to Graham Hill and thank him for his years of service to IASH.

11TH CONFERENCE PROCEEDINGS

The 11th Conference Proceedings are being prepared for on-line access through the IASH web site by Omnipress. Bob Morris is receiving papers and preparing them for inclusion in the proceedings. All attendees of the conference will receive an access code and password to enable them to access proceedings from all the conferences held in 2000 through 2009. The IASH on-line library will be available in early January. The 11th Conference Proceedings will also be available by CD-ROM upon request to Shirley Bradicich at sbradicich@iash.net.

If you were unable to attend the conference, you may renew your membership for $200 and with your renewal you will receive on-line access to the conference proceedings. Renewal notices will be sent shortly.

A special thank you to Bob Morris for the many hours of work devoted to formatting the papers and preparing them for the on-line library. We would also like to thank Dennis Hoskin for again serving as Conference photographer.

IASH MEMBER NEWS

Harry Giles Receives ASTM Award

Harry Giles received the ASTM D.02 George V. Dyroff Award of Honorary Membership at the Committee's meeting in Norfolk, Virginia in June. Harry has been actively involved with Committee D.02 since 1977, and is past chairman of Subcommittee D.02.14 on Fuel Stability and Cleanliness, which he helped organize. He served as IASH's third chairman for eight years and received the Nahum Por Award in 1995. In 2006, Harry retired from the U.S. Department of Energy. He currently serves as Executive Director of the Crude Oil Quality Association, and remains active in Committee D.02.

2011 IASH Conference

The 12th International Conference on Stability, Handling and Use of Liquid Fuels will be held on October 16-20, 2011 in Sarasota, Florida USA. Bob Morris and Shirley Bradicich visited the Sarasota/Tampa/Sanibel Island area last November. They recommended the conference be held at the Hyatt Regency in Sarasota and the Board approved the location. Anthony Kitson-Smith

will serve as the Conference Chair and will develop the program in early 2011. A Call for Papers will be sent out in December 2010.

TECHNICAL NEWS

A New Rapid Method For Measuring Trace Levels Of Biodiesel (Fame) In Jet Fuel

By Brent Mackin ,OCA VP of Global Laboratory Services, INTERTEK Oil

Most major international diesel fuel specifications (e.g. EN 590 and ASTM D 975) now permit incorporation of biodiesel (Fatty Acid Methyl Esters - FAME) at concentrations of up to 5% v/v. Due to rising concerns regarding climate change and sustainability of fuel supplies, it is likely that permitted levels will rise to 10% v/v or even higher within the next few years.

With ongoing pressure to meet mandated targets for introduction of renewable fuels, increasing volumes of diesel fuel containing biodiesel will require moving through multi-product pipelines. This will present a growing risk of jet fuel becoming contaminated with FAME through co-mingling of diesel/jet fuel at pipeline interfaces, or leaching of FAME from pipeline walls. Currently, no FAME is permitted in aviation fuel, although 5 ppm (mg/kg) has been accepted by the industry as satisfying this requirement (Def Stan 91/91)

At the present time, there are no recognized standard test methods for measuring FAME in jet fuel although Def Stan 91/91 references two oil companies' in-house test methods based on GC-GC and GC-MS. The GC-GC method is complex and relies on instrumentation which is expensive, complicated to operate and not widely available outside research laboratories. The GC-MS technique is somewhat more robust and more widely available and is currently being developed by the Energy Institute as an IP test method (IP PM DY). However, the GC-MS method still requires use of expensive instrumentation (approx. $100K) and is time consuming to carry out (1 hour per sample). If an instrument cannot be kept dedicated to FAME in jet determinations, it can take several hours for calibration solutions to be run before even a single FAME in jet determination can be carried out. Intertek Sunbury has developed a novel analytical approach to overcome the problems highlighted above. The new method is based on High Performance Liquid Chromatography (HPLC) using an Evaporative Light Scattering Detector (ELSD).

RESEARCH NEWS

Reducing Fuel Fires In Vehicles

By Joel A. Schmitigal, US Army RDECOM, and Maurice E. Le Pera

The threat of fuel fires for ground vehicles and personnel has long remained as a difficult if not impossible problem to resolve. Prior research during 1979-1985 resulted in the Army's developing a water-in-fuel microemulsion that would self-extinguish when ignited by an explosive projectile eliminating any pool burning (i.e., burning of any spilled fuel); however, this fuel created logistical problems due to the purity of water needed for maintaining a stable microemulsion, one that would not separate. The unconventional warfare in Iraq and Afghanistan involving use of Improvised Explosive Devices (IED) coupled with the Army's changeover from diesel fuel to an aviation kerosene fuel for ground vehicles has generated an urgent need to counter this threat of fuel fires. Efforts are now underway to develop new Fire Resistant Fuel to reduce or eliminate both the initial mist fireball and any residual pool burning.

In May 2006 as a result of the continuing fuel fire threat that was significantly impacting both personnel and vehicles in Iraq and Afghanistan, the program was restarted at SwRI. Initially a new baseline had to be established for blending and flammability testing using JP-8 as the previous research had involved only diesel fuel. Then in April 2007, a more comprehensive effort was initiated that involved the following tasks; developing new emulsified fuel formulations, investigating the addition of anti-mist additives to diminish the mist fireball that occurs when a vehicle is hit, determining whether the (Fire Resistant Fuel) FRF would adversely impact vehicle and equipment systems, designing preliminary blending systems for producing the FRF, establishing education and training guidance for eventual use of the FRF, conducting fuel flammability bench tests, and determining effectiveness of the FRF against a range of IED Threats.

The development of an emulsified fuel formulation yielding a stable emulsion (i.e., one that does not separate) using both JP-8 and diesel fuel has more than likely been the more difficult of all the above-mentioned tasks. This is because of many variables such as fuel composition, aromatic content, water quality, emulsifier/surfactant chemistry, additive interactions, etc. Adding to the complexity of this task is the planned addition of anti-mist additives to the emulsified fuel formulation.

Use Of Excitation-Emission Matrix Fluorescence Spectroscopy To Monitor And Predict Diesel Fuel Storage Stability

By Robert E. Morris and Jeffrey A. Cramer, Naval Research Laboratory

Storage stability of Navy diesel fuels is currently evaluated using ASTM D5304, where insoluble sediment is measured after stressing at 100°C under 100-psig air for 16 hours. However, there are instances where it would be desirable to have an alternative method to predict storage stability not requiring the analytical capabilities necessary to conduct D5304, and which has the potential to be adapted for field use. Southwest Research Institute has demonstrated that Laser Induced Fluorescence (LIF) of jet fuels acquired at 488 nm can be correlated with their JFTOT breakpoints. More recently, Jeyashekar and Wilson further developed the relationships between constituency, LIF intensity and thermal stability of jet fuels.

Based on these results, we have been examining the possibility of deriving correlations between excitation-emission matrix fluorescence (EEM) spectroscopy and storage stability of diesel fuels. The goal of this research is to develop the means to reliably predict diesel fuel storage stability using rapid, non-invasive fluorescence measurements,

These results confirm the hypothesis that it is possible to model D5304 storage stability from PARAFAC analysis of EEM data. However, it should be noted that these results are not rigorous because the best result out of 15 possible results was manually selected for each prediction, and the number of factors calculated and utilized for each model were inconsistent. It remains to be seen if EEM spectra can be used to predict storage stability of any diesel fuel, further work will be necessary to acquire more experimental D5304 sediment measurements on a larger, and more disperse group of diesel and MGO fuels. It also seems plausible that EEM spectral measurements could be used in this manner to monitor qualitatively fuels in storage to detect changes in chemical constituency.