## Bibliography of Water-Fuel Emulsions Studies

October 11, 2001

U.S. Environmental Protection Agency Office of Transportation and Air Quality

Following is a list of studies that are being considered for inclusion in work being done by EPA to assess the effects of water-fuel emulsions on emissions of oxides of nitrogen (NOx), hydrocarbons (HC), and particulate matter (PM).

This work will include a staff paper and possibly a database quantifying the emissions effects. For more information on this effort please contact Tia Sutton (Sutton.Tia@epa.gov).

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## **Fuel Emulsions Analysis Program Bibliography**

Andrews, G.E., K.D. Bartle, S.W. Pang, A.M. Nurein, and P.T. Williams, "The Reduction in Diesel Particulate Emissions Using Emulsified Fuels", SAE Paper No. 880348.

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Brown, K.F., J. Chadderton, D.T. Daly, D.A. Langer, D. Duncan, "Opportunity for Diesel Emission Reductions Using Advanced Catalysts and Water Blended Fuel", SAE Paper No. 2000-01-0182.

Chen, Z., M. Ishida, "An Analysis of the Added Water Effect on NO Formation in D.I. Diesel Engines", SAE Paper No. 941691.

Crookes, R.J., M.A.A. Nazha, M.S. Janota, T. Storey, "Investigation into the Combustion of Water/Diesel Fuel Emulsions", SAE Paper No. 800094.

Dec, J.E., R.E. Canaan, D.R. Tree, "The Effect of Water-Emulsified Fuel on Diesel Soot Formation", presentation at 219<sup>th</sup> American Chemical Society National Meeting, San Francisco, CA, March 26-31, 2000.

DeVita, A., "Multi-Cylinder D.I. Diesel Engine Tests with Unstabilized Emulsion of Water and Ethanol in Diesel Fuel", SAE Paper No. 890450.

Duncan, D.A., D.A. Langer, J.C. Marshall, "Emulsion fuels- improving the environment today", SAE Conference presentation, Vienna, Austria, April, 2001.

Henningsen, S., "Influence of the Fuel Injection Equipment on NO<sub>x</sub> Emissions and Particulates on a Large Heavy-Duty Two-Stroke Diesel Engine Operating on Water-in-Fuel Emulsion", SAE Paper No. 941783.

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Langer, D.A, D.T. Daly, "Low Emission Water Blend Diesel Fuel", presentation at Future Fuels and Fuel Additives for Vehicles Emissions Control- 219<sup>th</sup> American Chemical Society National Meeting, San Francisco, CA, March 26-31, 2000.

Langer, D.A., N.K. Petek, "Field and Lab Testing of Emissions Control System Using Water-Blended Fuel", presentation at Mining Diesel Emissions Conference, Toronto, Canada, November 15, 2000.

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Lestz, S.J., R.B. Melton Jr., E.J. Rambi, "Feasibility of Cooling Diesel Engines by Introducing Water Into the Combustion Chamber", SAE Paper No. 750129.

Li, Z., H. Sano, M. Tsukahara, Y. Yoshimoto, "NOx Reduction with EGR in a Diesel Engine Using Emulsified Fuel", SAE Paper No. 982490.

Miyamoto, N., H. Ogawa, J. Wang, and H. Ohashi, "Significant Nox Reductions with Direct Water Injection into the Sub-Chamber of an IDI Diesel Engine", SAE Paper No. 950609.

Modak, A., L.S. Caretto, "Engine Cooling by Direct Injection of Cooling Water", SAE Paper No. 700887.

Nicholls, J.E., I.A. El-Messiri, H.K. Newhall, "Inlet Manifold Water Injection for Control of Nitrogen Oxides- Theory and Experiment", SAE Paper No. 690018.

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Valdmanis, E., D.E. Wulfhorst, "The Effects of Emulsified Fuels and Water Induction on Diesel Combustion", SAE Paper No. 700736.

"Comparative Analysis of Vehicle Emission Using PuriNOx Fuel and Diesel Fuels", Air Improvement Resource, Inc., April 4, 2001.