UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

August 11, 2009

**MEMORANDUM FOR:** State Weights and Measures Directors and
Other Interested Parties

**FROM:** Carol Hockert, Chief CTH
Weights and Measures Division

**SUBJECT:** Amendments to **Section 2.1. Gasoline and Gasoline-Oxygenate Blends** in the Engine Fuels and Automotive Lubricants Regulation in NIST Handbook 130 (2009) *Uniform Laws and Regulations in the areas of legal metrology and engine fuel quality* as adopted by the 94th National Conference on Weights and Measures

At its 94th Annual Meeting in July 2009, the National Conference on Weights and Measures (NCWM) adopted an amendment to **Section 2.1. Gasoline and Gasoline-Oxygenate Blends** in the *Engine Fuels and Automotive Lubricants Regulation* in the 2009 Edition of NIST Handbook 130.

Since the amendment affected only one section of the Handbook 130, NIST has decided to forego publication of a 2010 edition (see Section Q. Revisions to the Handbook in the Introduction to Handbook 130). This memorandum and the attachment will serve as notice that the uniform laws and regulations and other sections in the 2009 Edition of Handbook 130 should be recognized as the current edition of the Handbook for use by weights and measures officials and jurisdictions (i.e., it will be the equivalent of a 2010 Edition of NIST Handbook 130) until NIST publishes a new edition of this handbook, except as noted herein.

The complete text of the revised **Section 2.1. Gasoline and Gasoline-Oxygenate Blends** is presented in the attached document. The effective enforcement date of the amendment is January 1, 2010. (See Section S. Effective Dates of Regulation in the Introduction section of the handbook.) Please print and insert this notice into your copy of NIST Handbook 130 2009 Edition for reference. A notice will also be added to the edition of NIST Handbook 130 that is available at www.nist.gov/owm on the Internet.

Please note that since all distillation classes at 50 volume percent evaporated points have been addressed by ASTM for ethanol blends, Section 2.1.3.(b) appears in the 2010 Edition of NIST Handbook 130 for informational purposes only. It will be deleted in future editions of the handbook editorially. In addition, the Vapor Liquid Ratio of 20 for Classes 1, 2, and 3 in Section 2.1.3.(c) has also been addressed by ASTM for ethanol blends and will be deleted in future editions of NIST Handbook 130.

Please contact Lisa Warfield at lisa.warfield@nist.gov or (301) 975-3308 for additional information or assistance related to NIST Handbook 130.

## Section 2. Standard Fuel Specifications (See NIST Handbook 130 2009 Edition, page 172)

### 2.1. Gasoline and Gasoline-Oxygenate Blends

**2.1.1. Gasoline and Gasoline-Oxygenate Blends** (as defined in this regulation)**.** – shall meet the most recent version of ASTM D4814 "Standard Specification for Automotive Spark-Ignition Engine Fuel" except for the permissible offsets for ethanol blends as provided in Section 2.1.3. Gasoline-Ethanol Blends.

**2.1.2. Gasoline-Oxygenate Blends.** – shall contain no more than 10 volume percent ethanol. For other oxygenates, blends shall contain no more than 2.0 mass percent oxygen except fuels containing aliphatic ethers and/or alcohols (excluding methanol) shall contain no more than 2.7 mass percent oxygen.

**2.1.3. Gasoline-Ethanol Blends. –** When gasoline is blended with 1 to 10 volume percent ethanol, the ethanol shall meet the requirements of ASTM D4806 and the blend shall meet ASTM D4814 with the following permissible exceptions:

(a) The maximum vapor pressure shall not exceed the ASTM D4814 limits by more than 1.0 psi for:

(1) Only 9 to 10 volume percent ethanol blends from June 1 through September 15.

(2) All blends of 1 to 10 volume percent ethanol from September 16 through May 31.

(b) Until May 1, 2012, or until ASTM D4814 incorporates changes to the 50 volume percent evaporated point to account for the volatility effects of up to 10 volume percent ethanol, whichever occurs earlier, the distillation minimum temperature at the 50 volume percent evaporated point shall not be less than 66 °C (150 °F) (see Notes 1and 2).

(c) Until May 1, 2012, or until ASTM D4814 incorporates changes to the vapor lock protection minimum temperature for Classes 1 - 5 to account for the volatility effects of up to 10 volume percent ethanol, whichever occurs earlier, the minimum temperature for a Vapor-Liquid Ratio of 20 for the applicable vapor lock protection class for gasoline-ethanol blends shall be as follows (see Notes 1 and 2):

(1) Class 1 shall be 54 °C (129 °F)

(2) Class 2 shall be 50. °C (122 °F)

(3) Class 3 shall be 47 °C (116 °F)

(4) Class 4 shall be 41.5 °C (107 °F)

(5) Class 5 shall be 39 °C (102 °F)

(6) Class 6 shall be 35 °C (95 °F)

All gasoline and gasoline-ethanol blends sold in Area V (as shown in ASTM D4814 Appendix Fig. X1.2) shall meet the vapor lock protection minimum temperatures in ASTM D4814.

***NOTE 1:*** *The value for the 50 volume percent evaporated point noted in Section 2.1.3.(b) and the values for Classes 1, 2, and 3 for the minimum temperature for a Vapor-Liquid Ratio of 20 in Section 2.1.3.(c) are now aligned and identical to those that are being published in ASTM D4814-09b and apply equally to gasoline and gasoline-ethanol blends. In future editions of NIST Handbook 130, Section 2.1.3.(b) will be removed editorially and the reference to Classes 1, 2, and 3 in Section 2.1.3.(c) will be removed editorially. In addition, existing Sections 2.1.3. through 2.1.7. of NIST Handbook 130 will be renumbered.*

***NOTE 2:*** *The temperature values (e.g., 54 °C, 50. °C, 41.5 °C) are presented in the format prescribed in ASTM E29 "Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications."*