

Grain Neutral Spirits- Drinking the best... burning the rest!!

Fuel Ethanol Laboratory Conference

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Just a bit about me...



1994: Started at largest distillery in the world.

2000: Transferred to largest corn processing plant in the world.

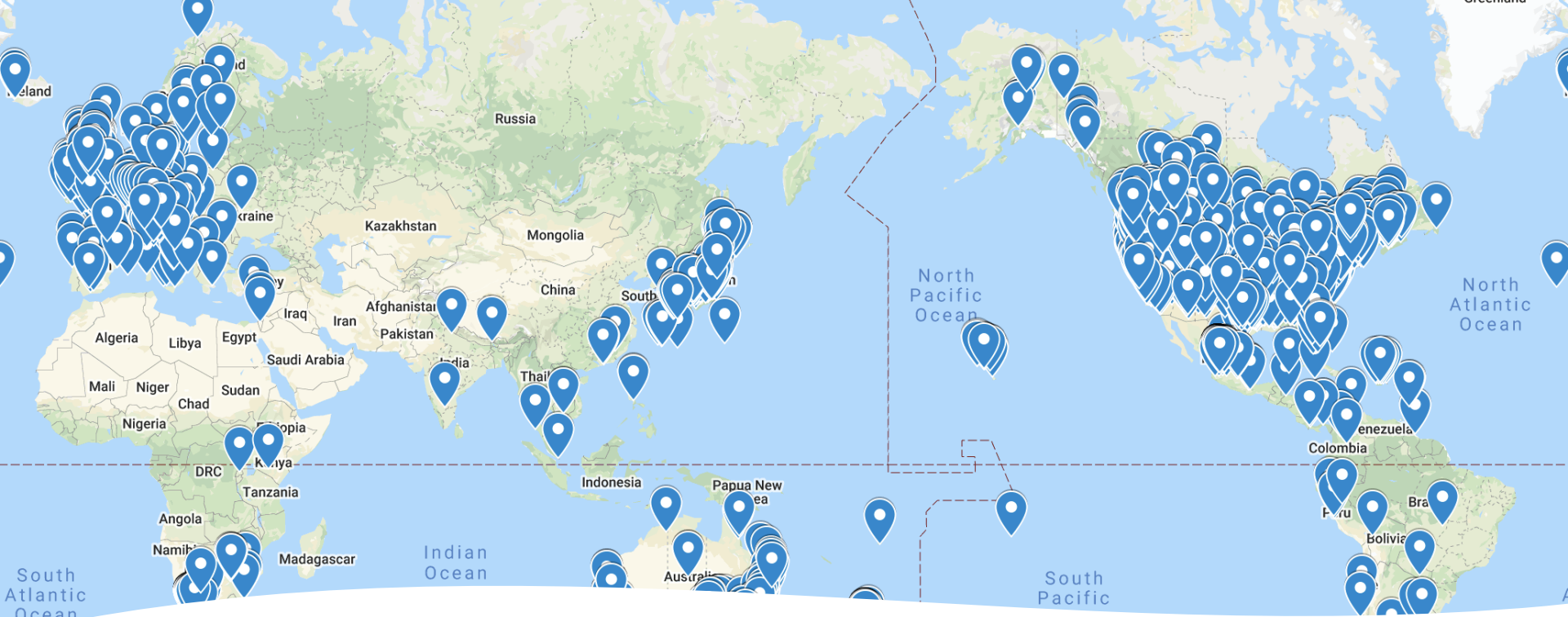
2002: MTBE transition team.

2007: Worked for ethanol trade association.

2009: Industry lead on E15 application.

2015: Opened up a consulting gig to feed my family.

2018: Building markets globally...



Grain Neutral Spirits Industry

- 2,050 distilleries in the U.S.
- 1,250 distilleries internationally.
- 865,000 direct jobs in the U.S.
- \$79B industry.
- \$13B in taxes generated.

<https://www.distilledspirits.org>

Alcohol Tobacco Tax and Trade Bureau

- The Grain Neutral Spirits (GNS) industry is HEAVILY regulated by the TTB.
 - Title 27, Code of Federal Regulations Part 19.
 - TTB Industry Circulars important.
- Batch, Monthly Reporting for GNS vs. Once annually for fuel.
- “Protection of the revenue” is wording that you need to learn.
 - \$27/ proof gallon GNS, \$13.50/ wine gallon SDA.
- Resources (very dated) on the www.ttb.gov website.

 An official website of the United States government [Here's how you know](#)



TTB Alcohol and Tobacco
Tax and Trade Bureau
U.S. Department of the Treasury

[Who We Are](#) [What We Do](#) [TTB Audiences](#)

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TTB Tips Online

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List of Methods of Analysis for Beverage Alcohol

Analyte(s)	Product Type	Technology	Reference
Acetic acid, Lactic, Citric acid	Wine, Distilled Spirits	GC, HPLC	AOAC Official Methods of Analysis 968.09, 972.10 (17th Ed); Am. J. Enol. Vitic. 5:4, 2003; LC-GC 16:12, 1998
Alcohol	Wine, Malt Beverages	Distillation, GC	AOAC Official Methods of Analysis 920.57, 920.58, 950.13, 982.10, 984.14 (17th Ed)
Alcohol	Wine, Malt Beverages, Distilled Spirits	Distillation, Densitometer	AOAC Official Methods of Analysis 920.47, 942.06, 945.07, 982.10, 983.12 (17th Ed); ASBC Official Method Beer-4; 27CFR part 30
Apparent Specific Gravity	Wine, Distilled Spirits	Density Meter	AOAC Official Methods of Analysis 950.28, 982.10 (17th Ed)
Arsenic	Wine	Graphite Furnace AA	At. Spectroscopy, 22 (2), 280-283 (2001)
Asarone (Beta)	Wine	Gas Chromatography	AOAC Official Methods of Analysis 977.09 (17th Ed)
Aspartame	Distilled Spirits	HPLC	TTB Official Method
Ash	Wine, Distilled Spirits, Malt Beverages	Muffle Oven	AOAC Official Methods of Analysis 920.54, 920.67, 950.14 (17th Ed); 920.48 (15th Ed); ASBC Official Method Beer-14
Bitterness	Malt Beverages	Spectrophotometry	AOAC Official Methods of Analysis 970.16 (17th Ed); ASBC Official Method Beer-23A
Cadmium	Wine	Graphite Furnace AA	Micr. Chem. Journal, 56, 221-228 (1997); TTB Official Method
Caffeine	Distilled Spirits	HPLC	JAOAC 72, 614-618 (1989); TTB Official Method
Calores	Malt Beverages		AOAC Official Methods of Analysis 971.10 (17th Ed); ASBC Official Method Beer-33
Caramel	Distilled Spirits	HPLC	JAOAC, 63, 1310-1313 (1980); TTB Official Method
Carbohydrates	Malt Beverages		AOAC Official Methods of Analysis 979.06 (17th Ed); ASBC Official Method Beer-6
Carbon dioxide	Wine	Enzymatic	AOAC Official Methods of Analysis 964.09 (17th Ed)
Carbon dioxide	Wine	Titrimetric	AOAC Official Methods of Analysis 988.07 (17th Ed)
Copper	Wine, Distilled Spirits, Malt Beverages	Graphite Furnace AA	At. Spectroscopy, 18 (5), 156-159 (1997); TTB Official Method
Coumarin	Wine, Distilled Spirits	Gas Chromatography	AOAC Official Methods of Analysis 976.12 (15th Ed)
Cyanide/Ferrocyanide	Wine	Ion Chromatography	TTB Official Method

TTB Official Methods listed in this table are not available at this time.

Quality Assurance/ Quality Control

- This is mainly customer driven once the regulatory requirements are met.
 - For example: Densitometer must be an approved type/ manufacturer.
- Learn to manage different product codes, specifications, formulations, unloading requirements, customer specific Certificates of Analysis and more.
 - Higher product quality expectations than USP/ FCC.
- Customer auditing is a cornerstone of this business.

Proofing video Series

Distilled Spirits Proofing Processes

Distilled spirits plant proprietors are required to determine taxes owed on spirits removed from their bonded premises. To do this, proprietors will need to "gauge" the spirits — that is, determine the quantity and proof of the spirits.

If you are a distilled spirits plant proprietor, it is important that you know how to proof your spirits correctly. We've listed below some resources to help guide you through the proofing process, including our [TTB Proofing Video Series](#).

TTB Proofing Resources



Introduction to Proofing Video Series (4:09)

TTB's Beverage



Part 1 - Proofing Spirits with a Hydrometer (4:29)

Learn how to



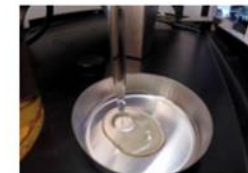
Part 2 - Proofing Spirits with a Densitometer (3:19)

Learn how to



Part 3 - Distilling Spirits for Proofing (4:54)

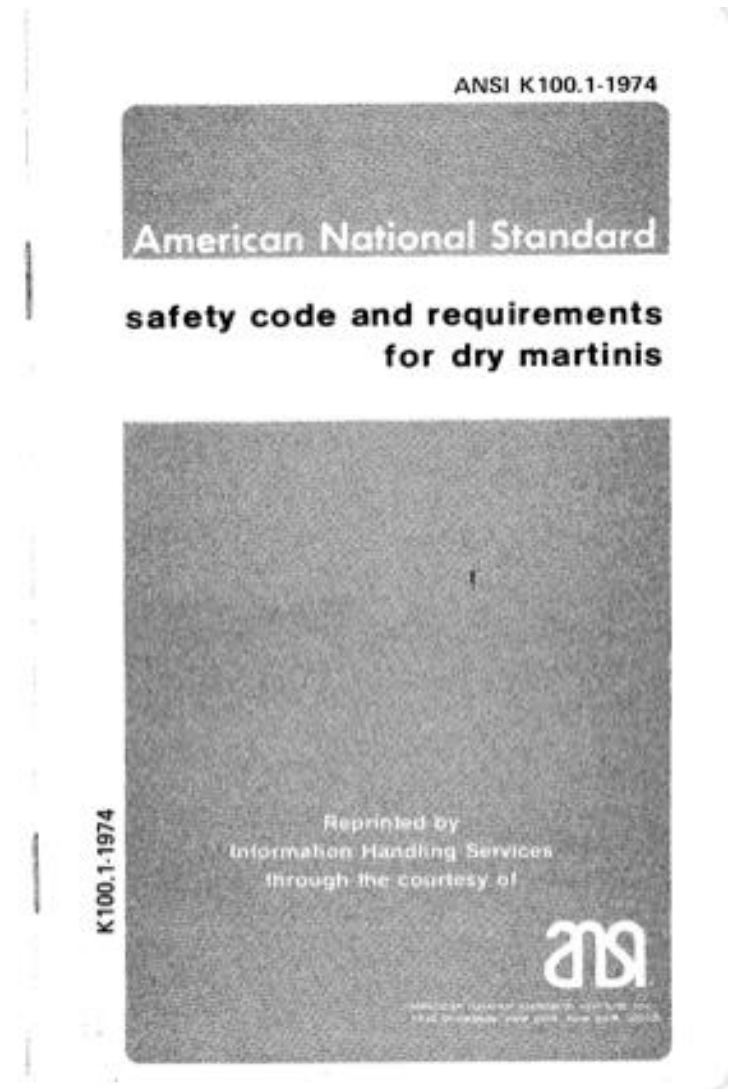
High solid



Part 4 - Determining Proof Obscuration by Evaporation

Efforts to Improve Test Methods

- Several new work items are under development at ASTM Committee E48.
 - Gas Chromatography.
 - Non-volatile residue.
 - Acidity.
 - Organoleptic.
- Contacting customers to assist and gain recognition on these test methods while under development.





Now I'm going to yield the rest of my time to Jenny Forbes of Phibro to provide an update to recent discussions on the use of antibiotics.

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