TTB's Laboratory Certification Program, and Wine Sampling and Testing Programs

Abdul Mabud  
Director, Scientific Services Division  
Alcohol and Tobacco Tax and Trade Bureau (TTB), USA

TTB Mission

- Collect Revenue  
  Collect all revenue that is rightfully due, eliminate or prevent tax evasion and other criminal conduct, and provide high quality service while imposing the least regulatory burden
- Protect the Public  
  Prevent consumer deception, ensure that regulated alcohol and tobacco products comply with Federal commodity, safety and distribution requirements

TTB Laboratories

National Laboratory Center, Maryland
- Beverage Alcohol Laboratory  
- Nonbeverage Products Laboratory  
- Tobacco Laboratory

Walnut Creek, California  
- Compliance Laboratory

Capabilities

- ISO 17025 Accreditation  
  - Beverage Alcohol Laboratory  
  - Compliance Laboratory  
  - Tobacco Laboratory
- Methods Used: Consensus Methods  
  - Use official methods of the Association of Official Analytical Chemists (AOAC)  
  - Develop methods, and validate

Alcohol Beverage Sampling Program

- Marketed Products
- Statistically valid random sampling  
  - Collected from retail shops  
  - Domestic and imported
- Laboratory analyses to ensure  
  - Products conform to TTB regulations (class and type, label information accurately described)  
  - Product safety  
    - Limited / prohibited ingredients (TTB and FDA laws and regulations)  
    - Sulfites, methanol, toxic metals, pesticides, mycotoxins, ingredients of herbs and botanicals, flavors, additives, etc.

Pesticide Monitoring Program

- Yearly Program  
  - Currently about 100 wines per year analyzed  
  - Sampling subset of ARSP samples  
  - Domestic and Imported
- Pesticides approved by EPA for application in grape vines have MRLs in grapes
- Analysis of wines  
  - Unauthorized pesticides  
  - Authorized pesticides that exceed the MRL established for grapes
Wines Survey: Pesticide Monitoring (2003 to Present)

Ochratoxin-A (OTA)
- Ochratoxin A - a naturally occurring mycotoxin on grapes produced by mold
- International Agency for Research on Cancer (IARC) has classified OTA as a possible carcinogen to humans
- EU has established 2 ppb ochratoxin A maximum level in wine (from 2003 vintage)
- TTB monitors OTA levels in wines sold in US


<table>
<thead>
<tr>
<th>Wine Type (No)</th>
<th>Range (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White (63)</td>
<td>0.01 – 0.09</td>
</tr>
<tr>
<td>Rose (16)</td>
<td>ND – 0.85</td>
</tr>
<tr>
<td>Red (169)</td>
<td>0.01 – 0.81</td>
</tr>
<tr>
<td>Dessert (4)</td>
<td>ND – 0.04</td>
</tr>
<tr>
<td>Sparkling wine (8)</td>
<td>ND</td>
</tr>
<tr>
<td>Feni/White (3)</td>
<td></td>
</tr>
<tr>
<td>Total 255 wines</td>
<td></td>
</tr>
</tbody>
</table>

All OTA levels are below the 5 ppb EU regulatory limit

Product Integrity Investigation
- Mostly domestic products (wineries, breweries, distilleries)
- Investigations and audits
- Imported Products (importers, distributors)
- Investigations
- Products are analyzed to ensure regulatory compliance

Chemist Certification Program
- Importing economies require analysis by a US certified laboratory
- TTB offers a program to certify chemists at qualified private laboratories
  - Wines, distilled spirits, and/or beer
  - Offered twice a year (Spring and Fall)
  - Applicants must meet TTB requirements
  - Educational
  - Have necessary equipment to perform the tests
  - Pass testing of TTB provided samples
  - ISO 17025 Lab

Test Samples
- All applicants analyze the same samples provided by TTB (from single lot/batch)
- TTB consensus values are determined
- All applicants need to meet the criteria
## Wine Analytes

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Reported as % or mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol by Volume</td>
<td>0.1% by volume</td>
</tr>
<tr>
<td>Total Extract</td>
<td>0.08 g/100mL</td>
</tr>
<tr>
<td>Total acidity as tartaric Acid</td>
<td>0.08 g/100mL</td>
</tr>
<tr>
<td>Malic Acid</td>
<td>0.001 g/100mL</td>
</tr>
<tr>
<td>Citric Acid</td>
<td>0.1 g/L</td>
</tr>
<tr>
<td>Total Sulfur Dioxide</td>
<td>1 mg/L</td>
</tr>
<tr>
<td>Residual Sugars (expressed as glucose + fructose)</td>
<td>0.1 g/100mL</td>
</tr>
<tr>
<td>Sorbic Acid</td>
<td>1 mg/L</td>
</tr>
<tr>
<td>Methanol</td>
<td>0.01% v/v (or mg/L)</td>
</tr>
</tbody>
</table>

## Program Statistics

(Wine, DS, and Beer)

<table>
<thead>
<tr>
<th></th>
<th>Total Applicants</th>
<th>New Applicants</th>
<th>Education Failures</th>
<th>Data Failures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>52</td>
<td>18</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Spring 2011</td>
<td>41</td>
<td>8</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>