More Than a Number…
MRLs from an International Beverage Company Perspective

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Why is The Coca-Cola Company interested in MRLs?

Two key drivers…

The ingredients that go into our beverages are largely derived from agricultural commodities.

Our products are available in more than 200 countries.
Presentation Outline

- Products and Commodities
- Pesticides and Regulatory Compliance in Agricultural Commodities
- Pesticide Monitoring - Survey Data
- Moving Forward
Globally, The Coca-Cola Company is the No. 1 provider of juices and juice drinks.
Coca-Cola Juice Brands – A Global Business

150 COUNTRIES
10 BILLION $ REVENUES
The Coca-Cola Company produces and sells all types of juice products.....
Grove-To-Glass Operating System

1. Get the best juice
   - Source locally and globally

2. Make the most of it
   - Optimize processing and transportation

3. Blend to perfection
   - Optimize taste & quality with consumers, at the best cost

Consistently delicious juice for local taste
Ready to Drink Teas and Coffees
Odwalla – Liquid Food Category

- Apple
- Carrot
- Grapefruit
- Orange
- Tangerine
- Mango
- Coconut

- Pumpkin
- Strawberry
- Grape
- Peach
- Lemon
- Raspberry
- Pineapple

- Blueberry
- Pear
- Pomegranate
- Lime
- Plum
Regulatory Considerations
Residues and Regulations

• Regulatory authorities establish and enforce allowable residues.
• Pesticide residues, when they do occur, are typically found at very low levels.
• Pesticide residues may or may not be detected on treated crops after harvest.
Balancing Benefits and Risks

Benefits

- Increased productivity and lower food costs
- Improved fruit and vegetable quality and appearance
- Longer shelf-life
- Public health issues (e.g., mosquito control)

Risks

- Worker exposure
- Soil and water contamination
- Non-target effects (e.g., beneficial insects, spray drift)
- Potential for residues in food
Establishing Tolerances and MRLs

• Requires residue data from controlled field studies (maximum rate, number of treatments, minimum harvest interval)

• MRLs are subject to review and revision

• New registrations are expensive

• Growers and associations have significant influence with chemical manufacturers for new uses and tolerances
Codex - MRLs on an International Basis

Codex Committee on Pesticide Residues (CCPR)

• Prepares priority lists of pesticides for evaluation by the expert group at Joint FAO/WHO Meeting on Pesticide Residues (JMPR)

• Uses scientific advice from JMPR to establish maximum limits for pesticide residues in food and feed

• Used primarily by countries that do not have the regulatory resources to establish their own residue levels
Pesticide Residue Monitoring
USDA – Pesticide Data Program (PDP)

• Started in 1991
• 100+ commodities and 500+ pesticides
• Samples collected in 11 states
• From the 2011 Annual Summary...
  • 11,894 total samples
  • 0.27% exceed tolerance (78% imp., 22% dom.)
  • 3.4% no approved tolerance (70% imp., 30% dom.)
  • Orange juice (585 samples)
    • Carbaryl (22.2%)
    • Imazalil (6.3%)
    • Imidaclorpid (5.8%)
    • Thiabendazole (9.6%)
• No illegal orange juice residues reported
Carbaryl Residues in Orange Juice – 2011 USDA PDP

- 130 detections out of 585 samples
- 455 non-detects
- Range of detections: 0.003 – 0.018 ppm
- Average residue (when detected): 0.007 ppm
- Carbaryl/orange tolerances and MRLs:
  - US: 10 ppm
  - Codex: 15 ppm
  - EU: 0.01 ppm
  - Japan: 7 ppm
2010 EU Report on Pesticide Residues in Food

• 27 EU member states plus Iceland and Norway
• More than 77,000 domestic and imported samples
• 2.8% exceed MRL for one or more pesticides
• EU Coordinated Program: 30 major foods, 10/year on a three-year cycle, statistically based
TCCC Testing and Pesticide Residue Monitoring

• Basic Attributes
  • Brix, acidity, color, turbidity, viscosity, etc.
  • Stability
  • Microbiology
  • Sensory
• Residues (screening >150 a.i.s)
• Heavy metals (arsenic, cadmium, lead)
• Adulteration
• More than 20,000 samples in 2012
Pesticide Residue Monitoring Summary

• Detections of pesticide residues exceeding an established tolerance are rare

• In the US, the detection of unapproved pesticides, those for which a tolerance has not been requested and/or approved (or has expired) are still rare

• As a consumer facing business, we must be able to respond to reports of residues, and the differences between allowable residue limits from one country to another
Moving Forward
MRL Priorities for Food and Beverage Companies

• Harmonization
• MRL Needs
• Partnerships
Benefits of Harmonization

• Simplify purchasing and distribution
• Flexibility in sourcing
• Simplify supplier messaging and requirements
• Consistent message to consumers
Tea: Additional Tolerances/MRLs Needed

- Tea Act of 1897 – shielded tea imports from most regulatory agencies
- Revoked in 1996
- 2008 – FDA detention of tea due to illegal pesticide residues
- FDA and Tea Association of the USA reached an agreement for enforcement discretion with good faith efforts to obtain tolerances
- Obstacles to new tolerances include: ownership and revenue for off-patent compounds, minor crop status in the US, new data generation requirements and expenses, registration fees and harmonization challenges.
Tea Tolerances and MRLs: US, EU and Codex

- **US**: tea tolerances for 18 active ingredients
  - plus 19 food and feed storage/handling tolerances

- **Codex**: 16 current (1 revision and 1 new MRL proposed for 2013)

- **EU**: 40+ established tea MRLs and default MRLs for many other active ingredients

### Comparison of Selected Tea Tolerances/MRLs

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>US Tolerance (ppm)</th>
<th>EU MRL (ppm)</th>
<th>Codex MRL (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetamiprid</td>
<td>50.0</td>
<td>0.1*</td>
<td>none</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>30</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Buprofezin</td>
<td>20</td>
<td>0.05*</td>
<td>30 (2013)</td>
</tr>
<tr>
<td>Carfentrazone-ethyl</td>
<td>0.10</td>
<td>0.02*</td>
<td>none</td>
</tr>
<tr>
<td>Chlorantraniliprole</td>
<td>50.0</td>
<td>0.02*</td>
<td>none</td>
</tr>
<tr>
<td>Chlorpyrifos</td>
<td>none</td>
<td>0.1*</td>
<td>2</td>
</tr>
<tr>
<td>Clothianidin</td>
<td>70</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Deltamethrin</td>
<td>none</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Dicofol</td>
<td>50.0</td>
<td>20</td>
<td>50 40 (2013)</td>
</tr>
</tbody>
</table>

* Indicates the lower limit of analytical detection.
Partnerships and Engagement

• Suppliers and Growers

• Codex Committee on Pesticide Residues

• Trade Associations and Commodity Groups
  – Tea Association of the USA
  – FL Citrus Mutual
  – CropLife America
  – Juice Products Association

• Agrochemical Manufacturers
Questions and Comments…

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