California Pesticide Residue Monitoring Program

Presentation at the Agricultural Pest Control Advisory Committee Meeting

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Outline

1. DPR’s Sampling Work Plan
2. Samples Analyzed at CDFA Laboratories
3. What Are Pesticide Residues and Tolerances?
4. DPR Pesticide Residue Monitoring Data
5. California Registered Labels are the “Law”
6. Consequences of Illegal Pesticide Residues
7. Recent Cases of Illegal Pesticide Residues in California Grown Produce
DPR’s Sampling Work Plan
Sampling Work Plan

• Work plan created each fiscal year

• 16 Target Commodities in FY 2013 / 2014

• Focus on commodities:
  – In children's diets
  – Treated with priority pesticides
  – With history of illegal residues
  – In ethnic diets
  – For which residue data is needed
Sampling Work Plan

Fiscal Year 2013 / 2014

• 3600 Total Samples
• >1500 Target Commodity Samples
• > 2000 Discretionary Samples
• 30 Follow-up Samples
SAMPLING LOCATIONS

Samples collected “throughout the channels of trade”:

- Wholesale and retail outlets
- Distribution centers of chain supermarkets
- Farmers’ markets
Sampling in 2012

- 3,501 samples
- > 160 kinds of commodities
  - Derived from plants (no animal products – U.S.D.A.)
  - Raw (not processed – CA Dept. of Public Health and FDA)
DPR samples Domestic and Imported Commodities

Targets for Fiscal Year 2013 / 2014:

<table>
<thead>
<tr>
<th>% of all samples</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. produce</td>
<td>70%</td>
</tr>
<tr>
<td>Imported produce</td>
<td>30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>15%</td>
</tr>
<tr>
<td>China</td>
<td>5%</td>
</tr>
<tr>
<td>Other countries</td>
<td>10%</td>
</tr>
</tbody>
</table>
Samples Analyzed at CDFA Laboratories
DPR Staff Deliver Samples to CDFA Lab
Samples are Prepared For Analysis
Samples are Analyzed
## CDFA Multi-Residue Screens

<table>
<thead>
<tr>
<th>“Old”</th>
<th>OP</th>
<th>CH</th>
<th>N-Methyl Carbamate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detect &gt; 200</td>
<td>OP (Organophosphate)</td>
<td>CH (Chlorinated Hydrocarbon)</td>
<td></td>
</tr>
<tr>
<td>Pesticide Residues</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| “New”            | LC/MS (Liquid Chromatograph/Mass Spectrometer) | GC/MS (Gas Chromatograph/Mass Spectrometer) | ---               |
| Detect > 300     |                                               |                                             |                   |
| Pesticide Residues |                                              |                                             |                   |
CDFA Multi-Residue Screens

• For most pesticides detected with LC/MS and GC/MS Screens:

• Minimum Detection Limit = 0.01 ppm
What are pesticide residues and tolerances?
“Residues” and “Tolerances”

- **Residue** = actual amount of pesticide residue detected
- **Tolerance** = maximum amount allowed (most countries call “MRL”)

**Example:** Tolerance for acephate on Brussels sprouts is 3 ppm

- Tolerances are set by U.S. EPA and published in Code of Federal Regulations (title 40, part 180)

- U.S. EPA establishes a tolerance for a particular pesticide on a particular food crop before California approves the use of that pesticide on that crop.
Two situations when a residue is illegal

For a particular pesticide on a particular commodity:

1. There is an U.S. EPA established tolerance, but the amount of residue is over that tolerance. (an “over tolerance” (OT) violation).

   Example: tolerance for malathion on apples is 8 ppm

   What amount of malathion residue on apples would be illegal?

   Answer: Any residue of malathion that is over 8 ppm

   Yes, that does include 8.01 ppm!
Two situations when a residue is illegal:

For a particular pesticide on a particular commodity:

2. There is no U.S. EPA established tolerance on this commodity (a “No Tolerance Established” (NTE) violation).

Example: There is no U.S. EPA established tolerance for residues of methomyl on strawberries.

What amount of methomyl residue on strawberries would be illegal?

Answer: Any detectable amount of methomyl residue.
DPR Pesticide Residue Monitoring Data
Results: DPR residue sampling, 2012

(n = 3,501 samples)

128 Illegal Samples
64.1% Imported produce
35.9% U.S. produce

38.9%
57.5%
3.6%

No residues detected
Within legal tolerances
Illegal residues
California’s reliable produce is attractive to buyers

DPR results from 2012:

CA-grown samples 1,210
Illegal pesticide residues 23 (1.9%)

98.1% of California-grown samples complied with U.S. tolerances
## 2012 Comparison of Multi-Residue Screens

<table>
<thead>
<tr>
<th>Screens Used</th>
<th>CDFA Laboratory</th>
<th>Proportion of Samples with Pesticide Residues (%)</th>
<th>Proportion of Samples with Illegal Pesticide Residues (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Old&quot;</td>
<td>Anaheim</td>
<td>23.1 %</td>
<td>2.2 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(428 of 1850 samples)</td>
<td>(41 of 1850 samples)</td>
</tr>
<tr>
<td>&quot;New&quot;</td>
<td>Sacramento</td>
<td>64.3 %</td>
<td>5.27 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1061 of 1651 samples)</td>
<td>(87 of 1651 samples)</td>
</tr>
</tbody>
</table>
Results: DPR residue sampling, 1st Half 2013

(n = 1,777 samples)

95 Illegal Samples
68.4% Imported produce
31.6% U.S. produce

No residues detected
Within legal tolerances
Illegal residues
### DPR results, 2011-12

Commodities from certain geographical locations with a higher proportion of samples with illegal residues:

<table>
<thead>
<tr>
<th>Commodity and Origin</th>
<th>% of Samples with Illegal Residues (2011 and 2012 combined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yardlong beans grown in <strong>Mexico</strong></td>
<td>20.0% (14 of 70 samples)</td>
</tr>
<tr>
<td>Cilantro grown in <strong>United States</strong></td>
<td>16.9% (11 of 65 samples)</td>
</tr>
<tr>
<td>Snow Peas grown in <strong>Guatemala</strong></td>
<td>12.3% (7 of 57 samples)</td>
</tr>
<tr>
<td>Chili peppers grown in <strong>Mexico</strong></td>
<td>9.4% (13 of 138 samples)</td>
</tr>
<tr>
<td>Tomatillos grown in <strong>Mexico</strong></td>
<td>9.2% (20 of 218 samples)</td>
</tr>
<tr>
<td>Limes grown in <strong>Mexico</strong></td>
<td>7.5% (15 of 201 samples)</td>
</tr>
<tr>
<td>Ginger grown in <strong>China</strong></td>
<td>6.5% (7 of 104 samples)</td>
</tr>
<tr>
<td>Spinach grown in <strong>United States</strong></td>
<td>6.2% (16 of 260 samples)</td>
</tr>
</tbody>
</table>

Results available at: [http://www.cdpr.ca.gov](http://www.cdpr.ca.gov)
Click on “A-Z Index”, then go to “Residue”
California Registered Pesticide Label is the “Law”
The Pesticide Label is the “Law”

- Before you treat or make a recommendation to treat a food crop with a pesticide product:
  1. Make sure the product is registered in California
  2. Make sure the product label includes use directions for the crop you are treating

- When treating the crop, follow the use directions for that crop carefully

- If you don’t follow these rules – there is a possibility that the treated crop will have illegal pesticide residues at harvest and in the channels of trade
Use Directions Example

Loveland Product, Inc.

PERMETHRIN 3.2 EC
EPA REG. NO. 279-3014-34704

<table>
<thead>
<tr>
<th>Insects Controlled</th>
<th>Rate of Application</th>
<th>Method of Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armyworm spp., Cabbage Looper,</td>
<td>2 to 4 ounces (0.05 to 0.1 pound</td>
<td>Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft. Apply as needed.</td>
</tr>
<tr>
<td>Diamondback Moth, Imported</td>
<td>active) per acre</td>
<td></td>
</tr>
<tr>
<td>Cabbage-worm, Plant Bugs, Thrrips</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Do not apply more than 0.8 pound</td>
<td></td>
</tr>
<tr>
<td></td>
<td>active ingredient per acre per</td>
<td></td>
</tr>
<tr>
<td></td>
<td>season.</td>
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</table>
California Food and Agricultural Code

- Section 12671 – “It is unlawful to pack, ship, or sell any produce that carries pesticide residue in excess of the permissible tolerance…”

- Section 12971 – “No recommendation shall be in conflict with the registered labeling for the product being recommended.”

- Section 12973 – The use of any pesticide shall not conflict with labeling registered pursuant to this chapter which is delivered with the pesticide or with any limitations applicable to the conditions of any permit issued by the director or commissioner.
Consequences of Illegal Pesticide Residues
“Penalties” when DPR detects illegal pesticide residues:

1. **Stop sale of the contaminated lot in CA**
   (loss of the value of that lot)

2. **Publish results annually on DPR website**
   (potential loss of customers)

3. **Civil penalties against repeat offenders**
   (Separate $10,000 fines to two CA-based importers in August 2010 and May 2011)
Grown in CA

- DPR Contacts the Agricultural Commissioner’s Office in County where commodity grown and provides any information it knows about the source of the commodity.

- County will investigate to determine whether residue the result of a misapplication or drift.

- Could result in destruction of crop, stop harvest of crop remaining in the field and/or civil penalties.
Recent Cases of Illegal Pesticide Residues in California Grown Produce
Propargite on Peaches

- August and September 2010
- Illegal (NTE) propargite residues were detected on three peach samples.
- Propargite is Restricted Material - Use requires a permit - Not registered for use on peaches
- Traced to San Joaquin Valley growers
- 2.4 Millions lbs. of peaches with estimated value of $1.1 million dollars were destroyed
- 2 pesticide dealers fined a total of $105,000 for selling restricted material for unregistered use.
Propargite on Peaches
Phosmet on Tejocotes

- December 2011
- Illegal (NTE) phosmet residues were detected on tejocote samples – native to Mexico and Guatemala
- Traced to San Diego County grower
- Imidan 70-W applied – No tejocote use directions
- County issued Hold /Stop Harvest Order for fruit in storage and not yet harvested
- Grower destroyed remaining fruit - value > $300,000
- Applicator fined $700
- PCA fined $1400
Phosmet on Tejocotes
Methomyl on Strawberries

- May 2013
- Illegal (NTE) methomyl residue detected on a strawberry sample collected at a retail market.
- Traced to Santa Cruz County grower
- Methomyl is Restricted Material – Use requires a permit - Not registered for use on strawberries
- 1093 cartons of strawberries destroyed
- DPR ordered the grower to destroy 10 acres of strawberries – Value > $200,000
- Grower fined $15,000 by DPR
Methomyl on Strawberries
Any questions?

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