2014 Pesticide Residue Monitoring

Presentation at the Agricultural Pest Control Advisory Committee Meeting

9 December 2015

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Goals of DPR Pesticide Residue Monitoring Program

1. Monitor pesticide residues in fresh fruits and vegetables throughout California with emphasis on commodities:
   - Consumed by infants and children (*e.g.* apples, grapes, carrots)
   - Consumed by different ethnic and socioeconomic groups (*e.g.* papaya, cactus, kale)
   - Treated with pesticides listed as carcinogens or reproductive toxicants.
   - With a recent history of a higher incidence of illegal pesticide residues.

Goals of DPR Pesticide Residue Monitoring Program

2. Help keep produce with illegal pesticide residues out of the marketplace.
3. Generate residue data for human health risk assessment of certain pesticides.

What the DPR Pesticide Residue Monitoring Program Samples

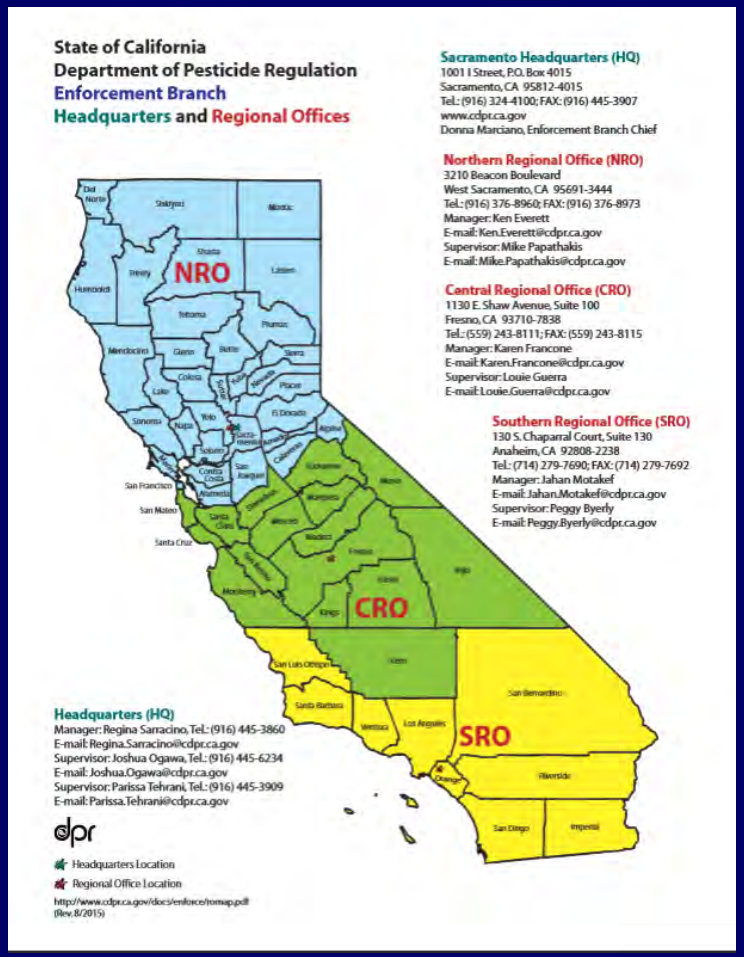
- Commodities derived from plants (no animal products)
- Raw fruits and vegetables (no processed commodities)
- Commodities intended for human consumption (no animal feeds)

Where DPR Samples are Collected

- Wholesale Markets
- Chain Distribution Centers
- Retail Outlets
- Farmers' Markets
- Packing Sheds
- Roadside Stands

Where DPR Samples are Collected

- Throughout the State of California by Enforcement Branch Staff in the three Regional Offices



How many samples does DPR's Residue Monitoring Program collect?

- DPR collects more than 3000 fruit and vegetable samples annually.

Where does the produce DPR samples originate?

- DPR samples both Domestic and Imported Produce.

Fiscal Year Targets:

	% of all samples	
U.S. produce	70%	
Imported produce	30%	
Mexico		15%
China		5%
Other countries		10%

DPR sampling in 2014

- 3,471 samples
  - Approximately 67% Domestic and 33% Imported
  - > 150 different fresh fruits and vegetables

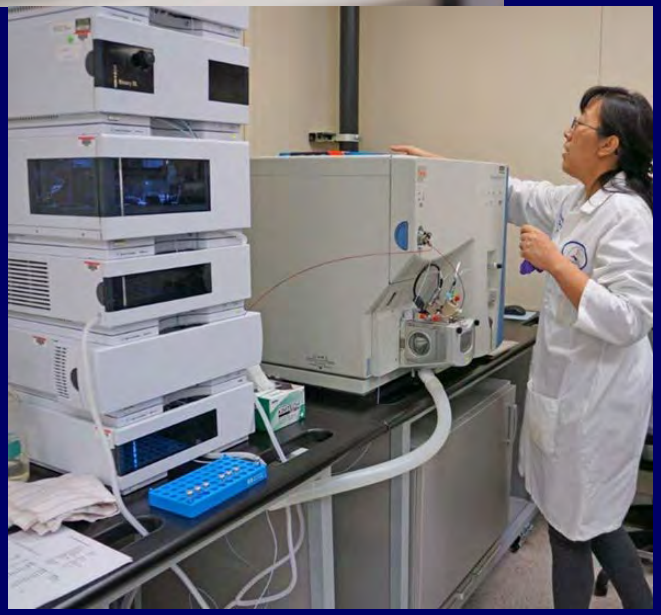
Where are DPR samples analyzed?

DPR Delivers or Ships Samples to CDFA Laboratories in Sacramento and Anaheim

Where are DPR samples analyzed?

DPR Samples are Prepared for Analysis and Analyzed for Pesticide Residues in the CDFA Laboratories

Pesticide Residue Analysis at CDFA Laboratories



- LCMS and GCMS Screens
- > 300 pesticide residues detected
- Detected pesticide residues are measured in parts per million (ppm)
- Minimum detection limit for most detected pesticide residues is 0.01 ppm

Pesticide Residue Tolerances

- Tolerance - The maximum amount of a particular pesticide legally allowed on a given commodity. Known in other countries as Maximum Residue Level (MRL)

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

  Example: Tolerance for acephate on Brussels sprouts is 3 ppm

- U.S. EPA sets a tolerance for residues of a particular pesticide on a food crop when they approve the use of that pesticide on that food crop.

- DPR Residue Monitoring Program enforces U.S. EPA tolerances

Illegal Pesticide Residues
Two Types

1. Over Tolerance (OT):

   A residue of a particular pesticide is detected on a sampled commodity and its amount is greater than the U.S. EPA established tolerance for the pesticide on that commodity.

Example:

The tolerance for malathion residue on apples is 8 ppm.

An 8.5 ppm malathion residue detected on apples is an **OT** illegal pesticide residue.

Illegal Pesticide Residues
Two Types

1. No Tolerance Established (NTE):

   A residue of a particular pesticide is detected on a sampled commodity and there is no U.S. EPA established tolerance for the pesticide on that commodity.

Example:

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

A 0.5 ppm methomyl residue detected on strawberries is an **NTE** illegal pesticide residue.

What happens when illegal pesticide residues are detected?

1. Stop sales and quarantine produce within California.
2. Trace back produce supply chain within California.
3. Warning letters sent to U.S.-based suppliers.
4. Notify U.S. Food and Drug Administration.
5. Notify California Department of Public Health when residue a potential health concern.
6. Results Published on DPR Website.
7. Civil penalties against repeat offenders.

   (In December 2014, DPR imposed a $21,000 civil penalty against a California produce importer with a history of recurring illegal pesticide, mostly on produce from Mexico.)

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.

2014
DPR Pesticide Residue Monitoring Results

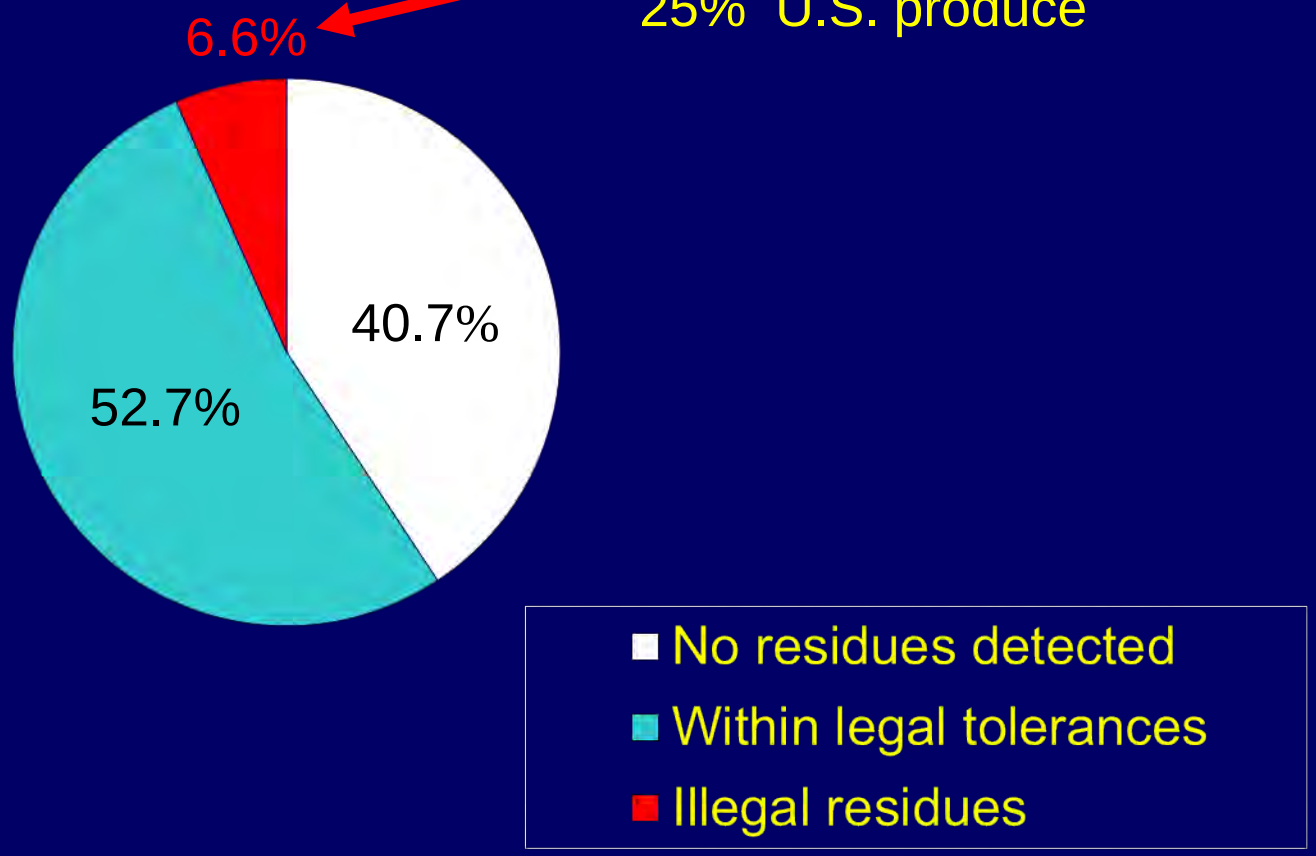
Results: DPR residue sampling, 2014

(n = 3,471 samples)

228 Illegal Samples

75% Imported produce

25% U.S. produce



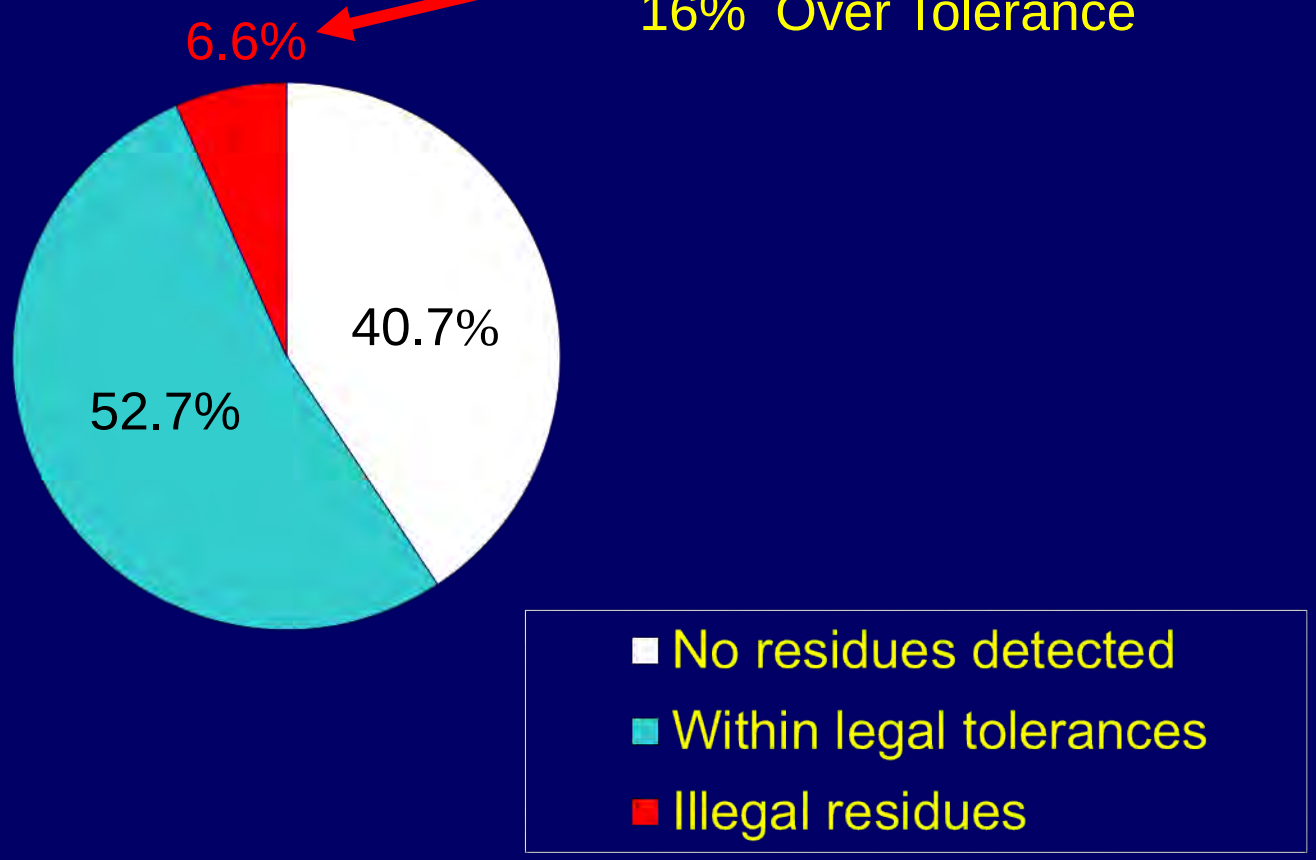
Results: DPR residue sampling, 2014

(n = 3,471 samples)

228 Illegal Samples

84% No Tolerance Established

16% Over Tolerance



Results of Samples of U.S. Grown Produce

<u>DPR results from 2014:</u>

U.S.-grown samples	2,301	
Illegal pesticide residues	47	(2.5%)

97.5% of U.S.-grown samples complied with U.S. tolerances

Results of Samples of Produce labelled California Grown

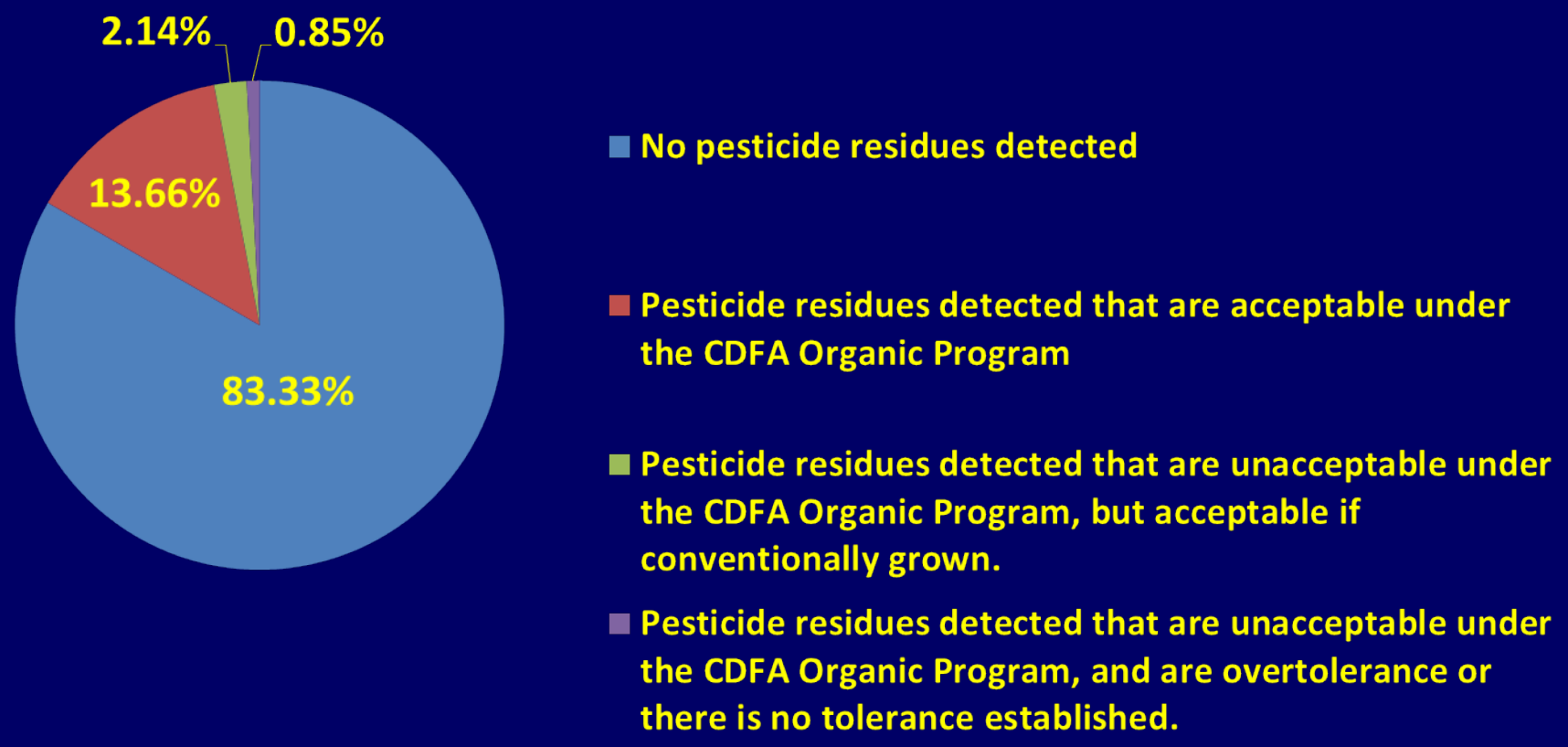
DPR results from 2014:

California-grown samples	1,129	
Illegal pesticide residues	41	(3.6%)

96.4% of California-grown samples complied with U.S. tolerances

Results: DPR organic produce samples, 2014

(n = 234 samples)



2014 Residue Monitoring Results

Commodities from certain geographical locations with the highest proportion of samples with illegal residues:

Commodity and Origin	% of samples with Illegal Residues	
Cactus (Pads and Fruit) grown in Mexico	**46.7 %**	(42 of 90 samples)
Limes grown in Mexico	**26.5 %**	(9 of 34 samples)
Papaya grown in Mexico	**17.1 %**	(6 of 35 samples)
Summer Squash grown in Mexico	**16.7 %**	(10 of 60 samples)
Ginger grown in China	**16.7 %**	(9 of 54 samples)
Tomatillo grown in Mexico	**15.5 %**	(9 of 58 samples)
Spinach grown in United States	**10.0 %**	(11 of 110 samples)
Chili peppers grown in Mexico	**7.9 %**	(6 of 76 samples)
Tomato grown in Mexico	**7.8 %**	(4 of 51 samples)
Nectarine grown in United States	**5.7 %**	(4 of 70 samples)

2014 Residue Monitoring Results

Commodities from certain geographical locations with the lowest proportion of samples with illegal residues:

Commodity and Origin	% of samples with Illegal Residues	
Apples grown in United States	**0 %**	(0 of 136 samples)
Strawberries grown in United States	**0 %**	(0 of 108 samples)
Dry Bulb Onion grown in United States	**0 %**	(0 of 70 samples)
Sweet Corn grown in United States	**0 %**	(0 of 70 samples)
Oranges grown in United States	**0 %**	(0 of 68 samples)
Head Lettuce grown in United States	**0 %**	(0 of 64 samples)
Leaf Lettuce grown in United States	**0 %**	(0 of 63 samples)
Summer squash grown in United States	**0%**	(0 of 63 samples)
Broccoli grown in United States	**0 %**	(0 of 51 samples)
Mushrooms grown in United States	**0 %**	(0 of 43 samples)

Any questions ?

Results available at: http://www.cdpr.ca.gov

Click on “A-Z Index”, then go to “Residue Monitoring Program”

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