

Pesticide Regulations in the U.S. for Cocoa

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National Confectioners Association's

CHOCOLATE
COUNCIL



National Confectioners Association

- Trade association
 - Customer Relations
 - Public Policy, Regulatory
- 350 Manufacturing confectioners
- 8 Cocoa Bean Processors
 - ADM
 - Barry Callebaut
 - Blommer
 - Cargill
 - Guittard
 - Lindt/Ghirardelli
 - Mars
 - Nestle



National Confectioners Association

- Chocolate Council
- Board members represent the chocolate industry in the US
- Focus:
 - Origin Issues
 - Food Safety
 - Promotion



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The Story of Chocolate

Where Is It From?

Learn about the trees, farms and factories that bring us chocolate

What Is It?

Discover ingredients, types and chocolate's role in health

Who Depends On It?

Appreciate chocolate's rich history and its place in today's communities

Savor It

Learn what the labels mean, find recipes and start tasting

Search



Your chocolate has a past.

The treat that now lies quietly in its wrapper carries a story of exotic places, long journeys and small families that raise delicate tropical fruit trees.

As you peel back the wrapper, you're uncovering the cacao tree's seed—and joining people the world over who have turned to this mysterious food for ritual, medicine and sheer pleasure for the past 4,000 years.

How do the beans in farmers' hands become decadent sweets in yours? Let's explore the story of chocolate.

- Where Is It From?
- What Is It?
- Who Depends On It?

Then, savor it.



Photo Gallery



Did You Know?

Spanish royalty gave cakes of cacao in their dowries.

next fact >

Topics to Cover Today

- How pesticides for cocoa beans are regulated in the U.S.
- Regulatory history
- Implications of the Food Safety Modernization Act



Who Regulates Pesticides?

- Pesticides: insecticides, fungicides, herbicides, and other agricultural chemicals.
- Environmental Protection Agency (EPA):
 - EPA reviews the scientific data on all pesticide products before they can be registered (or licensed) for use.
 - If a product is intended for use on food crops, EPA also establishes a tolerance.
- Food and Drug Administration (FDA):
 - FDA is responsible for enforcing tolerances on all foods
 - (Except meat, poultry, and certain egg products – USDA)
 - FDA works with EPA to set "action levels"-- enforcement guidelines for residues of pesticides, such as DDT, that may remain in the environment after use is discontinued.
- US Department of Agriculture (USDA): Monitors and enforces meat, poultry, some egg products, plus state-level monitoring.



U.S. Tolerances for Cocoa Beans

Cacao	Carfentrazone-ethyl	0.1 ppm
Cacao bean & roasted bean	Chlorantraniliprole	0.08 ppm
Cacao bean	Glyphosate	0.2 ppm
Cacao bean	Paraquat	0.05
Cacao bean, chocolate & cocoa powder	Chlorantraniliprole	1.5 ppm
Cacao bean, dried	Pyriproxyfen	0.02 ppm
Cacao bean, dried	Oxyfluorfen	0.05
Cacao bean, dried	Phosphine	0.1 ppm
Cacao bean, roasted bean, postharvest	Cryolite (Fluorine compounds)	20 ppm
Cacao bean, roasted bean, postharvest	Inorganic bromide residues resulting from fumigation with methyl bromide	50 ppm
Cacao bean, roasted bean, postharvest	Pyrethrins	1 ppm
Cacao bean, roasted bean, postharvest	Sulfuryl fluoride	0.2 ppm
Cacao bean, roasted bean, postharvest	Piperonyl butoxide	8 ppm
Cacao bean, dried bean & cocoa powder	Propylene oxide	200 ppm
Cocoa bean, dried bean	Chlorothalonil	0.05 ppm



Import Sampling

- Import samples are collected at point of entry into US commerce (at port)
- Illegal residues = refused entry
- Detention Without Physical Examination (DWPE) possible for future lots
 - Specific growers, manufacturers, shippers, or to a geographic area or country
 - Removal not easy. Minimum of 5 consecutive shipments with non-violative residues along with effective, detailed approach to correcting the problem.



Factors to Determine Sampling

- Available foreign pesticide usage data
- Dietary significance of the food
- Volume of imported food
- Origin of imported food
- Chemical characteristics and toxicity of the pesticides used

Focused Sampling Program



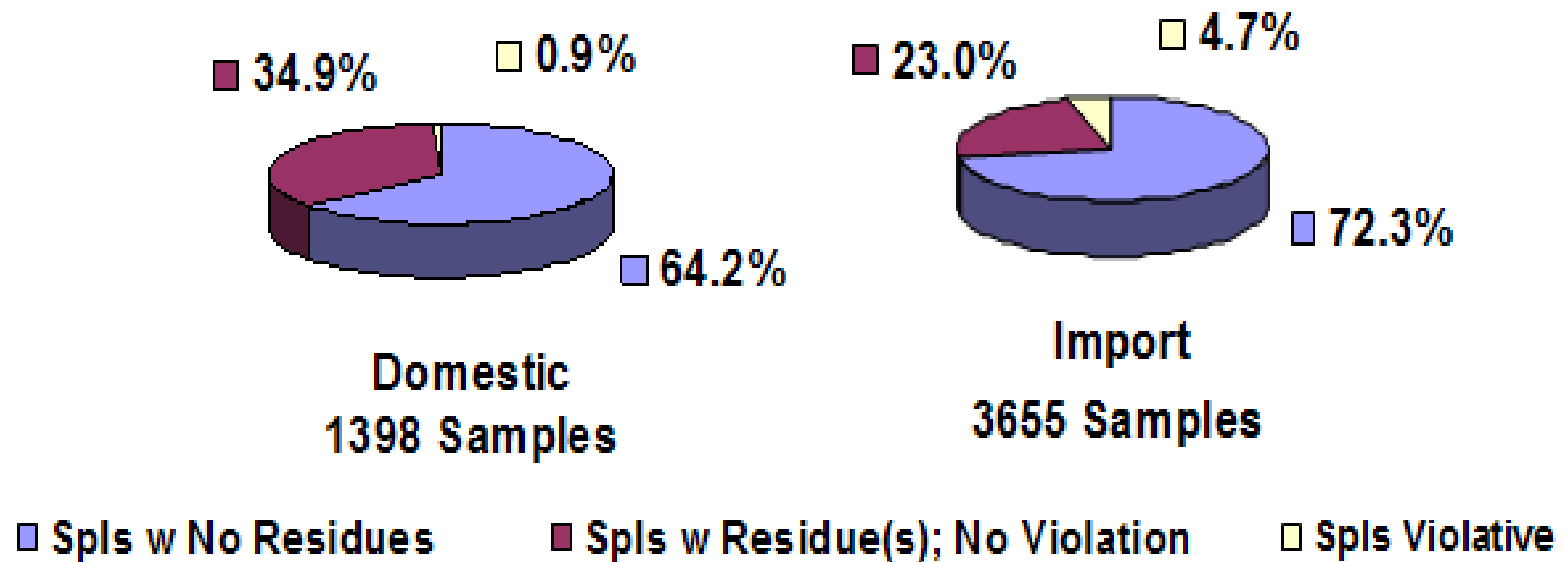
Analyses

- US FDA tests cocoa beans without shell
- Multi-residue methods – 100s of pesticides per analysis
- Finished chocolate/confectionery or other product sampling does NOT allow dilution factors...the same chemical tolerance level applies to both the commodity and finished confection



Violation Rates - 2008

FDA Pesticide Sampling Program



	Import	Domestic
2008	4.7%	0.9%
Typical	2.6 – 6.2%	0.7-2.4%



Implications of 2008 Data

Import Commodities That May Warrant Special Attention Based on 2008 Data

Commodity	No. Samples Analyzed	Violation Rate (%)
Kava kava	7	57.1
Capsicums	10	50.0
Basil	8	50.0
Ginseng, herbal and botanical, other than tea*	29	37.9
Pepinos (tropical fruit)	14	28.6
Papaya *	20	25.0
Tea, green	26	23.0
Pepper, hot, dried or paste	37	16.2
String beans	86	10.5

* Indicates commodity was on the FY 2007 table of import commodities warranting special attention.



Implications of 2008 Data

Importing Countries That May Warrant Special Attention Based on 2008 Data

Country	No. Samples Analyzed	Violation Rate (%)
Taiwan	50	14.0
Guatemala *	100	9.0
Ecuador *	63	7.7

* Indicates country was on the FY 2007 table of importing countries warranting special attention.



Sampling - Cocoa Origin Countries

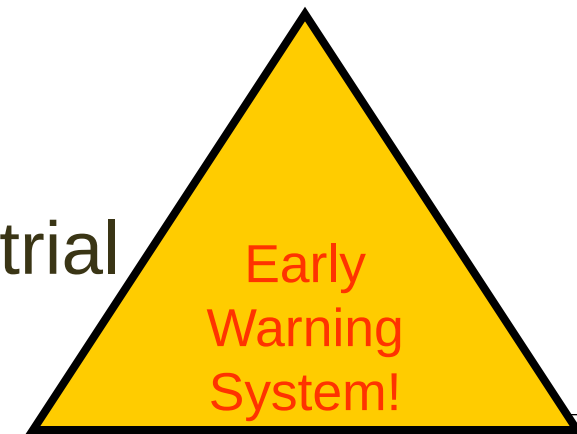
2008 Data; Not cocoa-specific

Colombia	31
Costa Rica	23
Dominican Republic	78
Ecuador	63
Indonesia	18
Mexico	1041
Ivory Coast	<10
Malaysia	<10
Nigeria	<10
Trinidad & Tobago	<10



Finished Product Monitoring

- FDA's Total Diet Study
- Foods that are prepared table-ready for consumption
- Typical diet "market basket" representing about 300 foods each
- Regional representation
- Pesticides, toxic and nutrient, industrial chemicals, other contaminants
- More sensitive methods of testing
 - 0.1 ppb
- Not regulatory, but CAN lead to investigation



Total Diet Study 2008

Most Frequently Found Residues - from 916 samples, all foods

Pesticide ²	Total	%	Range, ppm
DDT	204	22	0.0001-0.090
Malathion	112	12	0.0003-0.031
Dieldrin	98	11	0.0001-0.011
Endosulfan	97	11	0.0001-0.0645
Quintozene	88	10	0.0001-0.0217
Chlorpyrifos methyl	86	9	0.0001-0.025
Hexachlorobenzene	73	8	0.0001-0.001
Chlorpropham	66	7	0.0005-4.901
Chlorpyrifos	64	7	0.0002-0.063
Permethrin	44	5	0.0003-1.786
Thiabendazole ³	37	4	0.001-0.435
Carbaryl ⁴	27	3	0.0001-0.104
Phenylphenol, o-	23	3	0.003-0.475
Pirimiphos methyl	23	3	0.0001-0.363
Cypermethrin	19	2	0.0004-0.827
Benomyl ³	15	2	0.010-0.266
Bifenthrin	14	2	0.001-0.056

Total Diet Study - 2008

- Domestic – tested 1 confectionery sample, finished product
 - No residue detected
 - Imported – tested candy, chocolate, and cocoa products
 - 26 samples
 - 84.6% samples without residue
 - 0 samples with violative residue (without tolerance or over tolerance)
- VERY SMALL proportion of confectionery was sampled and analyzed.



Food Environment in the U.S.

- Hypersensitive to food origins – where and how food is grown, sustainability
- Nutrition
- Anti-Processed foods
- Food safety – MAJOR recalls in recent years
 - Spinach, Peppers, Melamine, Peanuts



Food Safety Modernization Act

- Signed into law at end of 2010
- Major new authorities for FDA
- Significant new procedures for importers



Imports

Hazard Analysis / Preventive Controls

- All facilities required to register with FDA must implement a hazard analysis and preventive controls plan
 - Biological, Chemical, Physical Hazards
 - “Including pesticides, natural toxins,” etc
- Includes port facilities where cocoa beans last processed (fumigated)
- Includes facilities that process beans in order to export intermediate chocolate inputs
- Includes U.S. cocoa bean processors
- June 2012 compliance date



Imports

Inspection

- FDA will inspect more foreign facilities
- FDA will inspect food imports according to risk
 - The known safety risks of the imported food
 - The known safety risks of the countries or regions of origin and transport of the imported food
 - The importer's compliance history including recalls, outbreaks, and violations
 - The rigor and effectiveness of the importer's Foreign Supplier Verification Program
 - Whether the importer participates in the Voluntary Qualified Importer Program
 - Whether the food or the facility that manufactured, processed, packed, or held the food has been certified by an accredited third-party auditor; and



Importers

Foreign Supplier Verification Program

- Importer must perform risk-based activities to verify that the food it imports is produced in a facility that has a hazard analysis/preventive control plan and is not misbranded or mislabeled. *May include:*
 - monitoring records of shipments
 - lot-by-lot certification
 - annual on-site inspections of foreign suppliers
 - checking the hazard analysis and prevent controls plans of foreign suppliers
 - **periodic sampling and testing of shipments**
- The term “importer” means (a) the U.S. owner or consignee of the article of food at the time of entry into the United States
- Compliance by end 2012



Importers

Voluntary Qualified Importer Program

- Importer must import food from a facility that has been certified by an accredited third-party auditor
- Certificate must accompany shipment
- Notice, application & fee to FDA, renew every 3 years
- Factors for acceptance to program:
 - the known safety risks of the food
 - the compliance history of the foreign suppliers used by the importer
 - the importer's Foreign Supplier Verification Program and food safety practices
 - the importer's regulatory history
 - the regulatory system in the country of export,
 - the potential risk of intentional adulteration
 - other factors as FDA deems appropriate.



Third Party Auditors

- FDA moving toward system that will rely heavily on third party audits
 - Facility certification
 - Food Import Certificate
- Conduct regulatory and consultative audits
- FDA may withdraw accreditation of auditor if a food he/she audited is linked to an outbreak of foodborne illness
- Significant responsibility with auditor



Accredited Labs

- For regulatory audits or purposes, only labs accredited by FDA may be used
- Results will be sent directly to FDA or made available to FDA
- FDA to post list of accredited labs on website
- Eventually more labs available
- Opportunity for regional labs in W Africa, SE Asia, S America



Traceability

- Bioterrorism Act 2001 – one up/one back traceability requirement already in place for all registered facilities
- New additional requirements for “high risk” foods.
- Cocoa could be designated “high risk” due to *Salmonella*.
- NCA will work with FDA to minimize burden to cocoa industry



Summary

- Historically, pesticides in cocoa have not been a major focus of US regulators.
- FDA monitoring and regulatory data do not indicate a reason for FDA concern.
- New food safety requirements will lead to more frequent and consistent testing.
- Should pesticides on cocoa become a regulatory concern, implications for trade are significant.
- Two-year window before compliance



Summary

- Pesticides are an important input to growing cocoa
- Therefore...
 1. **Good Agricultural Practices**
 2. **Integrated pest management**



A horizontal band of cocoa beans, showing a dense texture of small, brown, oval-shaped seeds.

THANK YOU!

