

# The Positive List System in Japan and Our Approach to the Issues of Pesticide Residues in Cocoa

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# Outline of Positive List System for Agricultural Chemical Residues

## 【 Current Regulation 】

Pesticides, Feed Additives,  
and Veterinary Drugs

Chemicals for which  
MRLs are established

283 substances

MRLs for 250 Pesticides and  
33 Veterinary Drugs



Foods containing chemicals  
above the MRLs are enjoined  
from domestic distribution

Chemicals for which MRLs  
are not established



Basically, even foods found to  
contain chemicals are not  
enjoined from distribution.

## 【 Enforcement of Positive List System (May 29, 2006~) 】

Pesticides, Feed Additives and Veterinary Drugs

Chemicals for which  
MRLs are established

799 substances

Establishment of provisional  
MRLs for agricultural  
chemicals, considering Codex  
standards, Japanese  
registration withholding  
limits, and other standards  
established based upon  
scientific evaluation

758 substances



Acceleration of the  
establishment of MRLs



Foods containing chemicals  
above the MRLs are enjoined  
from domestic distribution.

Chemicals for which  
MRLs are not  
established

Establishment of a  
certain level that is  
determined to pose no  
adverse health effects

0.01 ppm



Foods found to contain  
chemicals above the  
level are enjoined from  
domestic distribution.

Chemicals  
designated by  
MHLW

Chemicals that do  
not pose adverse  
health effects

65 substances



Not subject to the  
positive list system

Quotation from the website of Ministry of Health, Labour and Welfare

<http://www.mhlw.go.jp/english/topics/foodsafety/positivelist060228/introduction.html>

# MRLs on Cocoa Beans and Cocoa Products

- (1) The portion of cocoa beans to be analyzed shall be whole beans with shells.
- (2) Most of the provisional MRLs established on cocoa beans came from the then standards of CODEX, Australia, Canada, EU, New Zealand and United States. The individual standards of France, The Netherlands and Germany at that time were also referred to for some of the particular agricultural chemicals in view of the peculiar circumstances of the production and the distribution of cocoa beans.
- (3) The uniform limit of 0.01ppm shall apply to all the agricultural chemicals except for those (currently 125 chemical substances) on which the specific MRLs have been established and those (currently 19 chemical substances) that should be “N.D.” in any food.
- (4) The uniform limit of 0.01ppm shall apply to cocoa products. However, if the residual level of the agricultural chemical on cocoa beans is found complying with its MRL, then it's considered as that cocoa products made from such cocoa beans comply with the Positive List System regardless of the residual level in cocoa products.

# Reference

- (1) Introduction of the Positive List System for Agricultural Chemical Residues in Foods (Department of Food Safety, Ministry of Health, Labour and Welfare (“MHLW”))

<http://www.mhlw.go.jp/english/topics/foodsafety/positivelist060228/index.html>

- (2) Analytical Methods for Residual Compositional Substances of Agricultural Chemicals, Feed Additives, and Veterinary Drugs in Food (MHLW)

Page-13 Multiresidue Method for Agricultural Chemicals by GC/MS

<http://www.mhlw.go.jp/english/topics/foodsafety/positivelist060228/dl/060526-1a.pdf>

# CCAJ's Activities before The Enforcement of Positive List System

Prior to the enforcement of Positive List System (“PLS”) in Japan, CCAJ visited major cocoa producing countries and;

(1)made the related government authorities and industry bodies (such as exporters associations there) aware of the introduction of PLS and the new MRLs established on cocoa beans

(2)consulted with them whether it would be possible to conduct agro chemical residue analysis (with Japanese official analysis methods) prior to shipment in each country

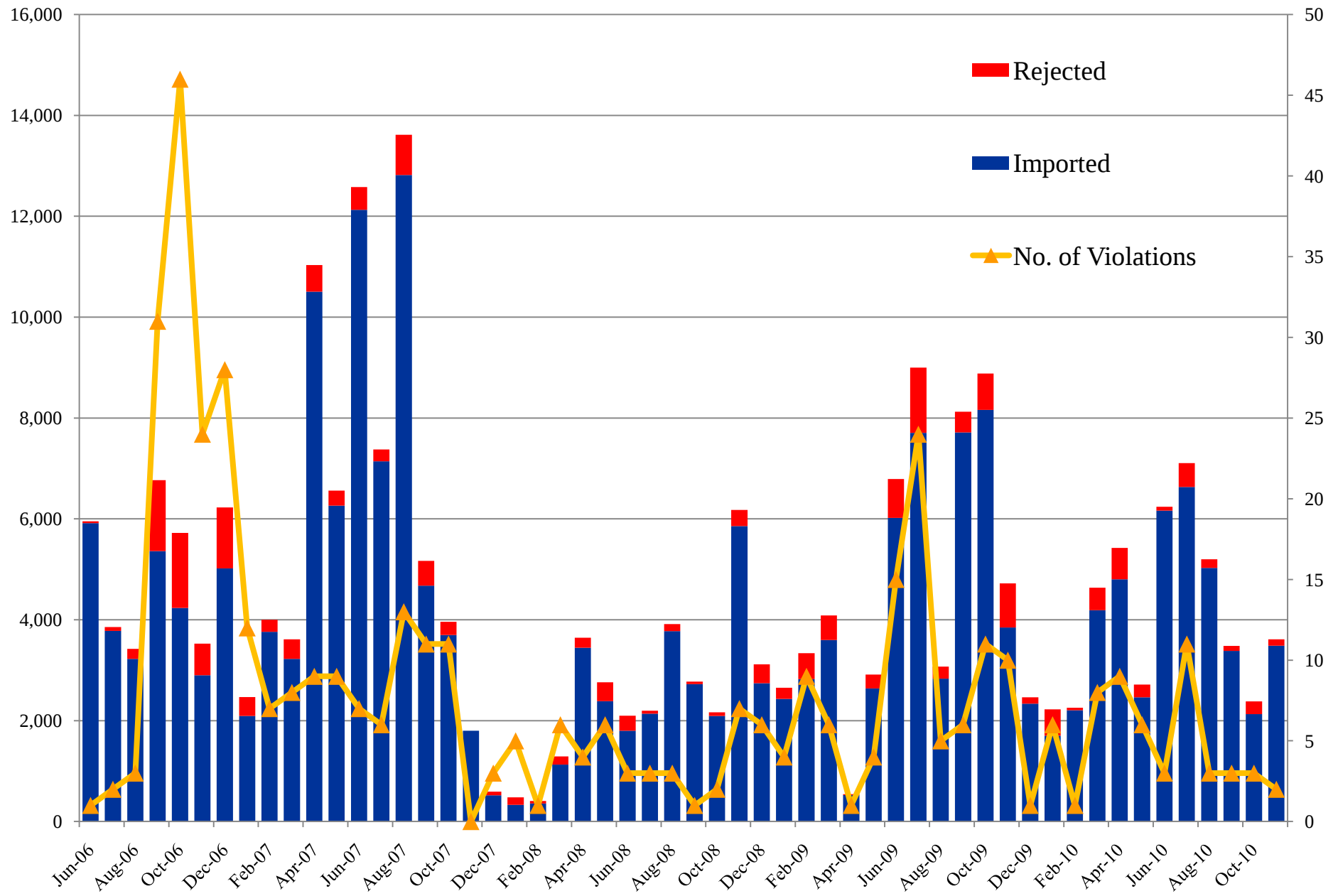
(3)visited cocoa farmers, plantations, warehouses, agro chemical shops and agro chemical companies to see the actual conditions of their agro chemical usage, in order to find causes of the agro chemical residues that were detected in cocoa beans by monitoring tests in the past

(4)requested the government authorities and industry bodies to conduct educational campaigns toward cocoa farmers and local buyers with posters, newspapers, radiobroadcasts, TV, etc., such as telling “Don’t spray with pesticides on the cocoa beans or jute bags.”

# Cocoa Beans Imported vs. Rejected (in M/T) by Month in Japan

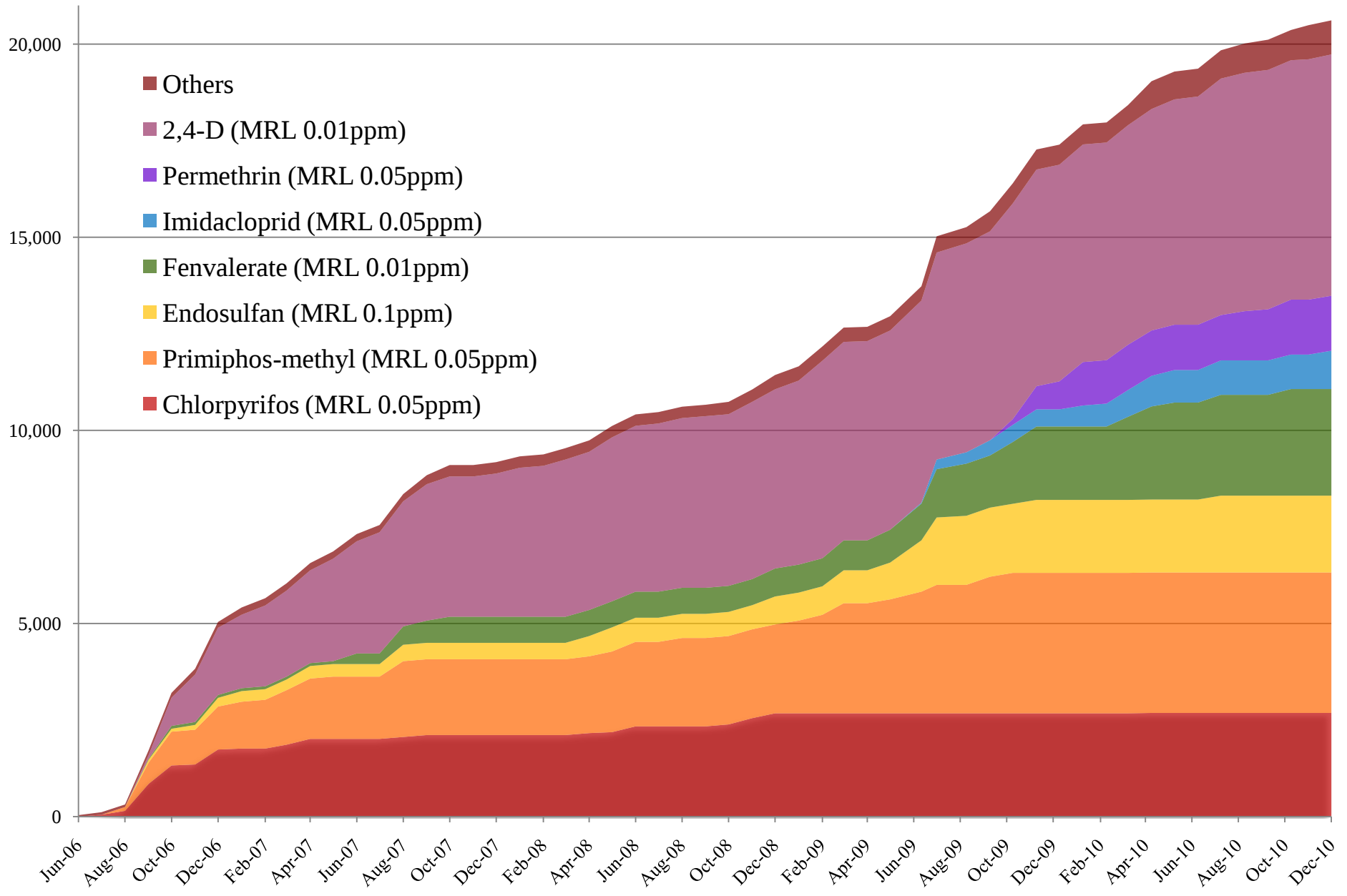
M/T

No.



M/T

# Cumulative Total (in M/T) of Rejected Cocoa Beans in Japan, by Substance



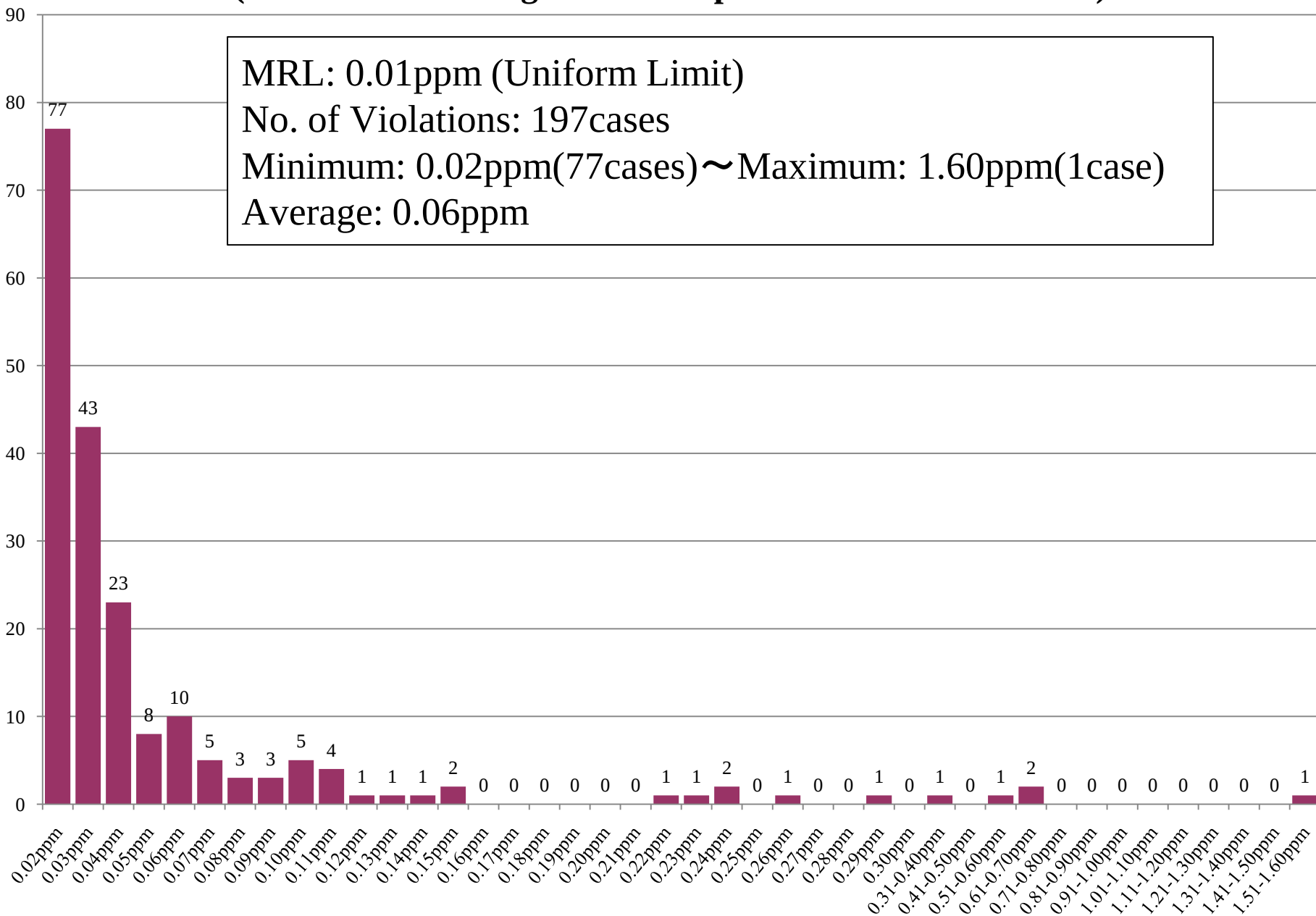
## No. of Violations with 2,4-D, by Level of Detection (on the list of strategic/recorded pesticides for use in cocoa)

MRL: 0.01ppm (Uniform Limit)

No. of Violations: 197cases

Minimum: 0.02ppm(77cases) ~ Maximum: 1.60ppm(1case)

Average: 0.06ppm



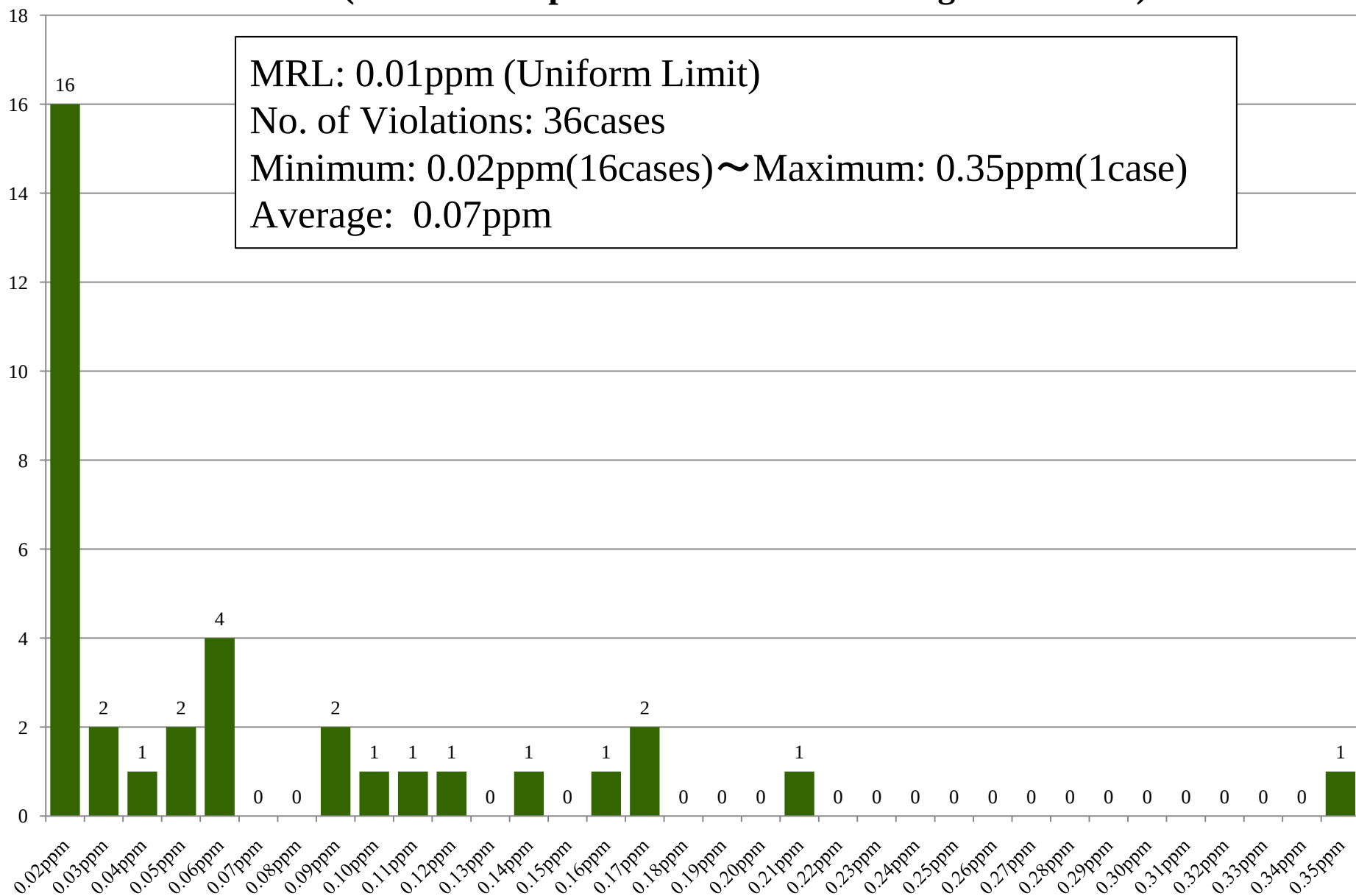
## No. of Violations with Fenvalerate, by Level of Detection (on the list of pesticides to be used with great caution)

MRL: 0.01ppm (Uniform Limit)

No. of Violations: 36cases

Minimum: 0.02ppm(16cases) ~ Maximum: 0.35ppm(1case)

Average: 0.07ppm



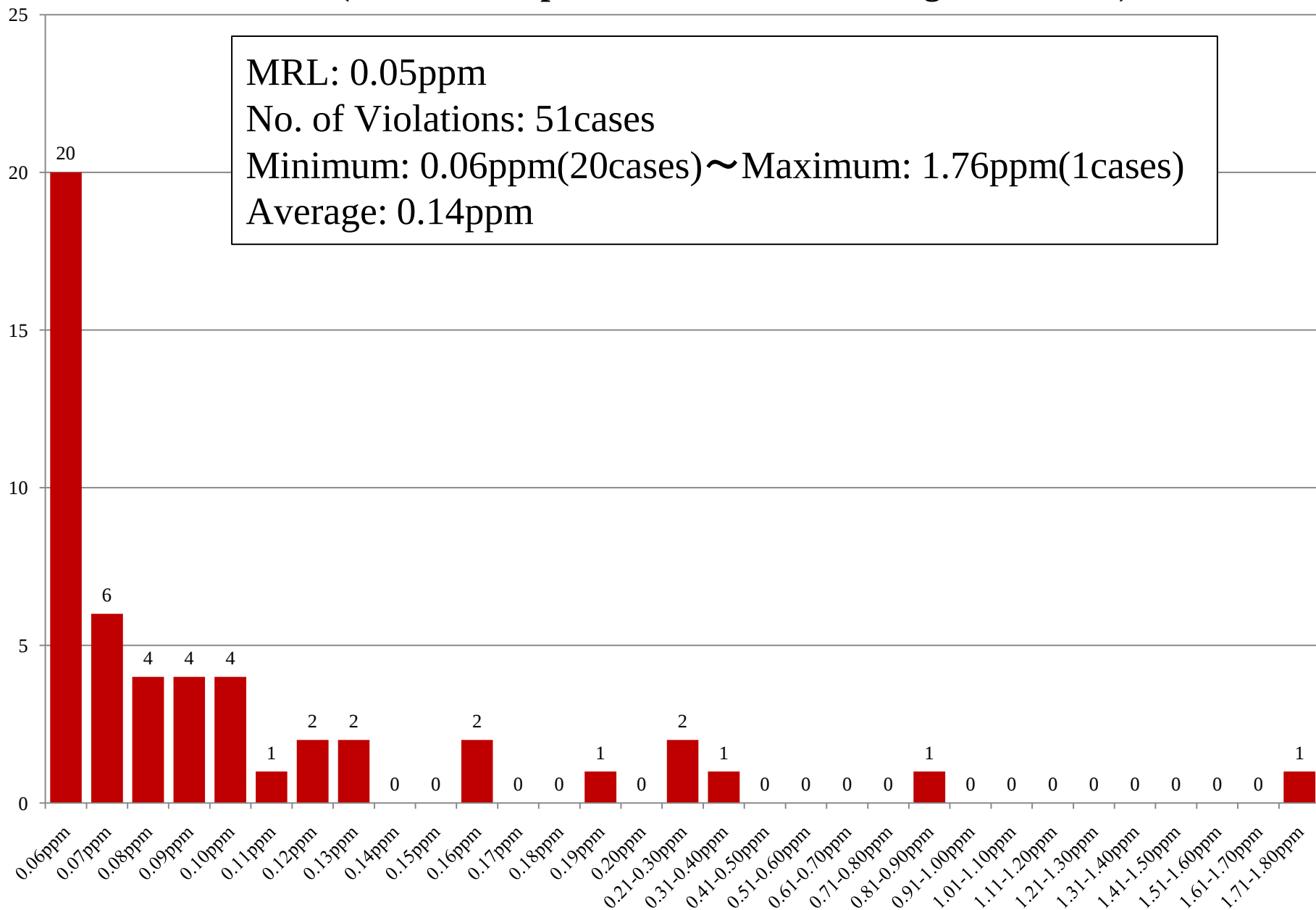
## No. of Violations with Chlorpyrifos, by Level of Detection (on the list of pesticides to be used with great caution)

MRL: 0.05ppm

No. of Violations: 51cases

Minimum: 0.06ppm(20cases) ~ Maximum: 1.76ppm(1cases)

Average: 0.14ppm



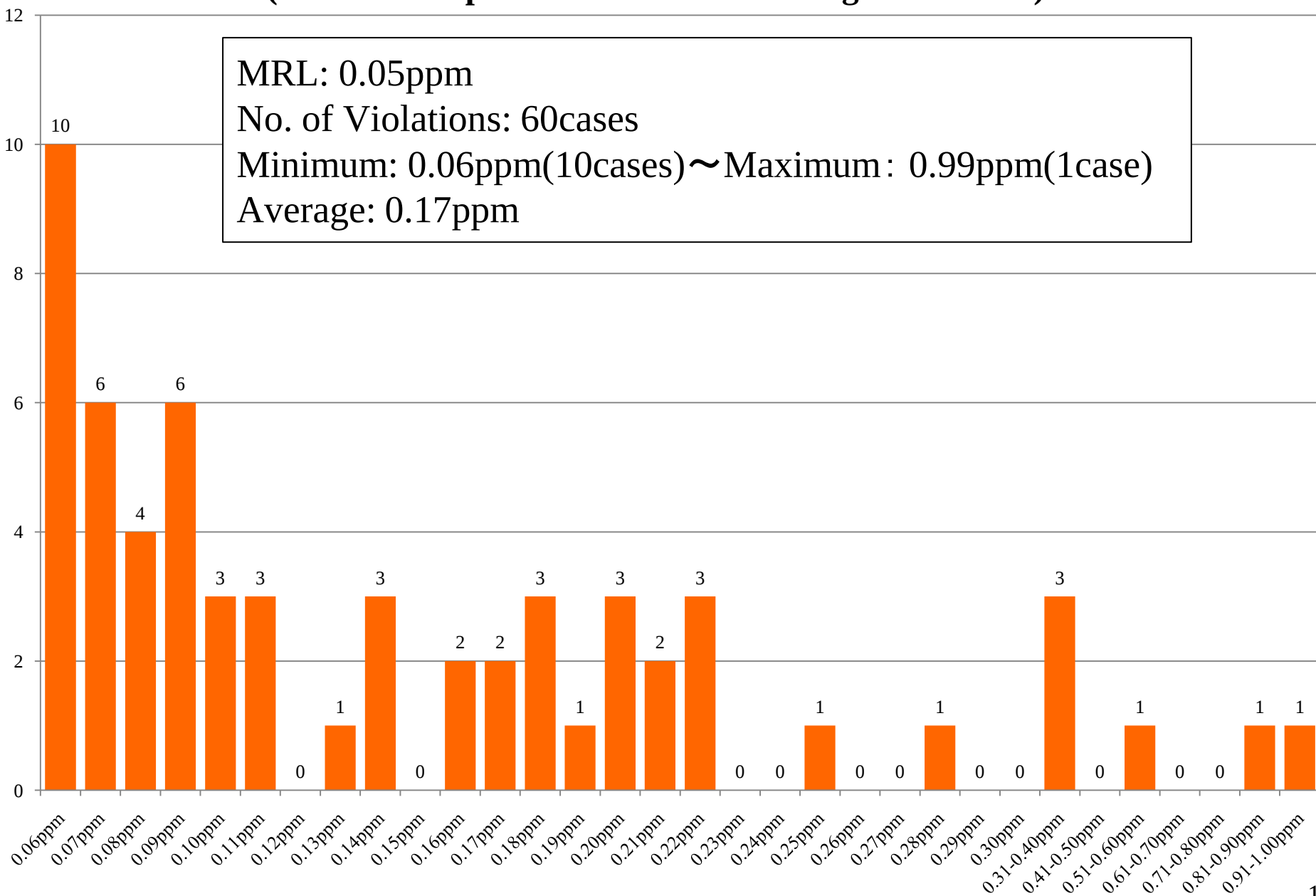
## No. of Violations with Pirimiphos-methyl, by Level of Detection (on the list of pesticides to be used with great caution)

MRL: 0.05ppm

No. of Violations: 60cases

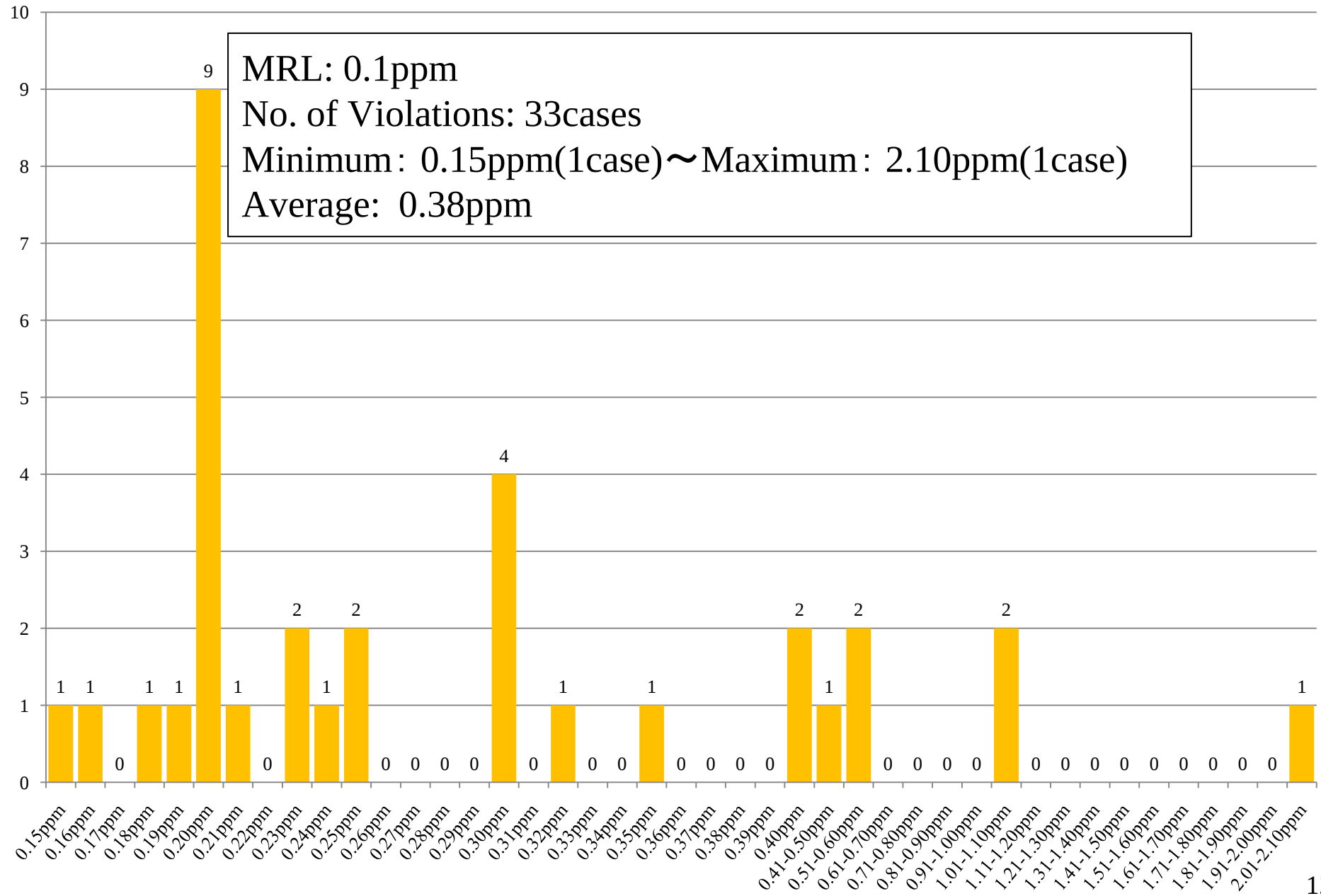
Minimum: 0.06ppm(10cases) ~ Maximum: 0.99ppm(1case)

Average: 0.17ppm



## No. of Violations with Endosulfan, by Level of Detection (on the list of pesticides that must not be used for cocoa)

NO.



# CCAJ's Activities after The Enforcement of PLS

After the enforcement of PLS, while we, as a whole chocolate and cocoa industry in Japan, are making our every effort to comply with the PLS in Japan, we have had our delegations frequently visit cocoa producing countries;

(1)to investigate causes of the agro chemical residue problems together with the producing countries, in order to reduce the number of violations of the PLS

(2)to work in cooperation with the producing countries in agro chemical residue analysis, in order to realize the actual situation of cocoa beans contamination

We also had agro chemical residue analysis operators from a major producing country trained in Japan.

When EU enforced their new pesticide residue legislation in September 2008, the difference between Japanese PLS and EU's started being considered as a big problem. Since we realized the necessity of harmonization of Japanese PLS with the EU legislation, we resumed our serious negotiation with MHLW for harmonization.

# Review of the Part of Cocoa Beans to be Analyzed

- (1) Since the very beginning of the enforcement of PLS in Japan, we have raised a question mark about the part of cocoa beans to be analyzed under the PLS.

When EU's pesticide residue legislation came into force prescribing that their MRLs apply to “cocoa beans after removal of shells”, we again requested MHLW to review the part of cocoa beans to be analyzed (and change it to “cocoa beans after removal of shells”) in July 2009.

- (2) We studied methods to remove shells of cocoa beans without heating, and then we submitted the results of our study to MHLW in addition to the above request.

# Concrete Plan of amendment to the Part of Cocoa Beans to be Analyzed

- (1) Agro chemicals for which cocoa beans after removal of shells shall be analyzed
  - a. 26 agro chemicals, for which the MRLs of individual EU countries (France, The Netherlands, Germany) were adopted at the time of introduction of PLS
  - b. 70 agro chemicals, for which the levels corresponding to the limits of determination were employed as the provisional MRLs because it was considered difficult to analyze at the level of the uniform limit (0.01ppm)
  - c. those agro chemicals, to which the uniform limit (0.01ppm) applies
- (2) Agro chemicals for which whole cocoa beans shall be analyzed

For all the other agro chemicals than the above a, b and c, whole cocoa beans shall continue to be analyzed.

# The Part of Cocoa Beans to be Analyzed for each Agro Chemical that is causing violations of the PLS in Japan

## ◆ Cocoa beans after removal of shells to be analyzed

- |                                     |                                |
|-------------------------------------|--------------------------------|
| (1) Imidacloprid (MRL 0.05ppm)      | (2) 2,4-D (MRL 0.01ppm)        |
| (3) Fenvalerate (MRL 0.01ppm)       | (4) Chlorpyrifos (MRL 0.05ppm) |
| (5) Pirimiphos-methyl (MRL 0.05ppm) | (6) Permethrin (MRL 0.05ppm)   |
| (7) Cypermethrin (MRL 0.03ppm)      | (8) Thiamethoxam (MRL 0.01ppm) |

## ◆ Whole cocoa beans to be analyzed

- |                               |                          |
|-------------------------------|--------------------------|
| (1) Endosulfan (MRL 0.1ppm)*  | (2) Diuron (MRL 0.02ppm) |
| (3) Fenitrothion (MRL 0.1ppm) |                          |

# Methods to Remove Shells of Cocoa Beans without Heating

## (1) Method with a Food Processor and a Sieve



100V- 120W



3.5mesh (5.6m/m)

**Cocoa Beans 250g**

**Food Processor**

15sec.(5sec. x 3times intermittently)

**Sieve**

**on the Sieve**

**through the Sieve**

- for what remains on the sieve, repeat the above process again and again
- repeat the above process until almost nothing remains on the sieve
- collect all what have gone through the sieve (i.e. broken nibs and broken shells)
- process 250g of cocoa beans 4 times to get total 1kg of broken nibs and broken shells

<Breaking>

## (2) Method with a Power Cutting Mill



Retsch Power Cutting Mill SM2000

695 r.p.m. / Screen 10mm

**Cocoa Beans 1kg**

**Power Cutting Mill**

Take 5 to 10min. to feed cocoa beans

**Broken Nibs and Broken Shells**

<Winnowing>



JOHN & GORDON (altered for the inside unit to be removable and washable)  
Airflow adjustable with a dial

Shells (Husks)

Nibs

# Review of the MRLs on Cocoa Beans

- (1) Although we have been requesting MHLW to review our MRLs and amend them all to be in line with EU's MRLs, it's difficult for MHLW to adopt EU's due to lack of scientific data that backs up the MRLs.
- (2) As for 2,4-D, although it is on the list of strategic/recommended pesticides for use against weeds (APPENDIX 3 of "Pesticide Use in Cocoa" – 2<sup>nd</sup> Edition, December 2009), no specific MRL has been established on cocoa beans under Japanese PLS and thus the uniform limit (0.01ppm) currently applies.

Since we realized that 0.01ppm is too tight for 2,4-D, we have been requesting MHLW to establish a specific MRL for 2,4-D on cocoa beans A.S.A.P.

## For the Future

- (1) We, as CCAJ, will continue to work on the related authorities to make “cocoa beans after removal of shells” be the part of cocoa beans to be analyzed for “all” agro chemicals.
- (2) For that purpose, we would like to ask that everyone work on CODEX to change their standards from applying to “whole commodity(cocoa beans)” to applying to “cocoa beans after removal of shells” and then we have a common rule worldwide.
- (3) We would also like to ask that everyone concerned work to make the part of cocoa beans to be analyzed all “cocoa beans after removal of shells” not only for pesticide residues but also for mycotoxin and heavy metals.

Last but not least, we would like to express our deepest gratitude to ICCO, ECA, CAOBISCO, ICA, Syndicat du Chocolat, EU authorities, French authority DGCCRF and all the others concerned for supporting us in tackling Japan's pesticide residue problems.