# Current International guidelines/regulations for consumer protection and international trade

## Are we on the right direction?

María Verónica Cesio & Horacio Heinzen

IAEA 60 Years Atoms for Peace and Development

RALACA Red Analítica de Latinoamérica y el Caribe

# Como queremos que sea nuestra comida?

Nutritiva

Segura

Saludable

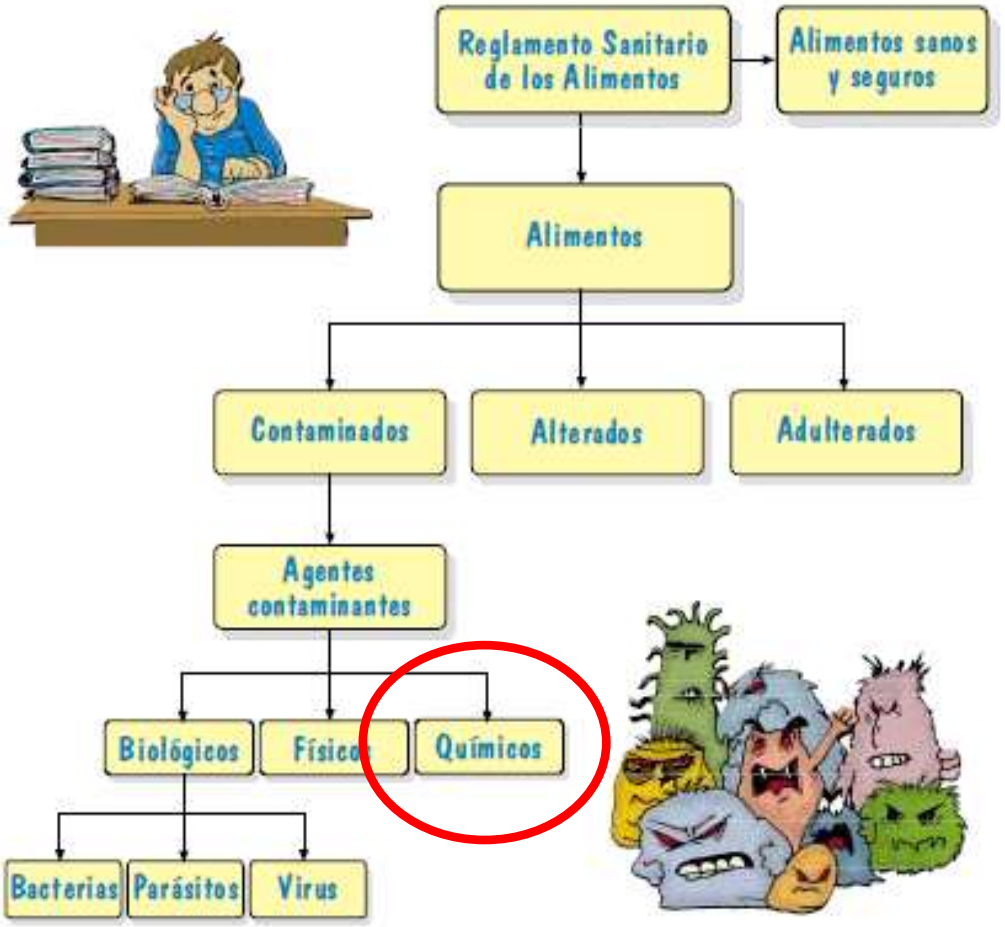
Sustentable

Seguridad alimentaria

En la alimentación saludable influyen, además de la calidad y cantidad de los nutrientes ingeridos, el que los alimentos que representan el vehículo de entrada de los nutrientes al organismo sean sanos y seguros

## ALIMENTOS SANOS Y SEGUROS. AGENTES CONTAMINANTES

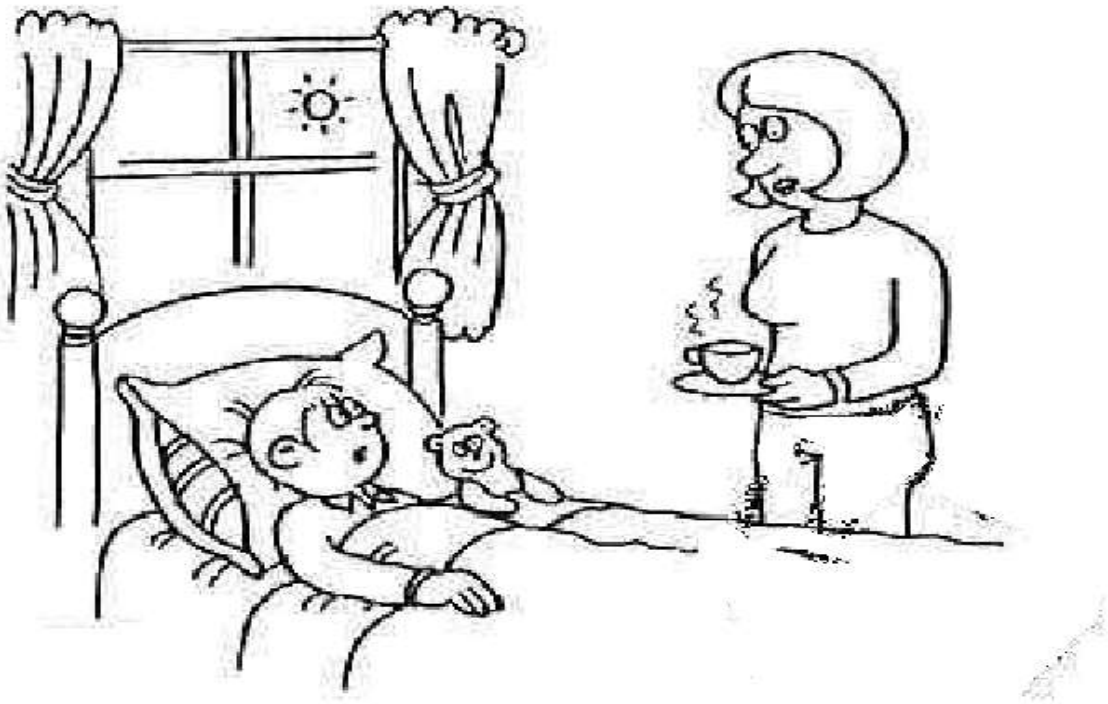





http://www.fao.org/docrep/014/am401s/am401s05.pdf

# Eurobarometro 2010: pesticidas son la primer prioridad!!

## Impacto de las percepciones de los consumidores sobre el riesgo

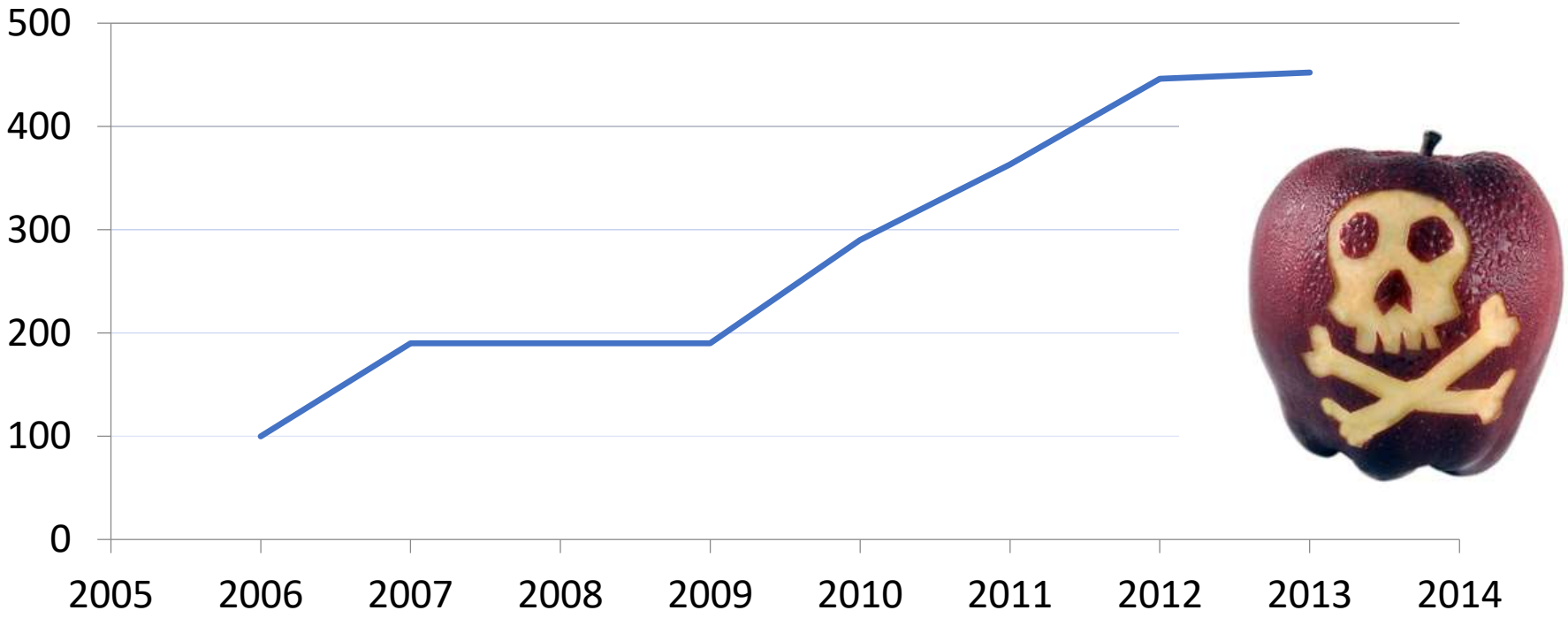


"I feel ill Mum. I think it's the pesticides in the veges. From now on I'm going to have to eat chips,burgers and pizzas."

Me siento enfermo mami, Creo que son los pesticidas en las hortalizas…. De ahora en mas, solo voy a comer chips, hamburgesas y pizzas

# Necesitamos un balance entre las percepciones y el riesgo basado en evidencia cientifica

# Acceso a la información oficial




**The Rapid Alert System for Food and Feed, 2013**
**Notifications for Pesticide Residues**

id Alert System for Food and Feed. 2011, 2012, 2013 Annual Report

Las demandas del cosumidor cambian constantemente

Mejorar la educacion de los consumidores

La cadena de sumistro es cada vez mas compleja

GMP en la seguridad del producto

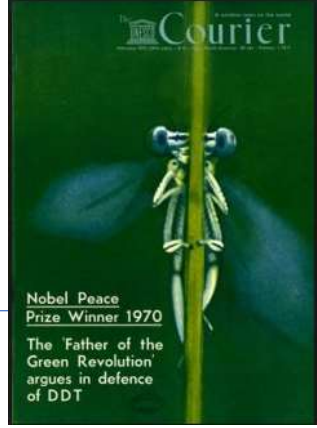
Globalidad del comercio mundial de alimentos

Son necesarias nuevas regulaciones

Rapida globalizacion  aumenta la probabildiad contaminacion

GACT

# La controversia




- The destiny of world civilization depends upon providing a decent standard of living for all mankind. It has been said that "Universal and lasting peace can be established only if it is based upon social justice. If you desire peace, cultivate justice". Almost certainly, however, the first essential component of social justice is adequate food for all mankind. I feel that the aforementioned guiding principle must be modified to read: "If you desire peace, cultivate justice, but at the same time cultivate the fields efficiently to produce more bread; otherwise there will be no peace

N Burlong, Premio Nobel de la Paz 1970

# Aseguramiento de la producción = Seguridad alimentaria?

**Aseguramiento de la producción empleando fitosanitarios a cualquier precio vs seguridad alimentaria**

**Aseguramiento de la producción ≠ Seguridad alimentaria !**

# La controversia

- “The withdrawal of DDT would be a major tragedy in the chapter of human health and is unjustifiable in the light of present knowledge. Vast populations in malarious areas of the world would be condemned to the frightening ravages of endemic and epidemic malaria.” World Health Organization February 12. 1971

The 'Father of the Green Revolution' speaks out

# IN DEFENCE OF DDT AND OTHER PESTICIDES

**Are pesticides and chemical fertilizers as harmful as some people claim? The "Unesco Courier" has devoted space in the past to opposing views on this controversial question, on the one hand favourable to DDT and pesticides (Gene Gregory in "The Magic of Modern Chemistry", June 1971) and a number of articles pointing to the danger of DDT and other pesticides ("Man the Killer of Nature", a U.N. report on problems of the environment, August-September 1970; "SOS Environment", a message from 2,200 scientists, July 1971). In addition, our Letters to the Editor column has contained many letters opposing the use of DDT etc.**

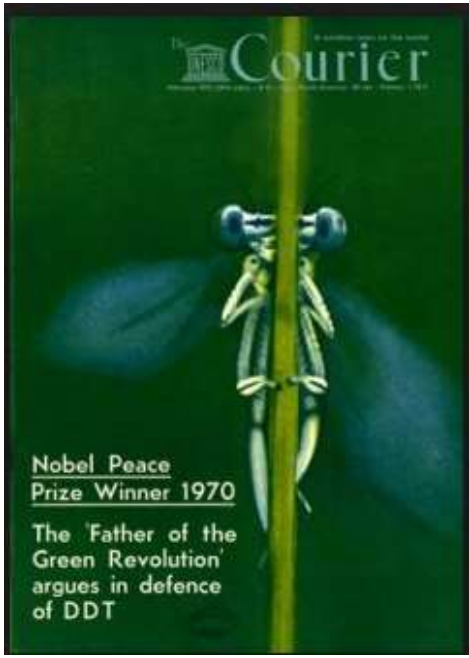
**In this issue we publish large extracts from the 1971 McDougall Memorial Lecture delivered on November 8, 1971, at the Food and Agriculture Organization in Rome by Nobel Peace Prize winner Norman E. Borlaug. Dr Borlaug was awarded the Nobel Prize for his contribution to the Green Revolution in agriculture (see page 6). His address was entitled "Mankind and Civilization at Another Crossroads". Here Dr. Borlaug makes a vigorous refutation of the campaigns being staged in the name of the protection of the environment against chemical products such as DDT and certain fertilizers. Dr. Borlaug considers that not only do these products do a great deal more good than harm but that their use is essential to the survival of a large portion of mankind particularly in the developing world.**

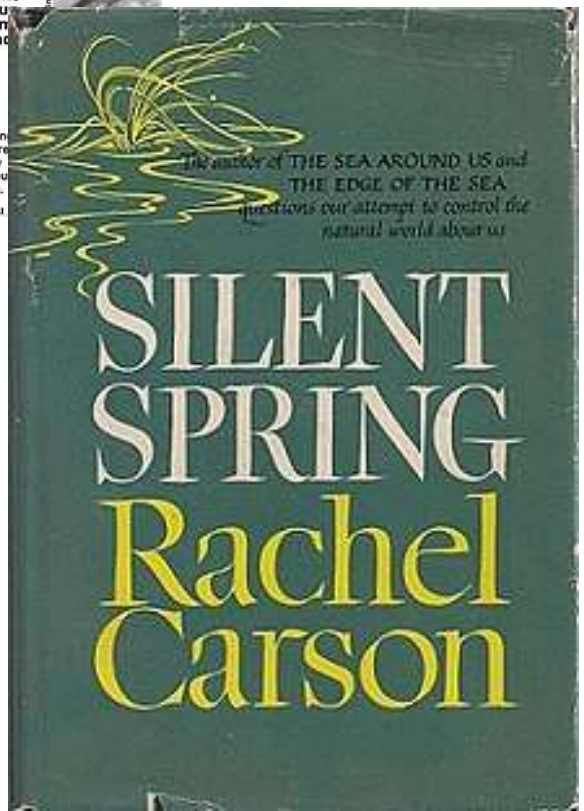
***by Norman E. Borlaug***
**Nobel Peace Prize 1970**

With a club in one hand and a rock in the other, he stalked animals and became a carnivore. For a long time he struggled for survival as a hunter and food gatherer under the hostile environmental pressures dispensed by

fortable, gratifyin
Among these were
control for many
plagued and scou
beginning of time.

With the control



# Glifosato: la nueva preocupación

OMS IARC Volume 112: Glifosato en categoría 2ª, potencialmente cancerígeno

Environmental
Toxicology and Chemistry

SETAC PRESS

Environmental Toxicology and Chemistry, Vol. 30, No. 3, pp. 548–555, 2011
© 2011 SETAC
Printed in the USA
DOI: 10.1002/etc.431

## OCCURRENCE AND FATE OF THE HERBICIDE GLYPHOSATE AND ITS DEGRADATE AMINOMETHYLPHOSPHONIC ACID IN THE ATMOSPHERE

FENG-CHIH CHANG,† MATT F. SIMCIK,*† and PAUL D. CAPEL‡
†School of Public Health, University of Minnesota, Minneapolis, Minnesota, USA
‡U.S Geological Survey, Minneapolis, Minnesota

(*Submitted* 21 *April* 2010; *Returned for Revision* 12 *June* 2010; *Accepted* 16 *September* 2010)

**Abstract**—This is the first report on the ambient levels of glyphosate, the most widely used herbicide in the United States, and its major degradation product, aminomethylphosphonic acid (AMPA), in air and rain. Concurrent, weekly integrated air particle and rain samples were collected during two growing seasons in agricultural areas in Mississippi and Iowa. Rain was also collected in Indiana in a

glyphosate ranged from <0.01 to 9.1 ng/m$^3$ and from <0.1 to 2.5 μg/L in air and rain samples, respectively. The frequency of detection and median and maximum concentrations of glyphosate in air were similar or greater to those of the other high-use herbicides observed in the Mississippi River basin, whereas its concentration in rain was greater than the other herbicides. It is not known what percentage of the applied glyphosate is introduced into the air, but it was estimated that up to 0.7% of application is removed from the air in rainfall. Glyphosate is efficiently removed from the air; it is estimated that an average of 97% of the glyphosate in the air is removed by a weekly rainfall ≥30 mm. Environ. Toxicol. Chem. 2011;30:548–555. © 2011 SETAC

**Keywords**—Atmosphere Glyphosate Aminomethylphosphonic acid Mass budget

GACT

# Presencia de residuos en los alimentos

# Residuos de pesticidas

# Residuo

Cualquier sustancia presente en los alimentos, productos agrícolas o para alimentación animal, proveniente de la aplicación de un pesticida. El término incluye todo derivado de plaguicida de importancia toxicológica, tal como metabolitos, productos de reacción y/o de conversión, así como las impurezas que contenga el producto formulado.

Se expresa en general en mg/kg (ppm)

# LMR

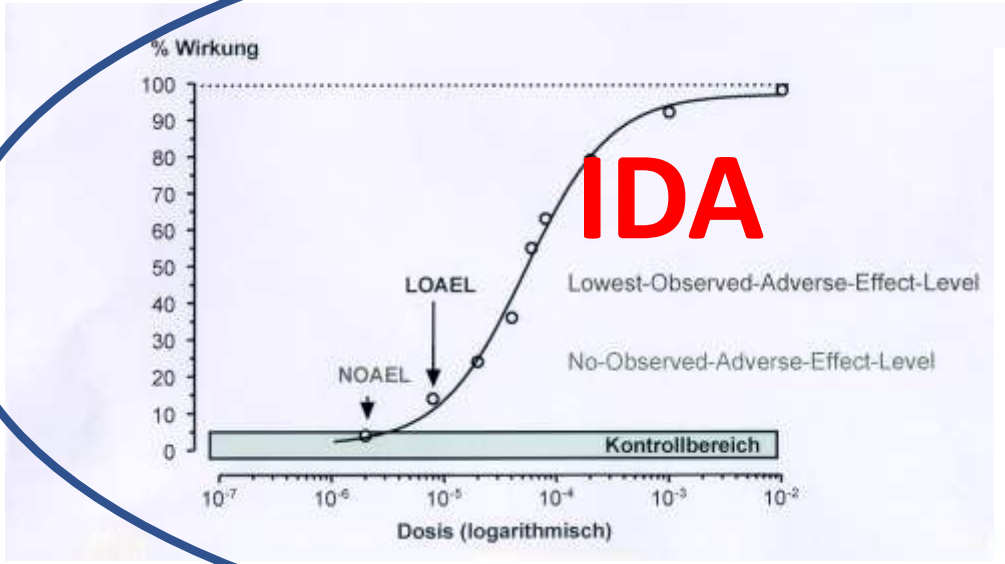
La concentración máxima de residuos de pesticidas (expresado como mg de residuos/kg de alimento/racion del **principio activo o sus metabolites de significancia toxicologica**) que posiblemente pueden ocurrir en él cuando el pesticida se ha aplicado de acuerdo a las de acuerdo a **las Buenas Prácticas Agricolas (BPA)** siguiendo las recomendaciones de la etiqueta y considerando las condiciones ambientales.

Los MRLs son en principio estandares de comercio pero se fijan para asegurar que los residuos **no constituyan un riesgo inaceptable para los consumidores**

**http://ec.europa.eu/sanco_pesticides/public/index.cfm**

# Establecimiento de los MRLs

# LIMITES MAXIMOS DE RESIDUOS



LMR

# Valores Toxicológicos de Referencia

FS →

FS →

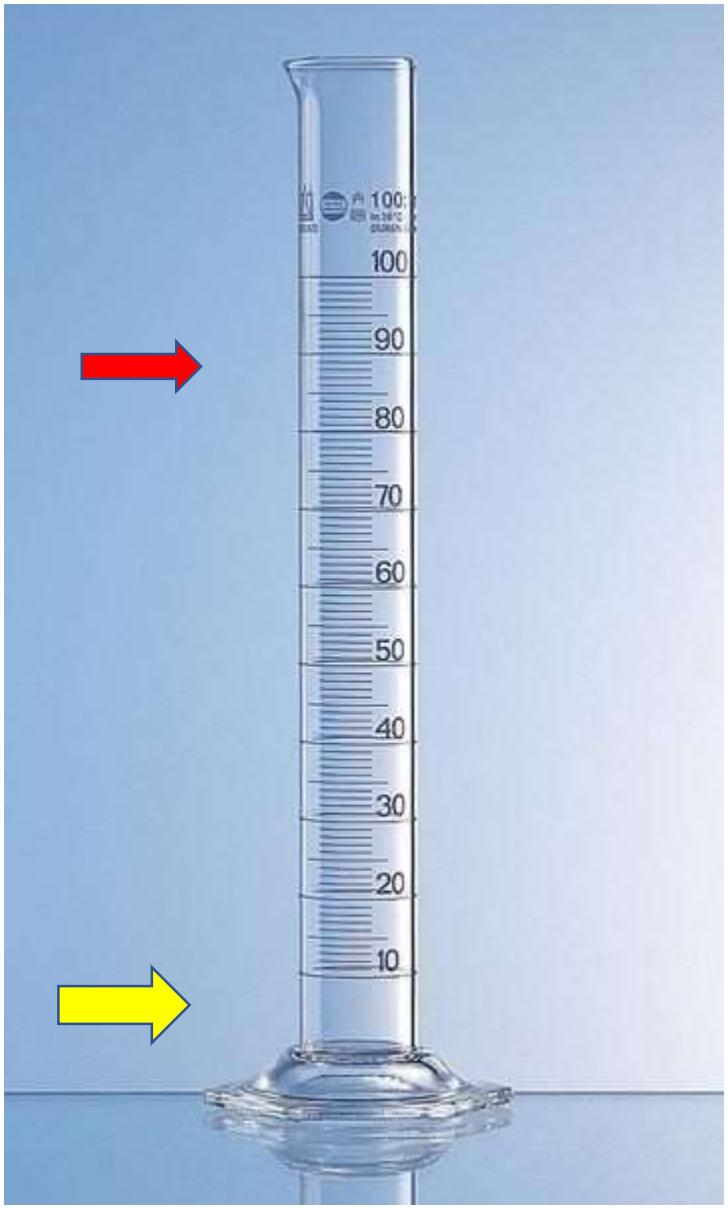
Extrapolación desde los animales mas sensibles a las especies humanas

Sensibilidad a diferentes subgrupos de poblacion

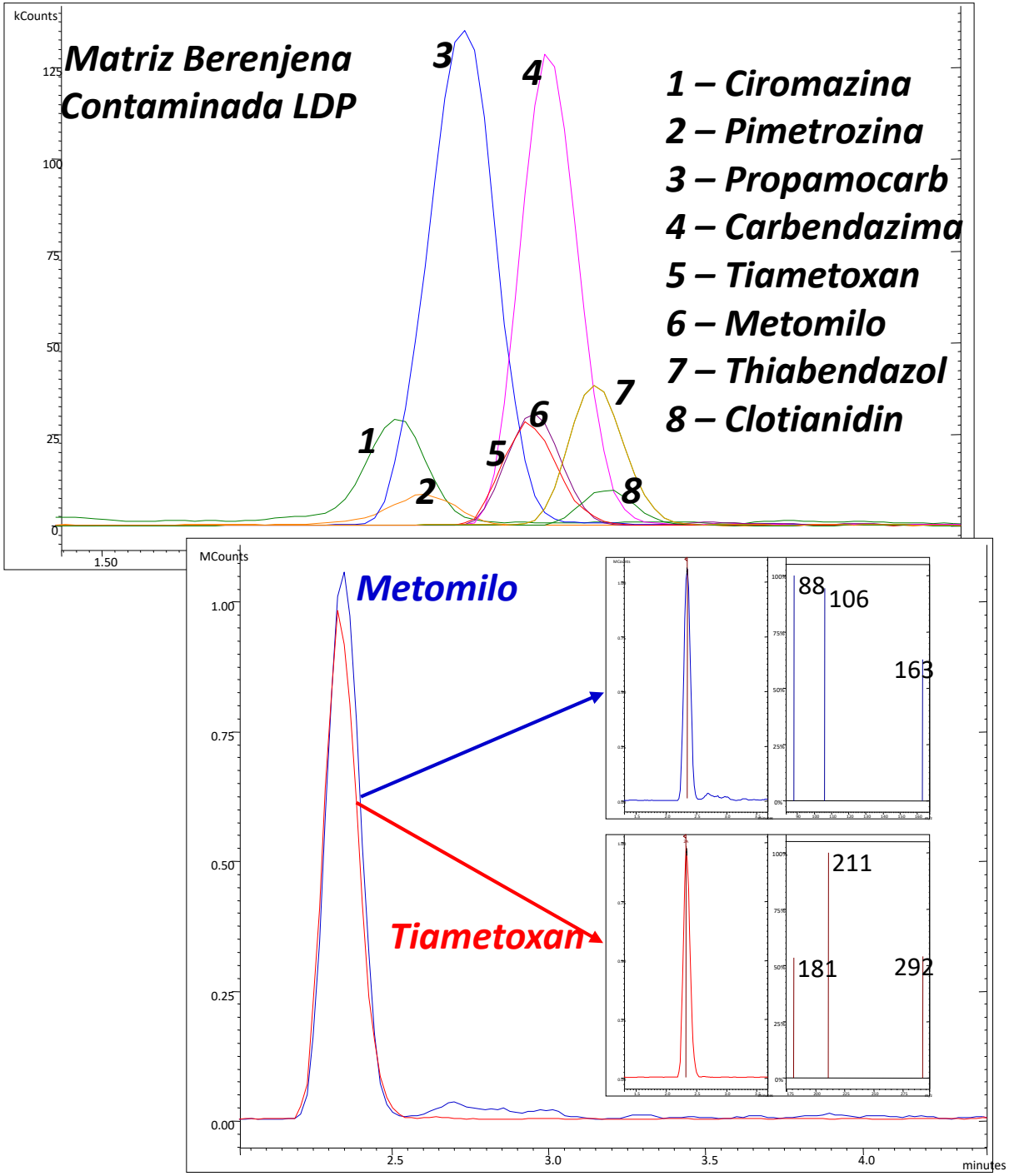
**FS: Factores de Seguridad**

DL50

LMR



La única seguridad del cumplimiento de las buenas practicas agrícolas ex post es a través del análisis de residuos

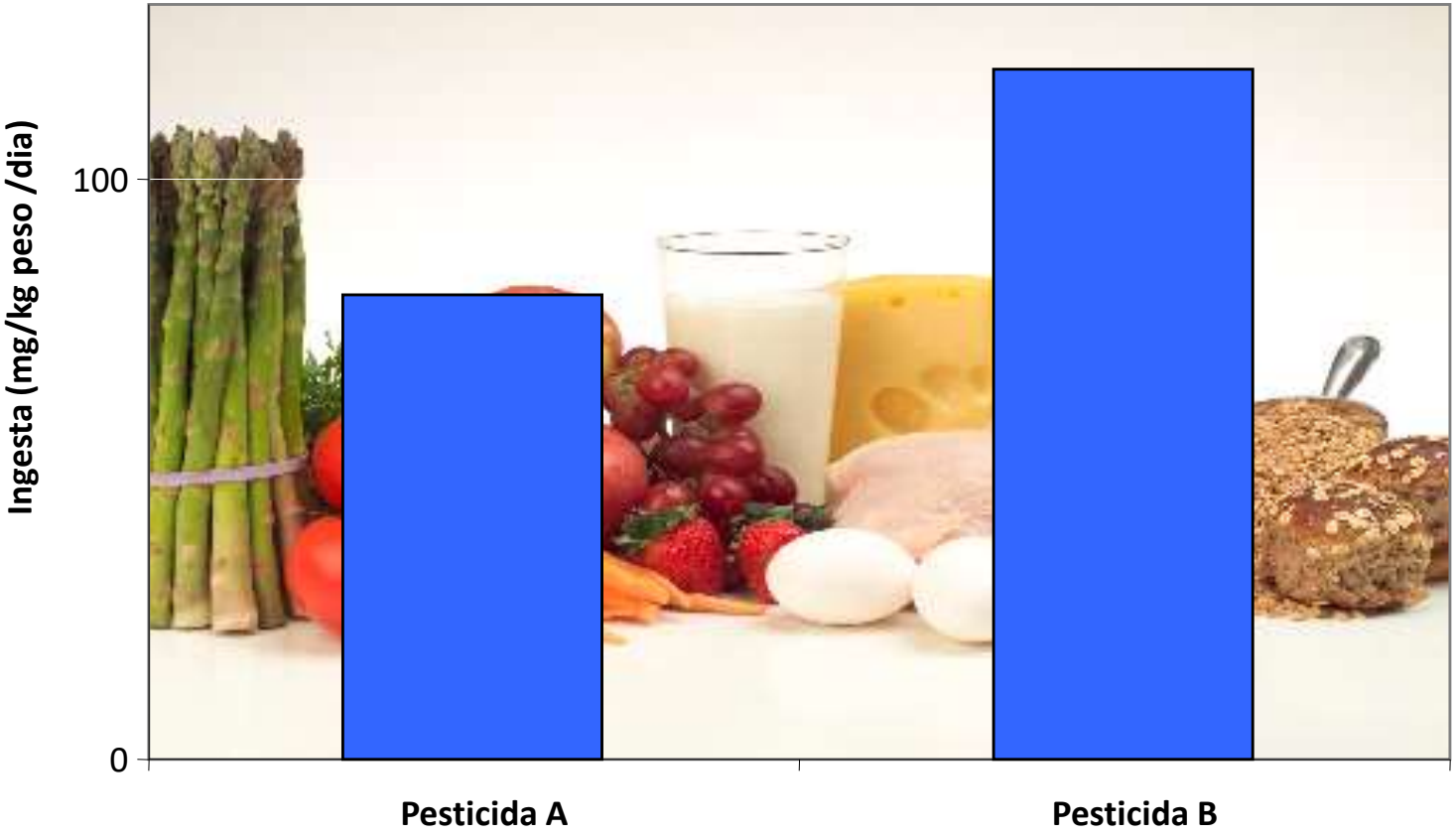


# Que criterios se siguen para autorizar un principio activo?

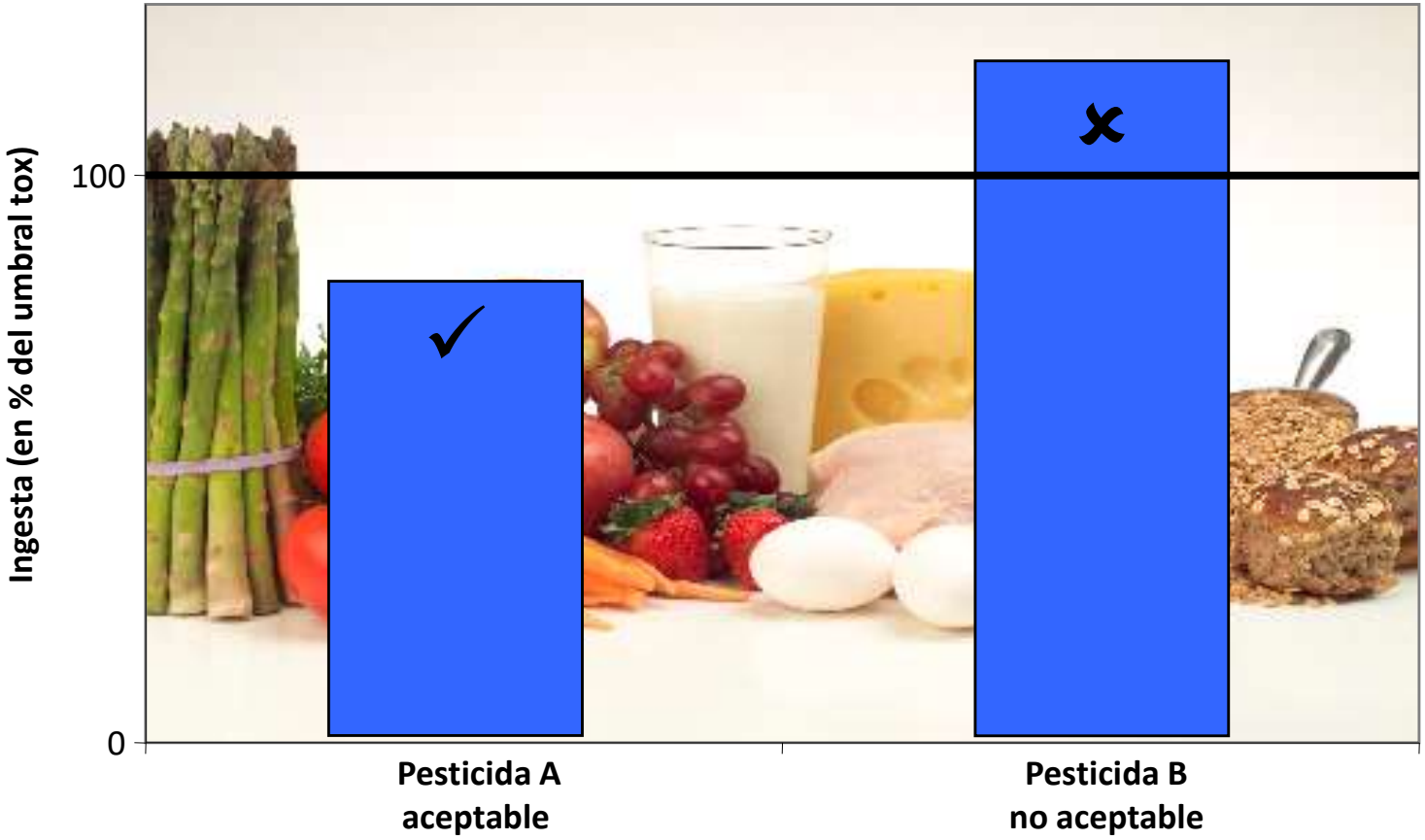
## PRESUNCIONES

- Todos los alimentos consumidos son tratados con pesticidas según lo autorizado y según el uso debido.
- Tiempo de decaimiento se respeta.

# Exposición del consumidor



# Riesgo del consumidor




Umbral Toxicologico

# Cual es el criterio fundamental?

Cuando haya un riesgo establecido para cualquier grupo de consumidores, la solicitud de LMR será desestimada y el plaguicida no se podrá utilizar en ese cultivo

**La seguridad de los alimentos prevalece sobre la protección de las plantas**

# Que hacer cuando no hay LMRs definidos?

# Politica para el establecimiento de LMRs de Default

**Principio de minimizacion**
ALARA (as low as reasonably achievable)

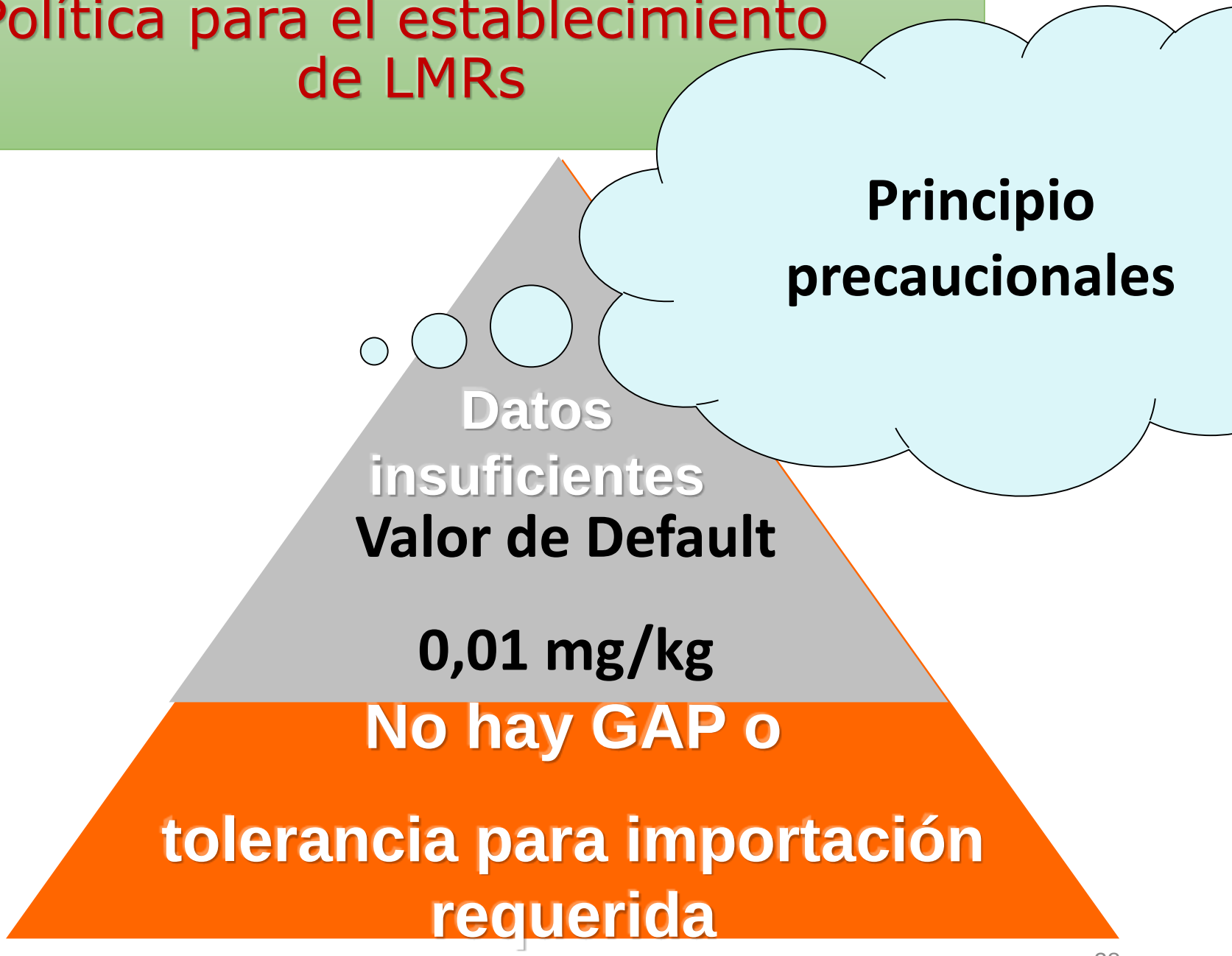
**Sin LMR**

**Valor de Default**

**0,01 mg/kg**

**Sin EU GAP**
**Sin Codex MRL**
**Sin tolerancia para productos**

# Política para el establecimiento de LMRs



**Evitar barreras comerciales**

**Proteccion del consumidor**

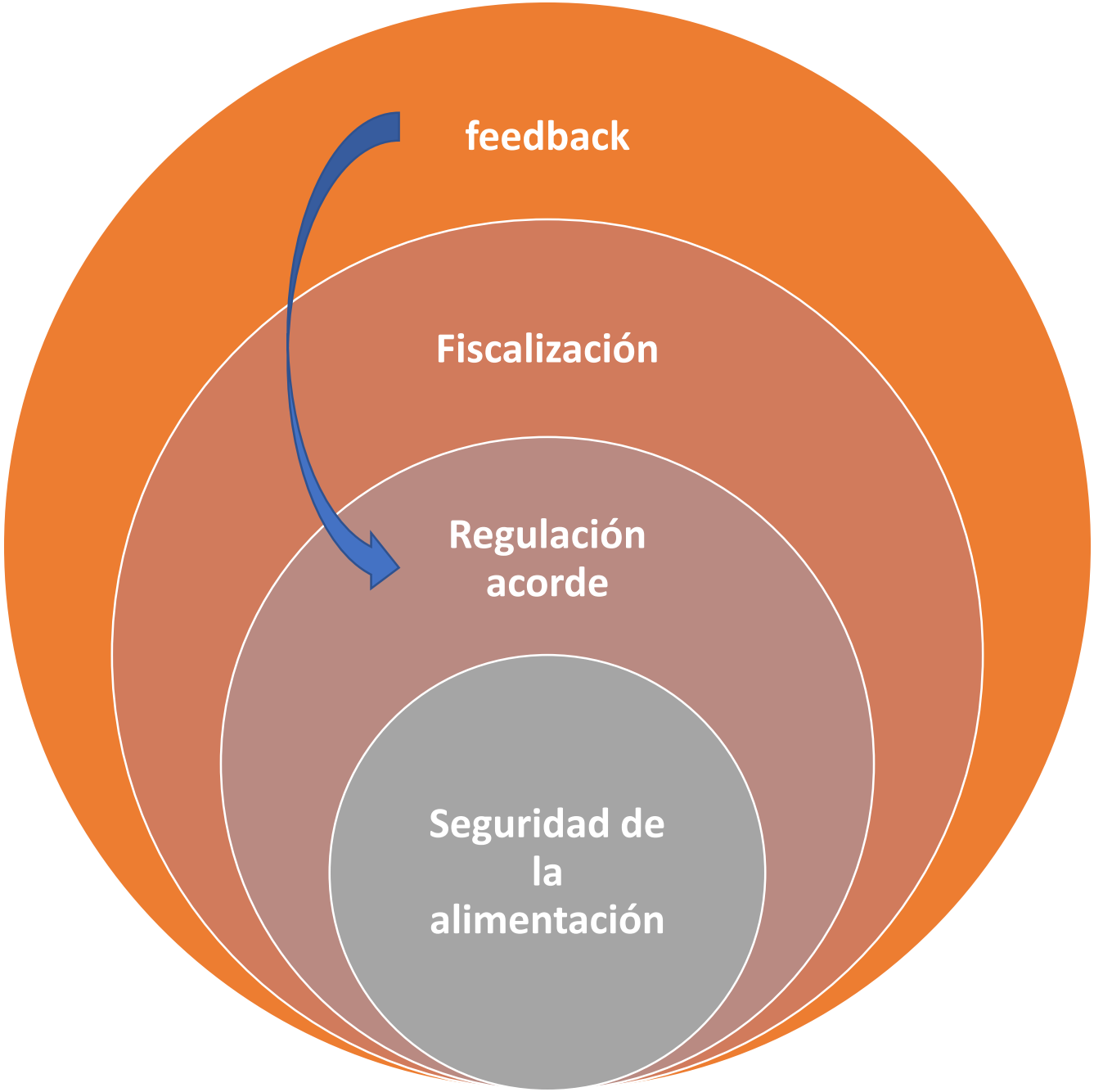
**Garantias a los productores** (GAP)

**Principio de Minimización**
ALARA (as low as reasonably achievable)

**Principios Precaucionales**

# COMO SE ESTABLECEN LOS MRLs

- BASADOS EN LAS GAP
- LA DOCUMENTACION PRESENTADA DEBE CUMPLIR CON LOS REQUISITOS SOLICITADOS
- RESIDUOS ESPERADOS NO DEBEN DE PONER EN RIESGO AL CONSUMIDOR.
- SON OBJETO DE CONTINUA REVISION


feedback
Fiscalización
Regulación acorde
Seguridad de la alimentación

# Plan Nacional de Vigilancia

**99% de los países pertenecen al CODEX**

# Organización FAO/OMS

www.codexalimentarius.org/about-codex/en/

Esta página está en inglés ¿Quieres traducirla? Traducir No

english | français | español | العربية | 中文 | русский

# CODEX ALIMENTARIUS

International Food Standards

World Health Organization

Food and Agriculture Organization of the United Nations

Google™ Custom Search

- Home
- About Codex
  - The foundation history of Codex
  - Understanding Codex
  - Codex E-Learning Course
  - Newsletter
- Members & Observers
- Committees & Task Forces
- Meetings & Reports
- Circular Letters
- Standards
- FAO/WHO Trust Fund
- Procedures & Strategies
- Scientific basis for Codex
- Contact & Links

## About Codex

CODEX ALIMENTARIUS is about safe, good food for everyone - everywhere.

International food trade has existed for thousands of years but until not too long ago food was mainly produced, sold and consumed locally. Over the last century the amount of food traded internationally has grown exponentially, and a quantity and variety of food never before possible travels the globe today.

The CODEX ALIMENTARIUS international food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade. Consumers can trust the safety and quality of the food products they buy and importers can trust that the food they ordered will be in accordance with their specifications.

### FAO/WHO Scientific Basis for Codex

- JECFA
- JMPR
- JEMRA
- Other scientific advice

### Latest news

**CAC35 related material**
**24 Jul 2012** - Audio recordings of the 35th Session of the Codex Alimentarius Commission are here available in [...]

**News releases on the 35th session of the Codex Alimentarius Commission**
**12 Jul 2012** - UN food safety body sets limits on veterinary growth promoting drugRelease issued 06 July 2012 [...]

**Prevention and Reduction of Food and Feed Contamination - 1st edition**
**19 Jun 2012** - The first edition of the "Prevention and Reduction of Food and Feed Contamination" booklet is [...]

**Code of practice for fish and fishery products - 2nd edition**
**19 Jun 2012** - A new edition of the "Code of practice for fish and fishery products" booklet is [...]

**Food import and export inspection and certification systems booklet - 5th edition**

www.codexalimentarius.org/about-codex/en/

Skype™ [2] - horaci... | concordia.pptx | Presentación1 | CODEX Alimentariu... | PEST-analysis-temp... | ES | 11:50 a.m.

www.codexalimentarius.org/standards/pesticide-mrls/en/

Esta página está en inglés ¿Quieres traducirla? Traducir No

english | français | español | العربية | 中文 | русский

# CODEX ALIMENTARIUS
International Food Standards

World Health Organization

Food and Agriculture Organization of the United Nations

Google™ Custom Search

- Home
- About Codex
- Members & Observers
- Committees & Task Forces
- Meetings & Reports
- Circular Letters
- Standards
  - List of standards
  - GSFA online (food additives)
  - Veterinary Drugs MRLs
  - **Pesticide MRLs**
  - Thematic compilations
- FAO/WHO Trust Fund
- Procedures & Strategies
- Scientific basis for Codex
- Contact & Links

## Codex Pesticides Residues in Food Online Database

This database contains **Codex Maximum Residue Limits** for Pesticides and **Extraneous Maximum Residue Limits** adopted by the Codex Alimentarius Commission up to and including its 34th Session (July 2011).

In the data base a user can obtain information on Codex Maximum Residue Limits (MRLs) and Codex Extraneous Maximum Residue Limits (EMRLs) both for a pesticide or certain pesticides, and for a commodity or a group of commodities. Names and definitions of commodities are found in the *Codex Classification of Foods and Animal Feeds* (Section 2 of *Codex Alimentarius*, Second Edition, Volume 2 (1993)).

The foods listed shall not contain more than the MRL or EMRL (in mg/kg) of the pesticide residue (defined in each individual case in the definition of residue) at (a) the point of entry into a country or (b) at the point of entry into trade channels within a country. This maximum limit shall not be exceeded at any time thereafter.

The MRLs and EMRLs apply to the residue content of the final sample representative of the lot and of the portion of commodities which is analyzed.

Click here for MRLs for spices adopted by the Commission including its 34th Session (July 2011).

CODEX Pesticides Home · Commodities · Pesticides · Search · Functional Classes · Glossary

Updated on: 02-11-2012

**FAO/WHO Scientific Basis for Codex**

- JECFA
- JMPR
- JEMRA
- Other scientific advice

**Latest news**

CAC35 related material
**24 Jul 2012** - Audio recordings of the 35th Session of the Codex Alimentarius Commission are here available in [...]

News releases on the 35th session of the Codex Alimentarius Commission
**12 Jul 2012** - UN food safety body sets limits on veterinary growth promoting drugRelease issued 06 July 2012 [...]

Prevention and Reduction of Food and Feed Contamination - 1st edition
**19 Jun 2012** - The first edition of the "Prevention and Reduction of Food and Feed Contamination" booklet is [...]

Code of practice for fish and fishery products - 2nd edition
**19 Jun 2012** - A new edition of the "Code of practice for fish and fishery products" booklet is [...]

Food import and export inspection and certification systems booklet - 5th edition

modern ethical managem | R.O.U. - M.G.A.P. - D.G.S.S | CODEX Alimentarius: Pest

DIVINO | Pesticide Presentati... | Adjuvant Products b... | Google | convocatoria Merco... | senaluruguay15 on J... | Scientific Program f... | Home | IUPAC | Instituto de Botánic...

Skype™ [2] - horaci... | concordia.pptx | Presentación1 | CODEX Alimentariu... | PEST-analysis-temp... | ES | 11:45 a.m.

modern ethical managem | R.O.U. - M.G.A.P. - D.G.S.S | CODEX Alimentarius: Pest | CODEX Online Home Pag
www.codexalimentarius.net/pestres/data/index.html?lang=en
DIVINO | Pesticide Presentati... | Adjuvant Products b... | Google | convocatoria Merco... | senaluruguay15 on J... | Scientific Program f... | Home | IUPAC
Esta página está en inglés ¿Quieres traducirla? Traducir No



# Pesticide Residues in Food and Feed

## CODEX PESTICIDES RESIDUES IN FOOD ONLINE DATABASE

This database contains **Codex Maximum Residue Limits** for Pesticides and **Extraneous Maximum Residue Limits** adopted by the Codex Alimentarius Commission up to and including its Twenty-second Session (June 1997).

In the data base a user can obtain information on Codex Maximum Residue Limits (MRLs) and Codex Extraneous Maximum Residue Limits (EMRLs) both for a pesticide or certain pesticides, and for a commodity or a group of commodities. Names and definitions of commodities are found in the *Codex Classification of Foods and Animal Feeds* (Section 2 of *Codex Alimentarius*, Second Edition, Volume 2 (1993)).

The foods listed shall not contain more than the MRL or EMRL (in mg/kg) of the pesticide residue (defined in each individual case in the definition of residue) at (a) the point of entry into a country or (b) at the point of entry into trade channels within a country. This maximum limit shall not be exceeded at any time thereafter.

The MRLs and EMRLs apply to the residue content of the final sample representative of the lot and of the portion of commodities which is analyzed.

**Click here for MRLs for spices adopted by the 28th Session of the Commission (Rome 4-9 July 2005)**

In this Section
- Commodity Index
- Pesticide Index
- Functional Classes
- Search Database

**printer-friendly version**

**CODEX Pesticides Home · Commodities · Pesticides · Search · Functional Classes**
**Glossary**

**© FAO and WHO 2010**

Skype™ [2] - horaci... | concordia.pptx | Presentación1 | CODEX Online Hom... | PEST-analysis-temp... | ES

# Características del Codex

- **C O D E X** A L I M E N T A R I U S is about safe, good food for everyone - everywhere.
- International food trade has existed for thousands of years but until not too long ago food was mainly produced, sold and consumed locally. Over the last century the amount of food traded internationally has grown exponentially, and a quantity and variety of food never before possible travels the globe today.
- The **C O D E X** A L I M E N T A R I U S international food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade. Consumers can trust the safety and quality of the food products they buy and importers can trust that the food they ordered will be in accordance with their specifications.

# ¿Que significa el Codex para la salud pública?

- Intenta fijar puntos de acuerdo sobre calidad y seguridad alimentaria
- Organización para asegurar el comercio internacional  bajo bases seguras
- Base para negociaciones entre partes
- Seguridad alimentaria  se fija en base a LMRs
- Los LMRs se fijan para un par pesticida commodity
- NO SÓLO PRODUCTOS NO PROCESADOS!!!!

# …..pero

- Los MRLs  del Codex no reflejan necesariamente la dieta de los distintos países
- …… Brasil y Argentina han establecido sus propios LMRs en base a dietas nacionales
- Es indispensable evaluar una dieta nacional

# Caracterisiticas de los países y regiones desarrollados

- **Compradores** y productores de materias primas
- Agencias de control de seguridad alimentaria
- Fuertes controles y sistemas de fiscalización
- Red de laboratorios oficiales efectivos
- Sistemas de alarmas: Trazabilidad

# La tendencia latinoamericana

- Reglamentación para circunscribir el problema
- De cumplirse, el tema residuos se auto-regula
- No son “tan críticos y necesarios” los análisis
- Se analizan fundamentalmente alimentos de exportación y poco del mercado interno
- Porque??
- Concepto moderno de Análisis Multi Residuo recién se está imponiendo en la región

Control de aplicaciones
Firma profesional
Residuos de pesticidas
registros
GAPs

# La tendencia latinoamericana

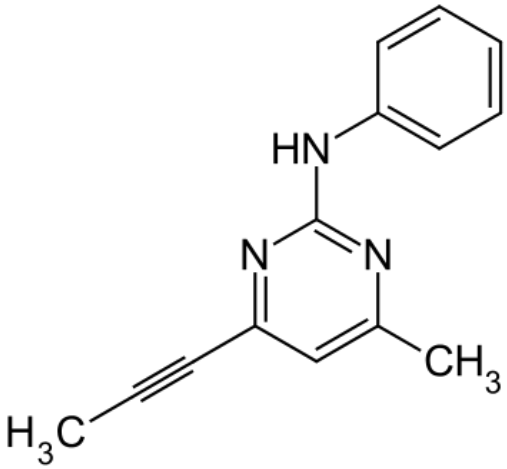
- Reglamentación para circunscribir el problema
- De cumplirse, el tema residuos se auto-regula
- No son “tan críticos” los análisis
- Pero la cuestión es cuando  el sistema falla…..

**…existen los controles?**

Control de aplicaciones
Firma profesional
Residuos de pesticidas
registros
GAPs

# Todos los puntos de la cadena productiva deben vigilarse

**Mepanipyrim en fruta citrica, detectado en Inglaterra**

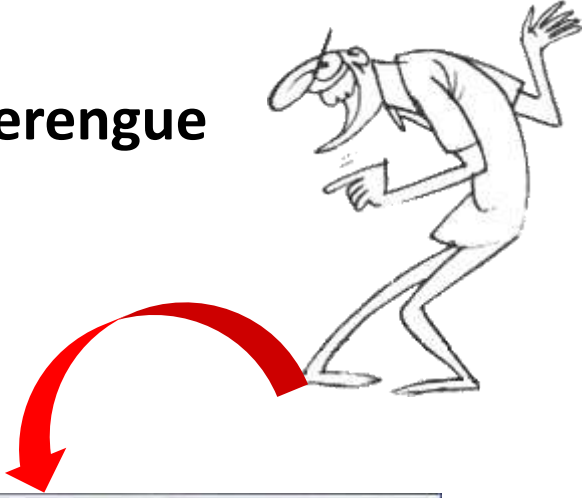



Mepanypirim prohibido en Uruguay, Argentina y Brasil

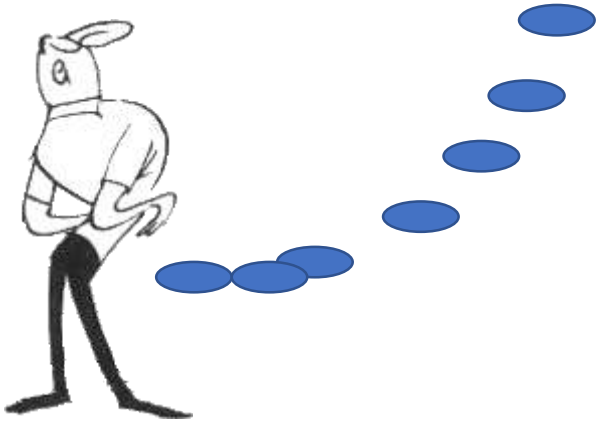
**Fuente de la contaminación: Impurezas en fosetil aluminio**

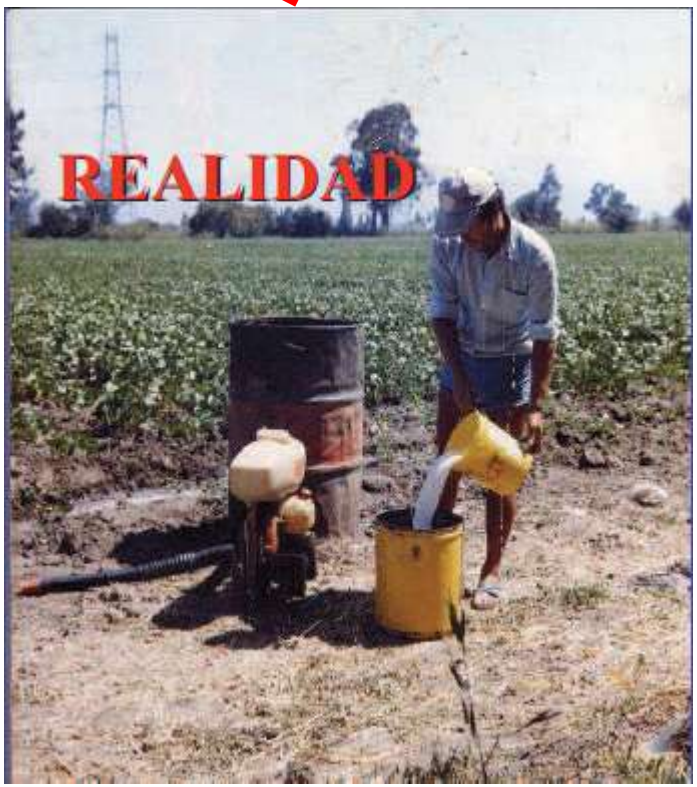
# LEGISLACION EN L.A.

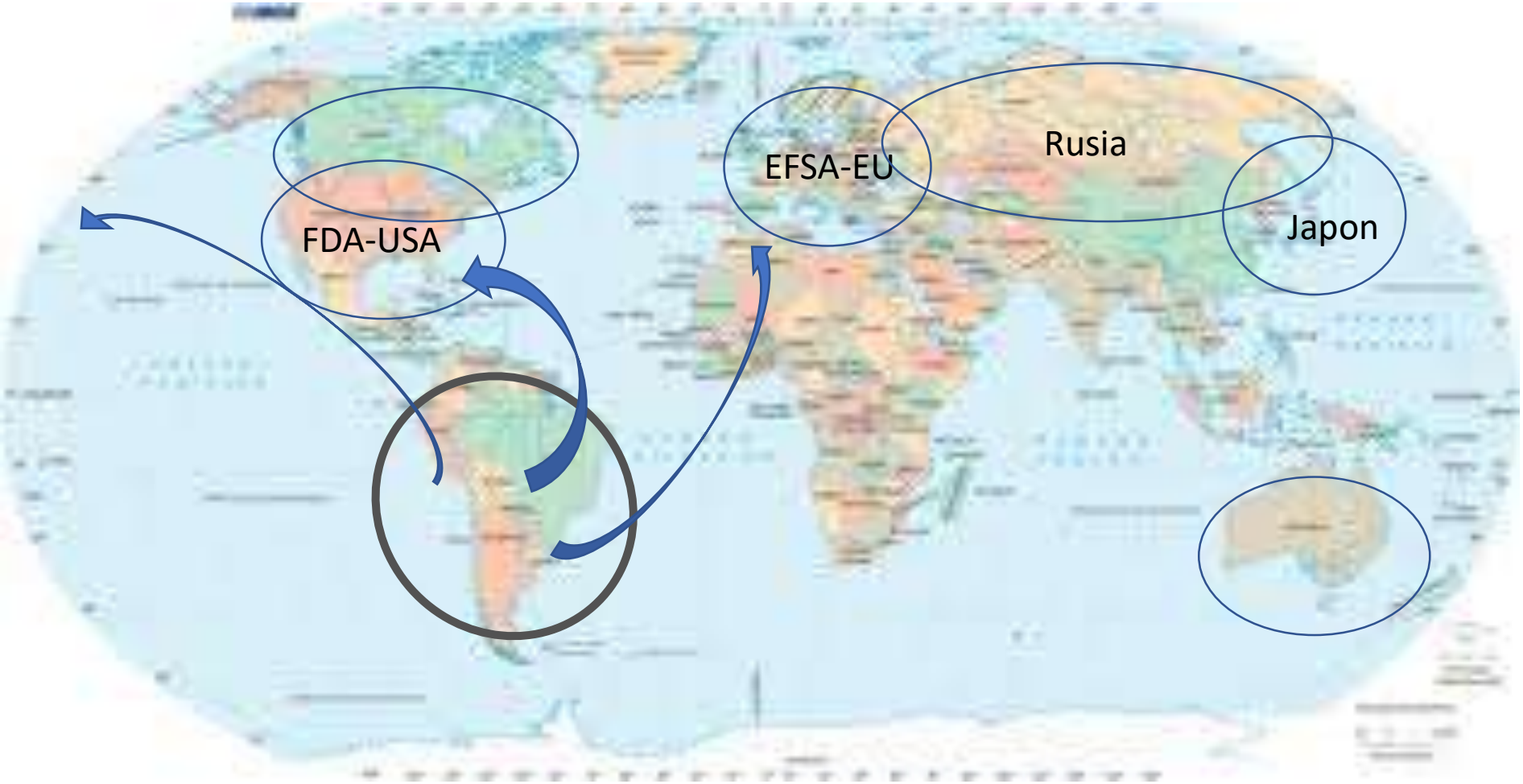
## o el otro yo del Dr. Merengue



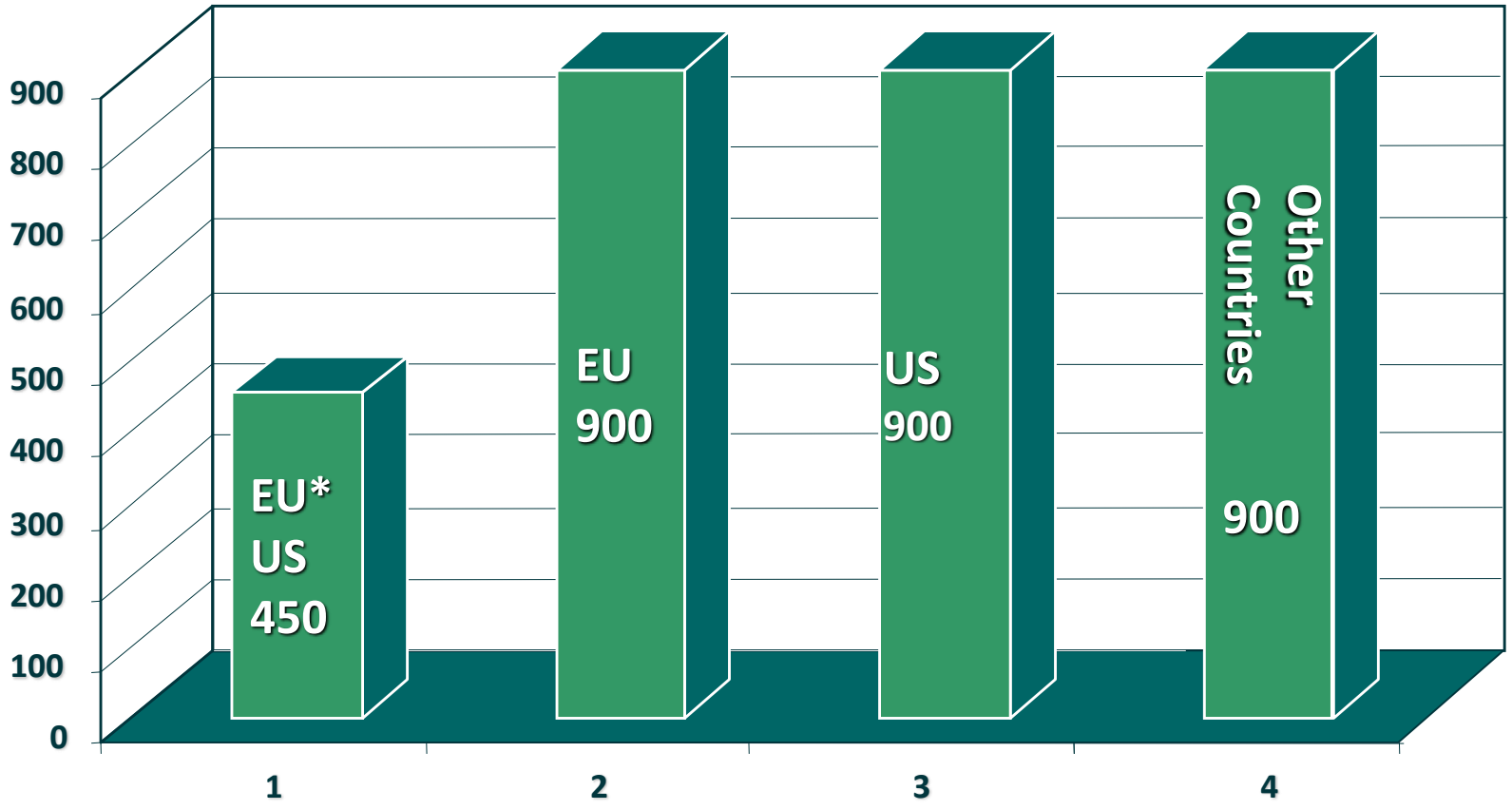
MITO






FDA-USA
EFSA-EU
Rusia
Japon

# Pesticidas en uso en el mundo



amenazas

fortalezas

Los compradores, deben necesariamente controlar TODOS los pesticidas

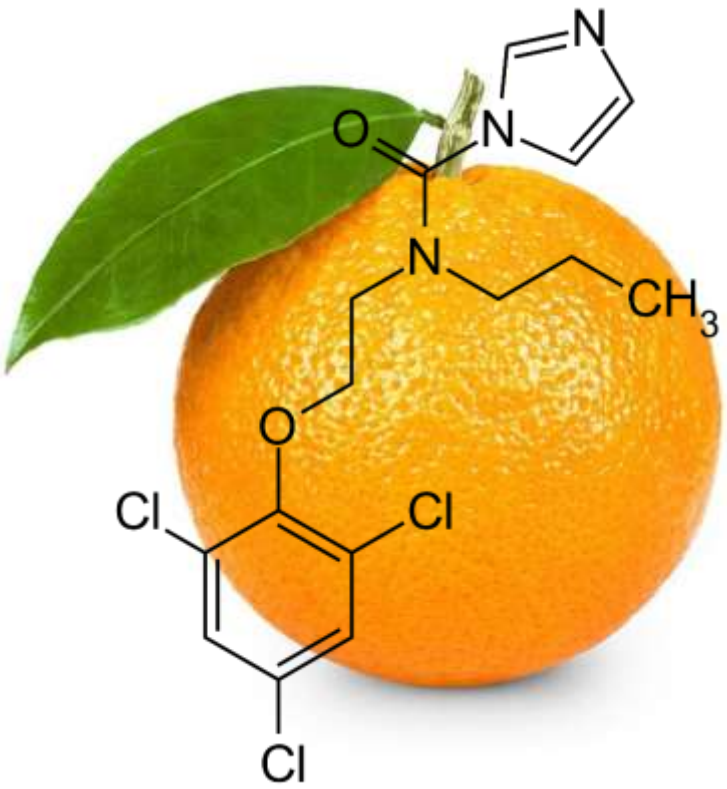
Los vendedores debemos asegurar la seguridad alimentaria y la calidad de la producción

oportunidades

debilidades

# Se deben conocer los mercados
# Procloraz

Prohibido en EEUU



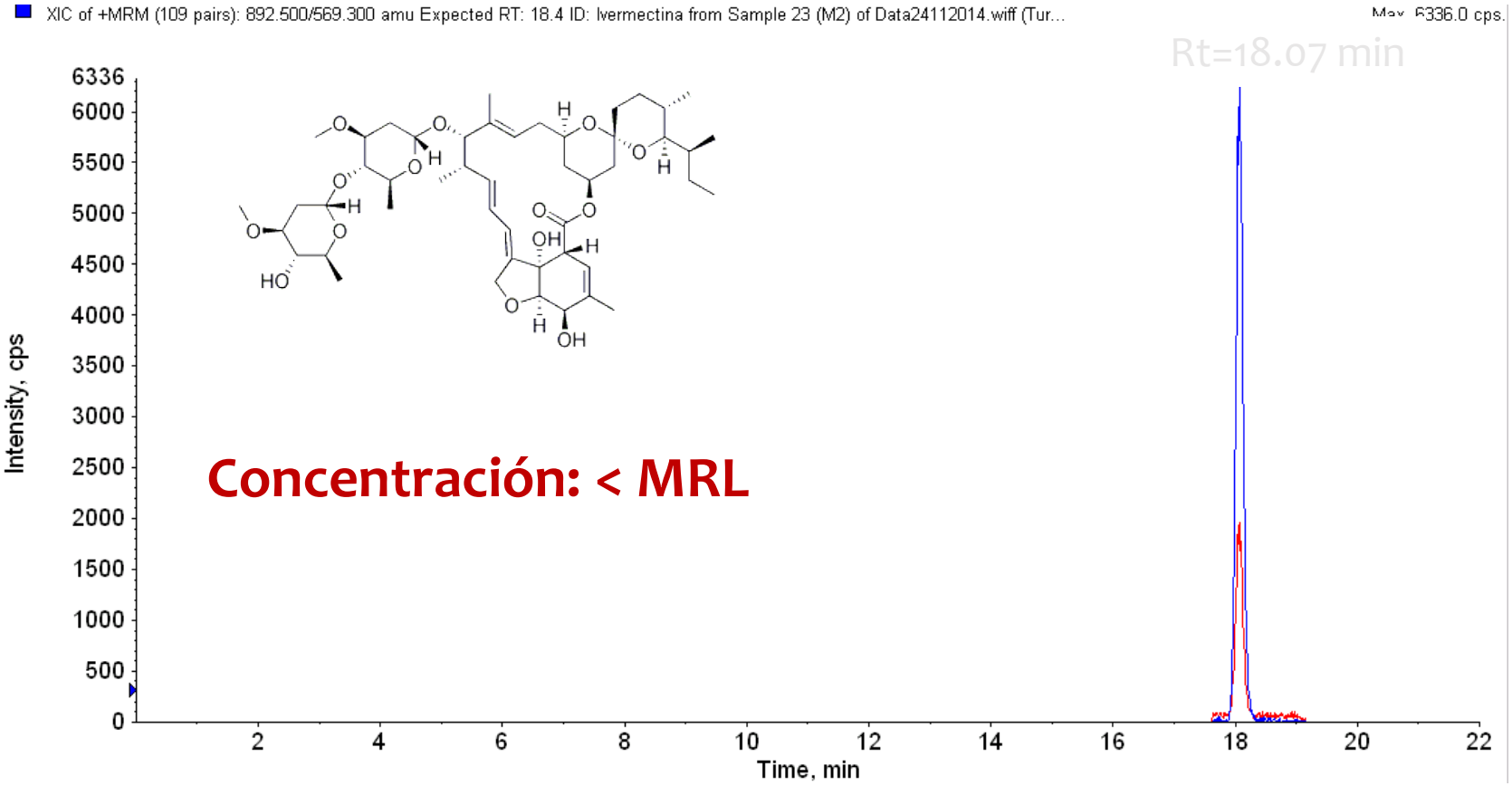

Aceptado en la UE

# Uruguay Exporta

90% arrroz
90% soja
60% trigo
80% citrus
80% carne vacuna

- 3 millones de habitantes
- Se producen alimentos para 30 millones de personas

# Ivermectina en hígado



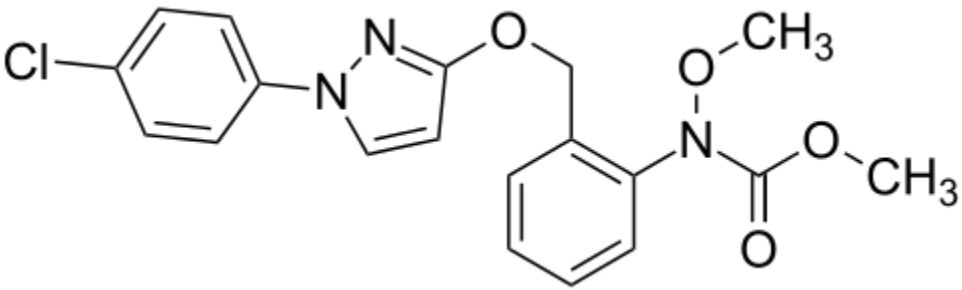

Souza et al, Chrmatographia 2016

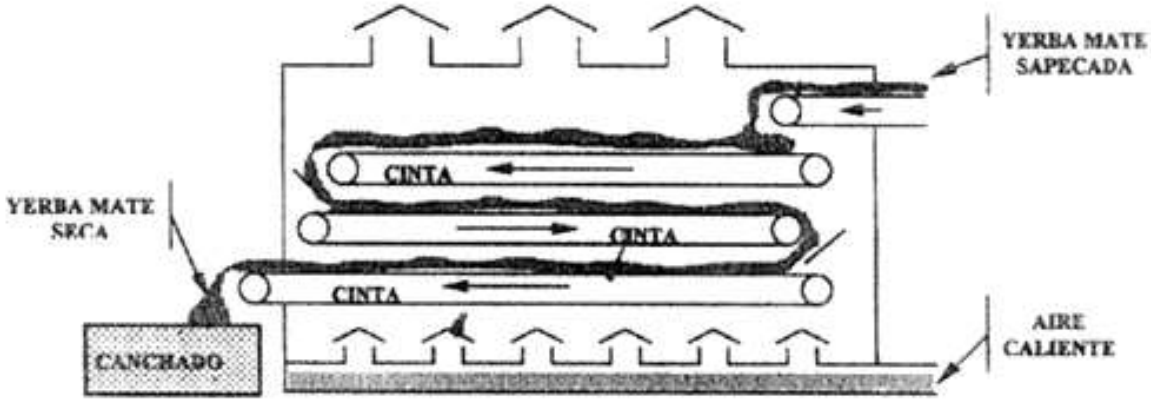
# El procesamiento, destruye los pesticidas?

Imagen de http://biotek-agriculture.com

# Residuos de Pesticidas en yerba mate (2015)

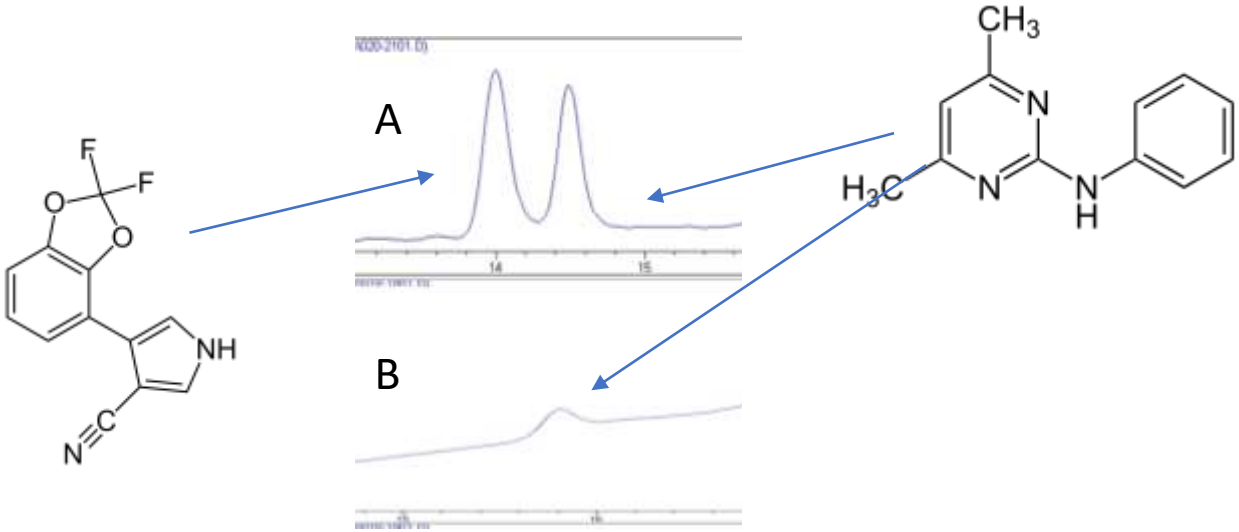
Todas las muestras (15) contienen piraclostrobin



# Disipación de fungicidas durante la elaboración del vino

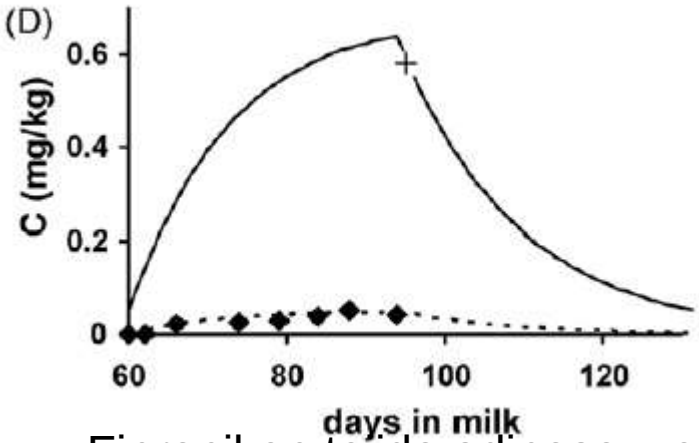
Tradicionalmente se asumía que los pesticidas se degradaban durante el proceso de fermentación




disipación de fludioxinil y pirimetanil
en un vino experimental A Mosto, B vino

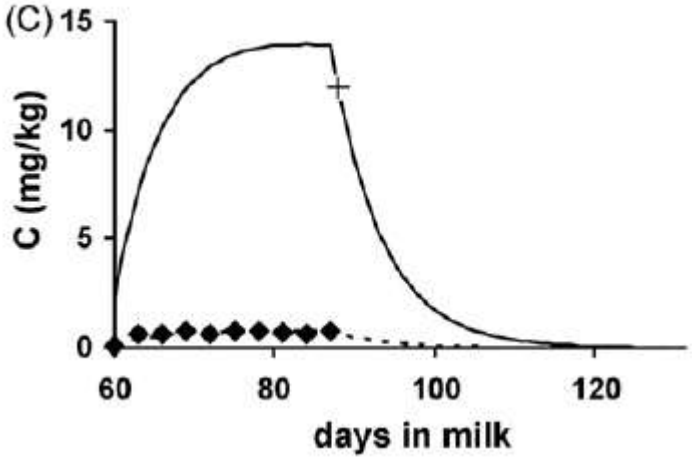
*S. Niell et al, EPRW2010*

# Factor de transferencia (TF)



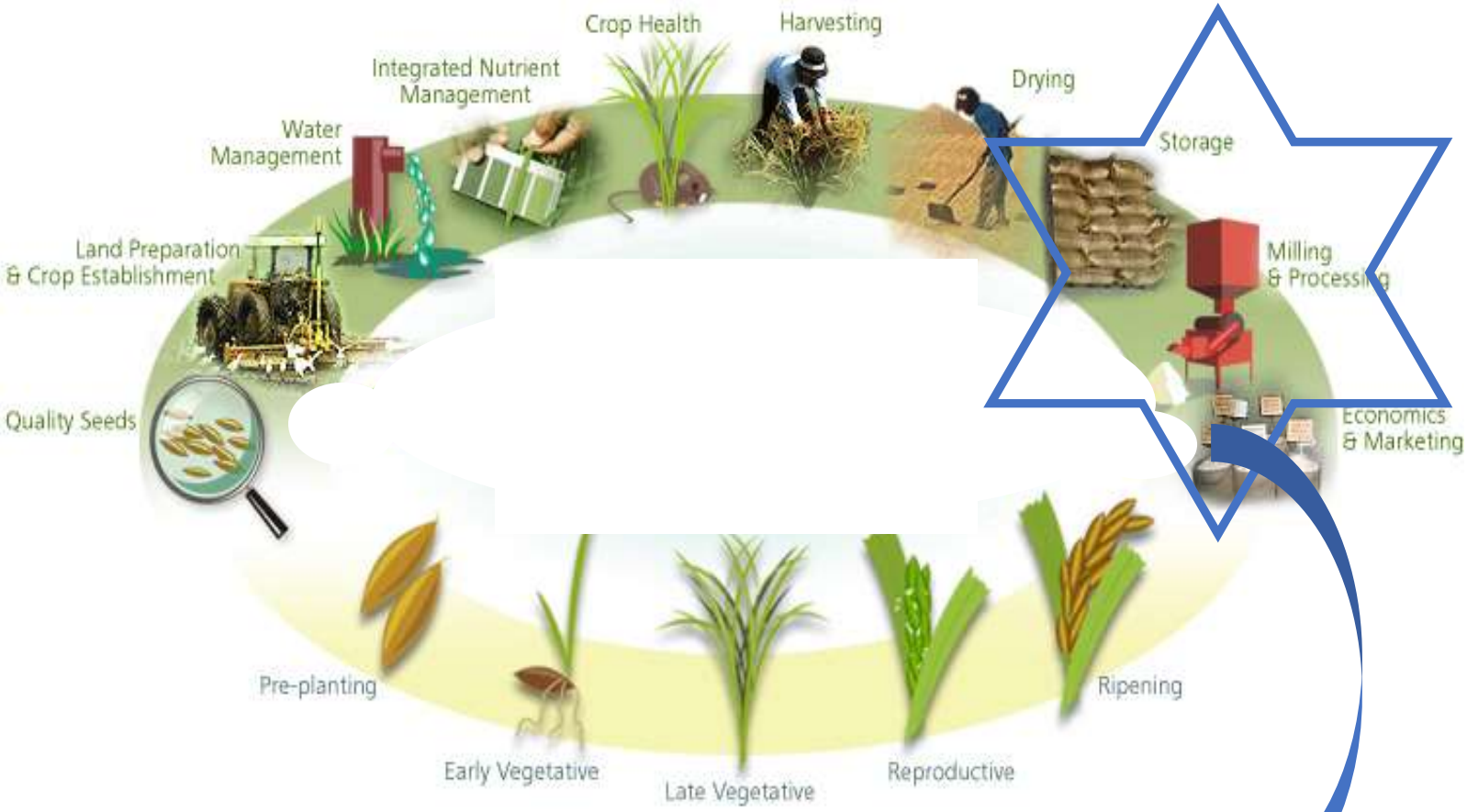

$$TF = \frac{C}{intake}$$

Fipronil en tejido adiposo y en leche
TF leche/TF grasa= 0,08




Residuos de Endosulfan en grasa y leche
TF leche/TF grasa 0,066

# Distribución de pesticidas en productos del arroz




Como se distribuyen los pesticidas en los subproductos del arroz ?

**CUMPLE CON LOS LMR?**

*Pareja et al, JAFC 2012*

# Distribucion de pesticidas

| Pesticide | Method | Paddy Rice µg/kg | Brown Rice µg/kg | Rice Bran µg/kg | Half grain Rice µg/kg | White Rice µg/kg | pKow | MRL |
|---|---|---|---|---|---|---|---|---|
| **Azoxystrobin** | Original QuEChERS | 210.3 | 8.9 | 16.8 | | | 2.5 | √ |
| **Carbendazim** | Original QuEChERS | 718.9 | 80.8 | 110.3 | 10.4 | 11.7 | 1.4 | x |
| **Difenoconazole** | Citrate QuEChERS | 138.6 | 21.7 | 19.3 | | | 4.4 | √ |
| **Epoxiconazole** | Original QuEChERS | 431.4 | 44.2 | 10.1 | 24.0 | 32.2 | 3.3 | √ |
| **Isoprothiolane** | Citrate QuEChERS | 806.7 | 655.6 | 131.4 | 128.5 | 153.1 | 3.3 | √ |
| **Tebuconazole** | Citrate QuEChERS | 774.2 | 178.2 | 5.9 | 25.4 | 29.4 | 3.7 | √ |
| **Thiamethoxam** | Citrate QuEChERS | 31.9 | | 20.3 | | | -0.1 | √ |
| **Tricyclazole** | Citrate QuEChERS | 638.6 | 34.2 | 262.3 | 9.0 | 8.5 | 1.4 | √ |

Las demandas del consumidor cambian constantemente

Educacion de los consumidores

la cadena de suministros de Vuelve cada vez mas compleja

GAPs para asegurar inocuidad

Son necesarias nuevas y adecuadas regulaciones

Globalizacion del mercado

Rapida globalizacion de la produccion de alimentos aumenta el potencial de contaminacion

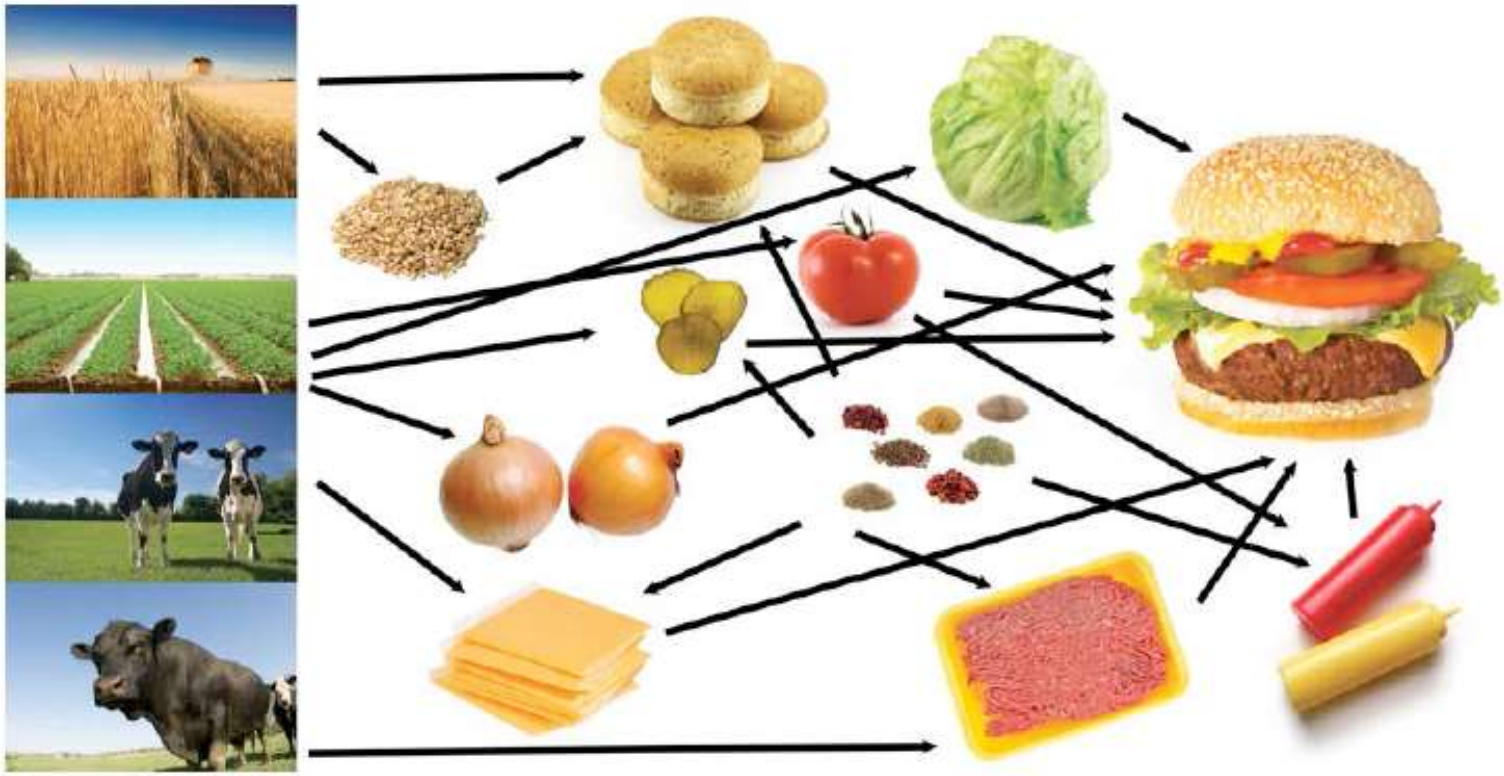
## Su alimento

**Agro-industria**

?

# es nuestro alimento

# Global Supply Chain Complexity



©2009 National Center for Food Protection and Defense. All rights reserved. Do not copy or distribute without permission of NCFPD.

NATIONAL CENTER FOR
FOOD PROTECTION AND DEFENSE
A HOMELAND SECURITY CENTER OF EXCELLENCE

# Globalizing the Cheeseburguer

**Vinegar**
Argentina
Australia
Austria
Belgium
Brazil
Canada
China
Chile
Colombia
Denmark
Dom. Rep
France
Germany
Greece
Hong Kong
Israel
Italy
Japan
S. Korea
Lebanon
Peru
Poland
Portugal
Serbia
Philippines
Russia
S. Africa
Singapore
Spain
Sweden
Turkey
Taiwan
U.K.

**Garlic Powder**
Brazil
Canada
China
Germany
India
Israel
Japan
S. Korea
Mexico

slide3.tiff

**Tomatoes**
Belgium
Canada
Colombia
Costa Rica
Dom. Rep.
Guatemala
Israel
Morocco
Mexico
Netherlands
New Zealand
Poland
Spain

**Beef**
Australia
Canada
Chile
Costa Rica
Honduras
Japan
Mexico
Nicaragua
New Zealand
Uruguay

**Wheat Gluten**
Australia
Belgium
Canada
China
Czech Rep.
France
Germany
Kazakhstan
Lithuania
Netherlands
Poland
Russia
Switzerland
Thailand
U.K.

©2009 National Center for Food Protection and Defense. All rights reserved. Do not copy or distribute without permission of NCFPD.

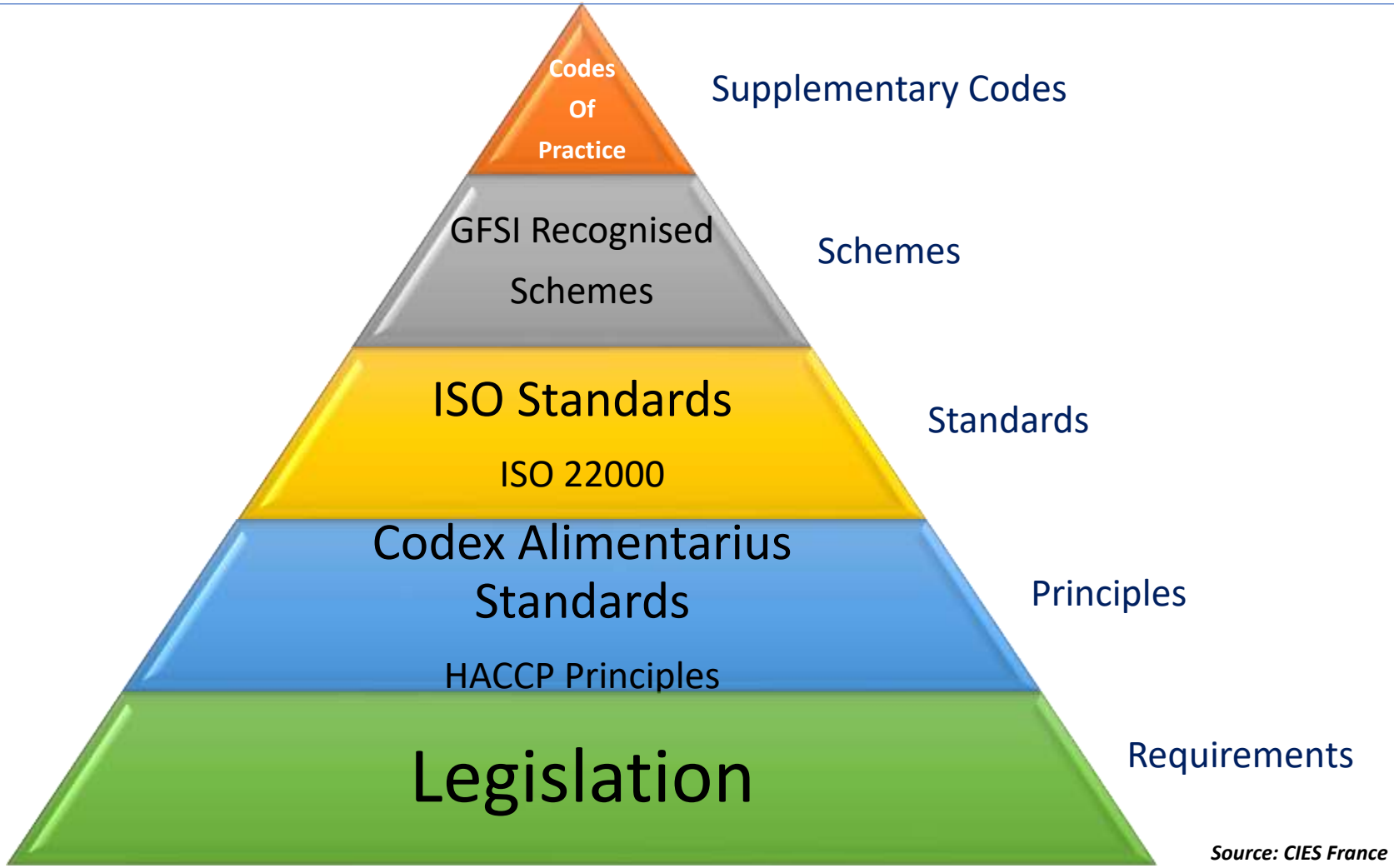
NATIONAL CENTER FOR
FOOD PROTECTION AND DEFENSE
A HOMELAND SECURITY CENTER OF EXCELLENCE

PRIMARY PRODUCTION ➤ HARVEST ➤ TRANSPORTATION ➤ STORAGE ➤ PROCESSING ➤ DISTRIBUTION ➤ RETAIL/FOOD SERVICE ➤ CONSUMER

# Como asegurar la inocuidad alimentaria?

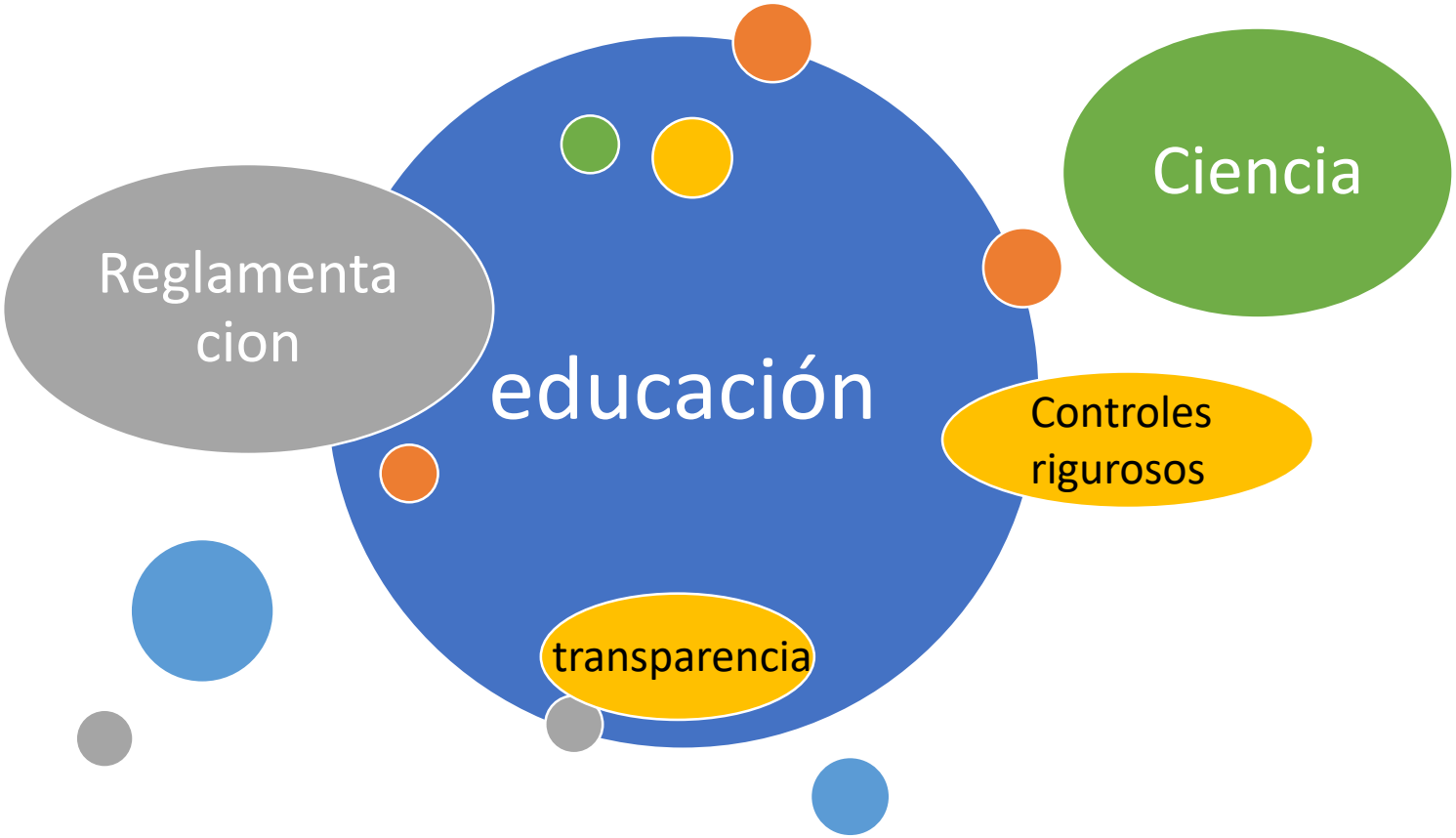
# Con bases en la ciencia

## Las regulaciones alimentarias deben ajustarse a la evidencia cientifica y los cienficos deben conocer las regulaciones




*Source: CIES France*

# Y como entra la sociedad?



# Reflexiones finales

A veces hay que dejar de hacer SIEMPRE lo mismo

**Para asegurar la inocuidad alimentaria son necesarios controles estrictos y sofisticados: Los instrumentos por si solos no funcionan!**

**El compromiso**

- **El sector regulador**
- **El sector industrial**
- **La comunicación**

**Debe construirse**

**El factor humano es fundamental**

# Agradecimientos


- Dr. Hermine Reich (EFSA, PARMA, Italia)
- Dr. Nuri Gras (Chile)
- Dr. Hans Mol ( RIKILT, WAGENINGEN Holanda)
- Dr. Amadeo R. Fernandez Alba
- Miembros del GACT (Dra. Lucia Pareja. Dra. Natalia Besil & Dr. Andres Perez Parada)
- Dr. Ralf Lippold ( CVUA- FREIBURG, EURL Animal Origin, Alemania)

# agradecimientos

ANII
Agencia Nacional de Investigación e Innovación

INIA
Instituto Nacional de Investigación Agropecuaria
URUGUAY

CSIC

PEDECIBA

Thank you !!!
Muchas gracias!!!