



Children's Environmental Health Symposium

El Paso, Texas
September 25, 2015

SINTOX

Servicio de Información
Toxicológica



Pesticides in children
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Asociado a:



Representando la Industria de la Ciencia de los Cultivos



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Objectives

- Show data related to pesticide exposures in Mexico
- Point out common pesticides involved in children's exposure and poisoning at our Poison Center
- Focus on preventive measures that can be easily spread among public and patients

What are pesticides?

- Products designed to control pests (undesired insects, weeds and rodents in our homes, gardens, lawns or agricultural lands)
- Pesticides help us protect crops, food supplies and make our lives pest free

What are pesticides?

- Pesticides are divided in 4 groups:
- Insecticides:
 - Insect sprays and baits (spider, cockroach)
 - Flea, tick, lice sprays, powders, pet collars
- Herbicides - Lawn and garden weed killers
- Fungicides (mold and fungus)
- Rodenticides - Rat and mice pellets, baits

Pesticide exposure

- If improperly used, pesticides can pose health risks to people, pests and environment
- 4 exposure paths: food, water, air, direct contact
- Crops: Pesticide residues (BUMA program)
- Water: Residues run off into rivers and streams, empty bottles improperly disposed (BUMA materials)
- House or buildings not evacuated for the appropriate amount of time

Pesticide exposure in children AAPCC

- 50% of poisonings involve children < 6 yo
- 90% of this incidents occur in the home
- AAPCC: >70,000 calls to PCC with concerns about potential exposure to common household pesticides

Pesticide exposure in children AAPCC

- Close to half stored at least one pesticide product within reach of a child
- Nearly 75% of households with no children <5 yo stored pesticides in an unlocked cabinet within a child's reach
- 13% of pesticide poisonings occur in homes other than that of a child

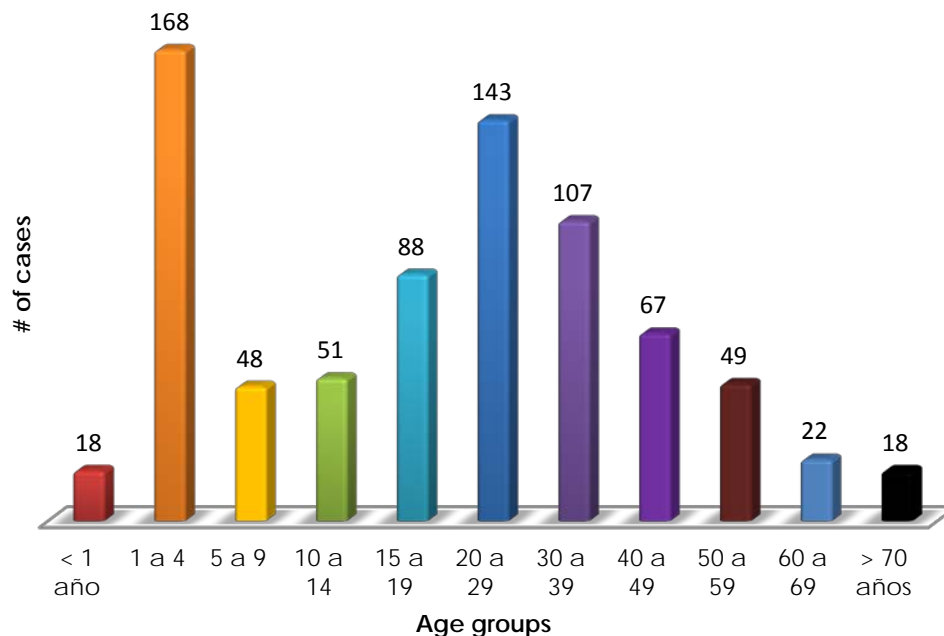
What are pesticides?

- Misuse is the main reason for calls to our PCC
 - Accidental exposure w/ household insecticides, repellents, rodenticides
 - Excessive or inadequate application of household sprays
 - Agricultural pesticides used at home
 - Inadequate / no use of personal protective equipment (PPE)

Filters: All reports from 01/01/2014 to 12/31/2014

Reports by age group, gender, total			
Age group	Female	Male	Total
< 1 yo	7	11	18
1 - 4 yo	79	89	168
5 - 9 yo	17	31	48
10 - 14 yo	30	21	51
15 - 19 yo	46	42	88
20 - 29 yo	54	89	143
30 - 39 yo	41	66	107
40 a-49 yo	18	49	67
50 - 59 yo	14	35	49
60 - 69 yo	4	18	22
> 70 yo	6	12	18
Total	316	463	779

Reports by age groups
January- December 2014



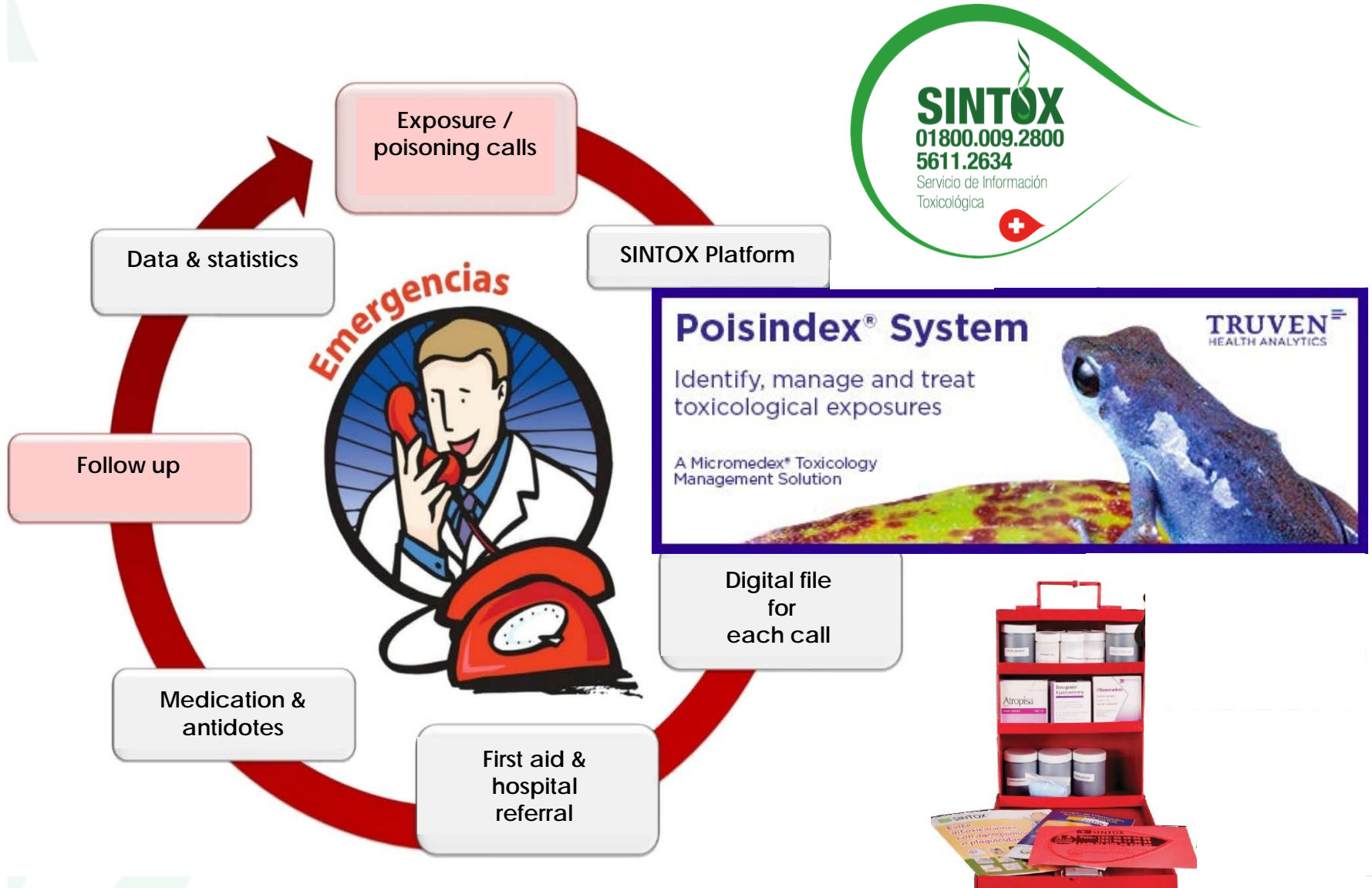
Notes:

- Total cases in 2014: 1069 (100%) Animal reports: 212 (20%) Other toxic reports: 79 (7%) Pesticide reports humans: 778 (73%)
- Most frequent group age in reports: 1 - 4 yo (21.5%)
- Second place: 20 - 29 yo (18.3%), third place: 30 - 39 yo (13.7%)
- 59.4% of pesticide reports were males

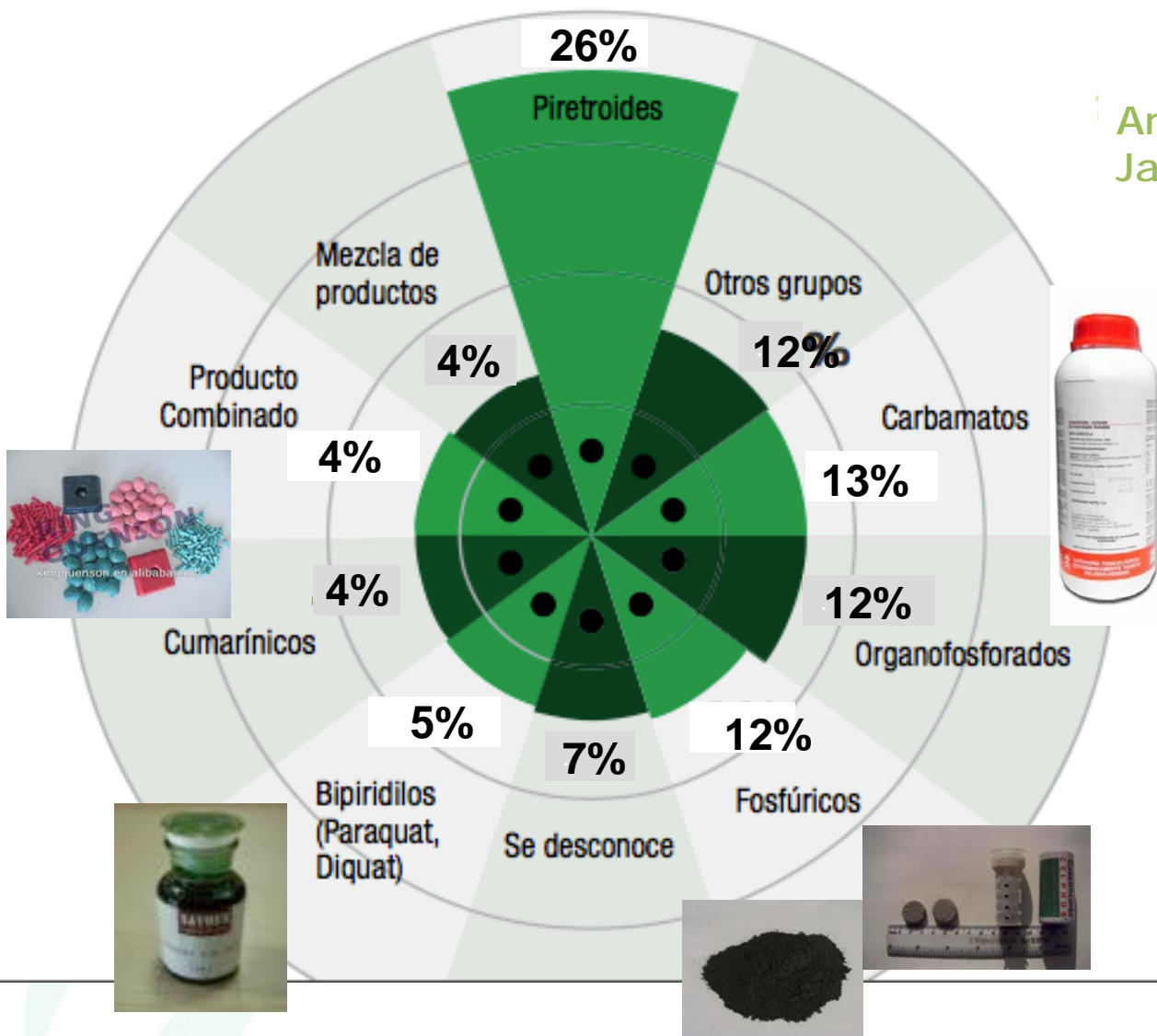
Our statistics 2014

- Misuse is the main reason of calls to our PCC related to pesticide exposure / poisoning
- Exposure: Contact with a toxic w/wo poisoning
- Poisoning: Symptoms related to toxic exposure
- 50% of exposure calls w/o poisoning are related to accidental contact in children <6yo
- 30% of intentional poisoning calls are related to teenagers (12-19 yo)

Emergency calls to our PCC



Chemical group statistics 2014



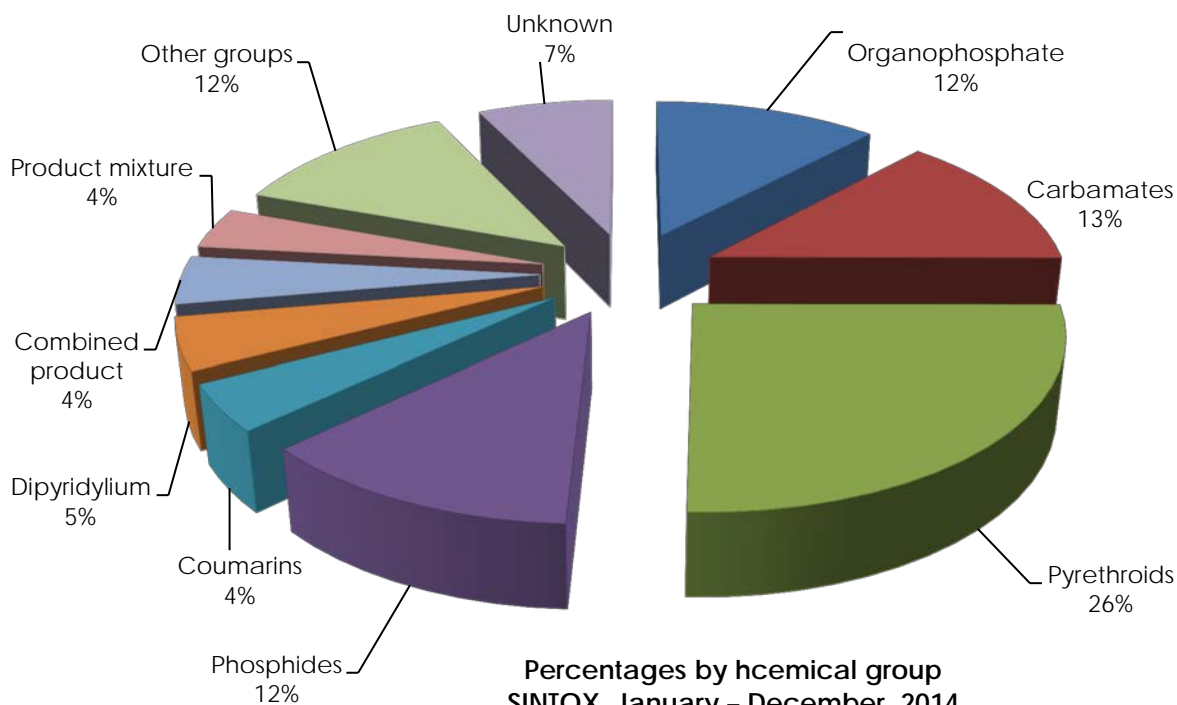
Annual reports
January – December 2014

NOTAS:

- Producto combinado: Producto con 2 o más ingredientes de diferentes grupos químicos en su formulación original
- Mezcla de productos: Uso simultáneo de 2 o más productos por el usuario
- Se desconoce: Reportes sin información del producto o productos sin ingredientes en la etiqueta



Filters: All reports from 01/01/2014 to 12/31/2014



Reports by chemical group, gender, total			
Chemical Group	Female	Male	Total
Organophosphates	37	56	93
Carbamates	31	71	102
Pyrethroids	93	106	199
Phosphides	50	46	96
Coumarins	19	15	34
Dipyridylum(Paraquat)	11	27	38
Combined product	12	23	35
Product mixture	5	25	30
Other groups	34	61	95
Unknown	23	33	56
Totals	315	463	778

Notes:

- Combined product: Product with one or more chemical groups in its formula
- Product mixture: Use of 2 or more products
- In this report, other chemical groups refer to: Acetanilidas (1), amidinas (amitraz 12 casos), aminofosfonatos (glifosato 14 casos), avermectinas (1), benzoicos (2), cúpricos (2), cyclohexanodionas (1), derivados ácido fosfónico (1), difenileter (2), ditiocarbamatos (1), fenipirazoles (fipronil 4 casos), fenoxiacéticos (2,4-D 9 casos), fertilizantes (3), fungicidas (2), minerales (7), neonicotinoides (9), organoclorados (4), organofluorados (fluoroacetato de sodio 6), triazinas (2), ureas (1)

PCC call

- 3 yo boy takes a sip of a green liquid from a Gatorade bottle
- Neighbor gave it to his mother to kill weed...
- 30 minutes later he arrives to the ER with respiratory failure

PCC call

- 15 yo female
- Tries to commit suicide with 5 ml of 20% paraquat
- She tries to inject it intravenously in her right arm

Herbicides

- Paraquat and diquat
- Clay in soil inactivates them
- Controversial effects after dermal or inhalatory exposure
- Rapidly absorbed if ingested → severe skin, oral, esophageal burns

Paraquat

- Destroys cells producing free radicals
- Target cells: lung cells
- Oxygen induces more free radicals
- Paraquat + O₂ → ↑↑free radicals → accelerates lung damage
- Supplemental oxygen should be avoid as possible even if patient develops mild to moderate breathing problems

Paraquat

- Mild <7.5ml 20% paraquat
N/V/D, transient respiratory problems
- Moderate to severe 7.5-15 ml 20% paraquat
Renal / hepatic failure, pulmonar fibrosis. Lethal 2-3 weeks
- Severe >15ml 20% paraquat
Multiple organic failure, esophagic perforation, coma, seizures. Lethal 1-7 days

Paraquat

- 3 yo boy takes a sip of a green liquid from a Gatorade bottle
- 30 minutes later he arrives to the ER with respiratory problems
- Doctors are not familiarized with paraquat poisoning
- Patient gets supplementary O₂
- His condition quickly worsens and dies less than an hour after arrival

Paraquat

- 15 yo female
- Tries to commit suicide with a 5 ml intravenous injection of 20% paraquat
- She developed swelling, pain, redness from elbow to shoulder → subcutaneous emphysema extends to face and trunk
- Respiratory failure → mechanical ventilation
- Renal failure
- Steroids, cyclophosphamide

PCC call

- 13 yo girl brings aluminium phosphide (AP) tablets to school
- She says she is going to commit suicide and takes 3 tablets during a school recess
- Collapses 5 minutes later, paramedics want to do GL in the ambulance but they don't have the right size of NG tube...

Zinc & aluminium phosphide

- Zinc phosphide: Black fine dust, rotten fish or garlic odor
- Zinc aluminium: Gray tablets or pellets
- Dust inhalation → pulmonar edema
- Ingestion → N/V/D, fumes in vomit, diarrhea

Zinc & aluminium phosphide

- Activated by water (moisture)
- Phosphide + water → phosphine gas (highly toxic and lethal)
- Arrhythmias, hypotension, myocardial infarction
- Pulmonar edema pulmonar, seizures, coma
- Lethal in 24 - 48 hrs

Aluminium phosphide

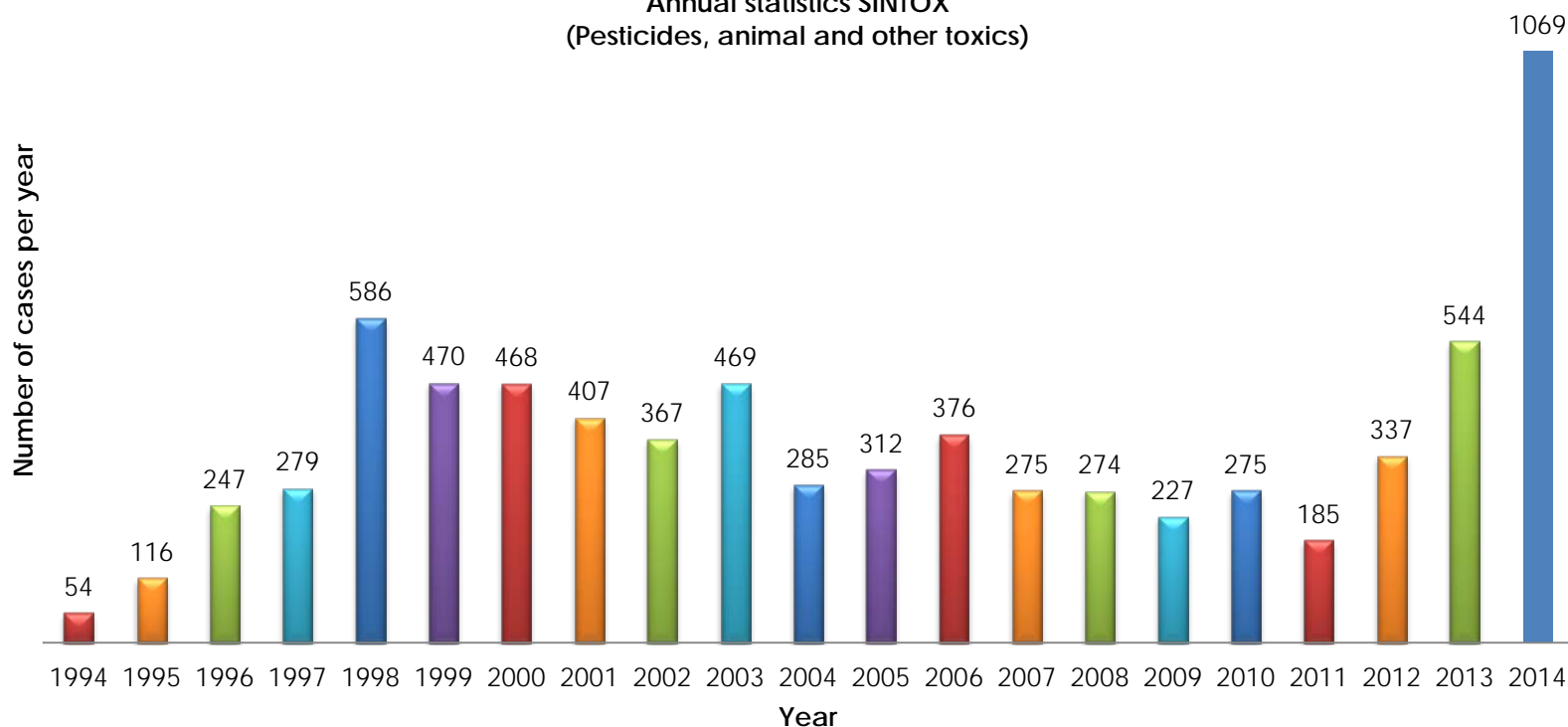
- 13 yo girl takes 3 tablets of aluminium phosphide
- Collapses 5 minutes later, paramedics want to do GL in the ambulance but they don't have the right size of NG tube...
- Phosphide + H₂O = phosphine gas (lethal)
- Female physician at the ER orders the intern to do GL at arrival. Patient died, intern and 2 nurses also poisoned...

Reports to our PCC

- New criteria applied for calls since 2014
- Exposures & poisoning related calls
- Animal exposures & poisonings
- Acute and long term exposure calls
- Other frequent poisonings or exposures:
 - Household products
 - Medication
 - Bites and stings

Filters: All reports from 01/01/2014 to 12/31/2014

Annual statistics SINTOX
 (Pesticides, animal and other toxics)



Exposure vs poisoning

- Exposure
- Acute poisoning
- Chronic poisoning
- Long term exposure
 - Cancer
 - Endocrine disruption

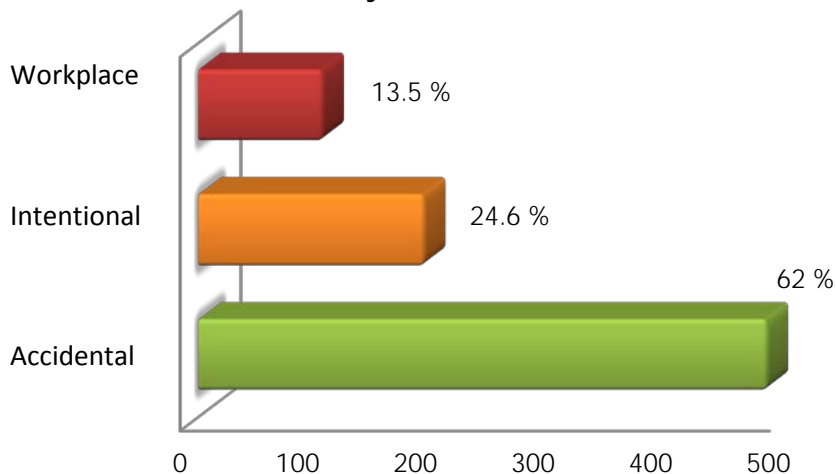
Chronic effects and prevention

- Silent Spring
- DDT effect on bald eagles
- What is research without an action plan?

Filters: All reports from 01/01/2014 to 12/31/2014

Calls by exposure cause, gender, totals			
Exposure	Female	Male	Totals
Accidental	200	282	482
Intentional	102	89	191
Workplace	13	92	105
Totals	315	463	778

Calls by exposure cause
SINTOX January– December 2014



Notes:

- Accidental reports in males represent 36.2% of all pesticide exposures in 2014
- Intentional exposures represent 24.5% (53.4% were females)
- Only 13.5% of 2014 reports were workplace exposures

Common exposures & poisonings

ACCIDENTAL EXPOSURES

- Insect repellants (mosquito coils, mats)
- Rodent baits and pellets
- Household spray insecticides (used as head lice treatment)

Common exposures & poisonings

INTENTIONAL POISONINGS:

- OPs, carbamates
- Herbicides (paraquat)
- Zinc & aluminium phosphide

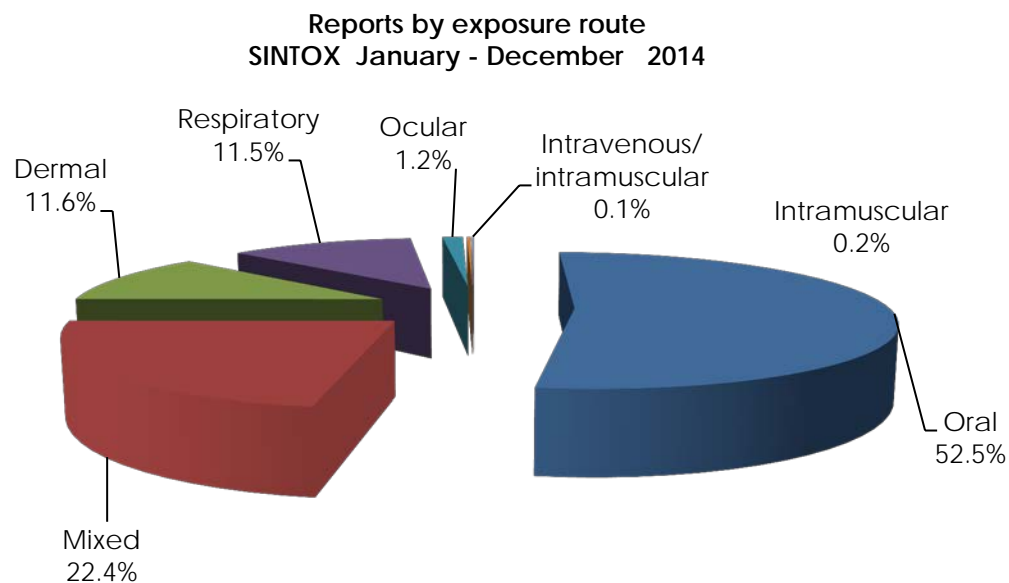
Common exposures & poisonings

WORKPLACE EXPOSURES

- ¿Agricultural exposure?
- No related calls in children

Filters: All reports from 01/01/2014 to 12/31/2014

Report by exposure route and gender			
Route	Female	Male	Total
Oral	201	208	409
Mixed	56	119	175
Dermal	27	64	91
Inhaled	26	64	90
Ocular	4	6	10
Intramuscular	0	2	2
Intravenous/ intramuscular	1	0	1
Total	315	463	778

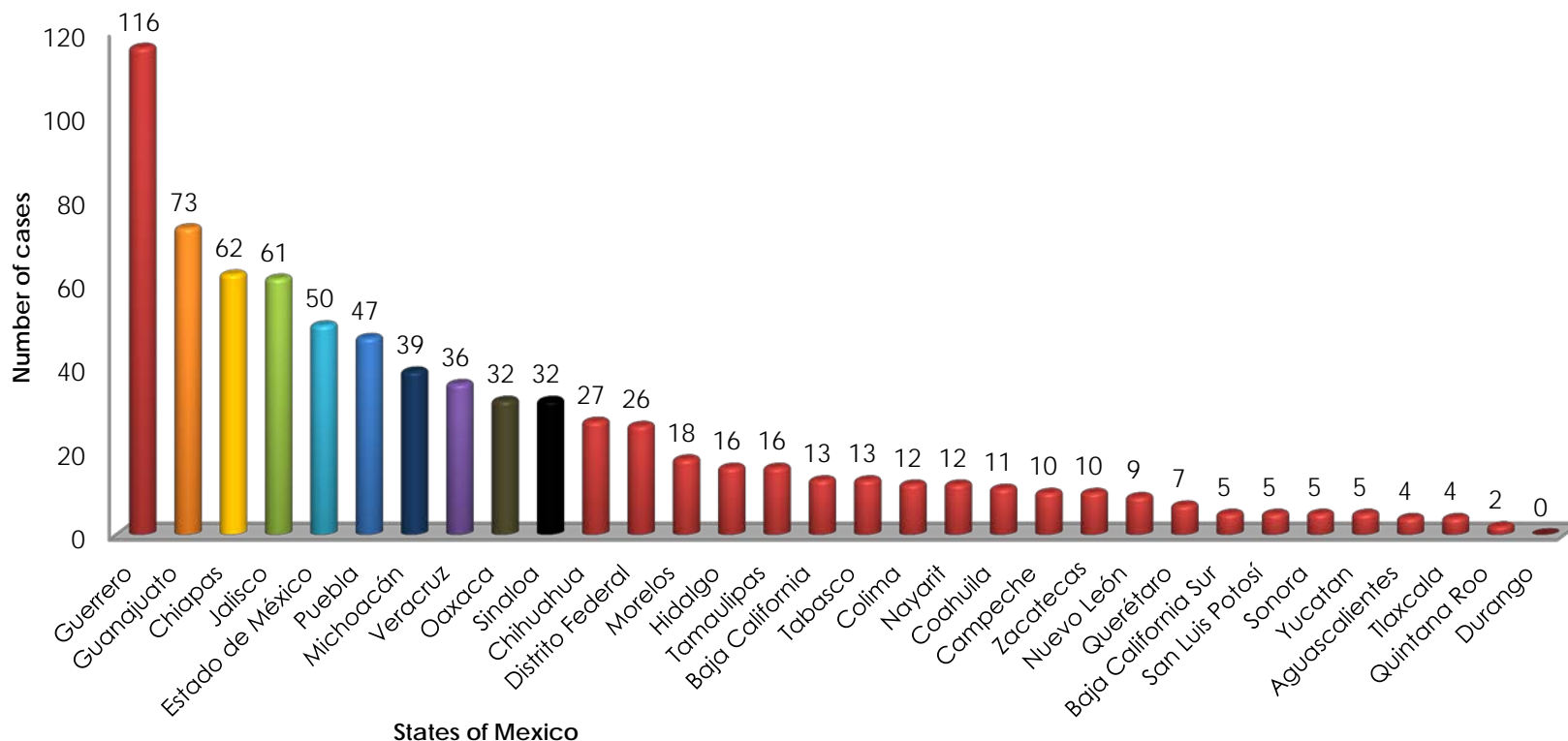


Notas:

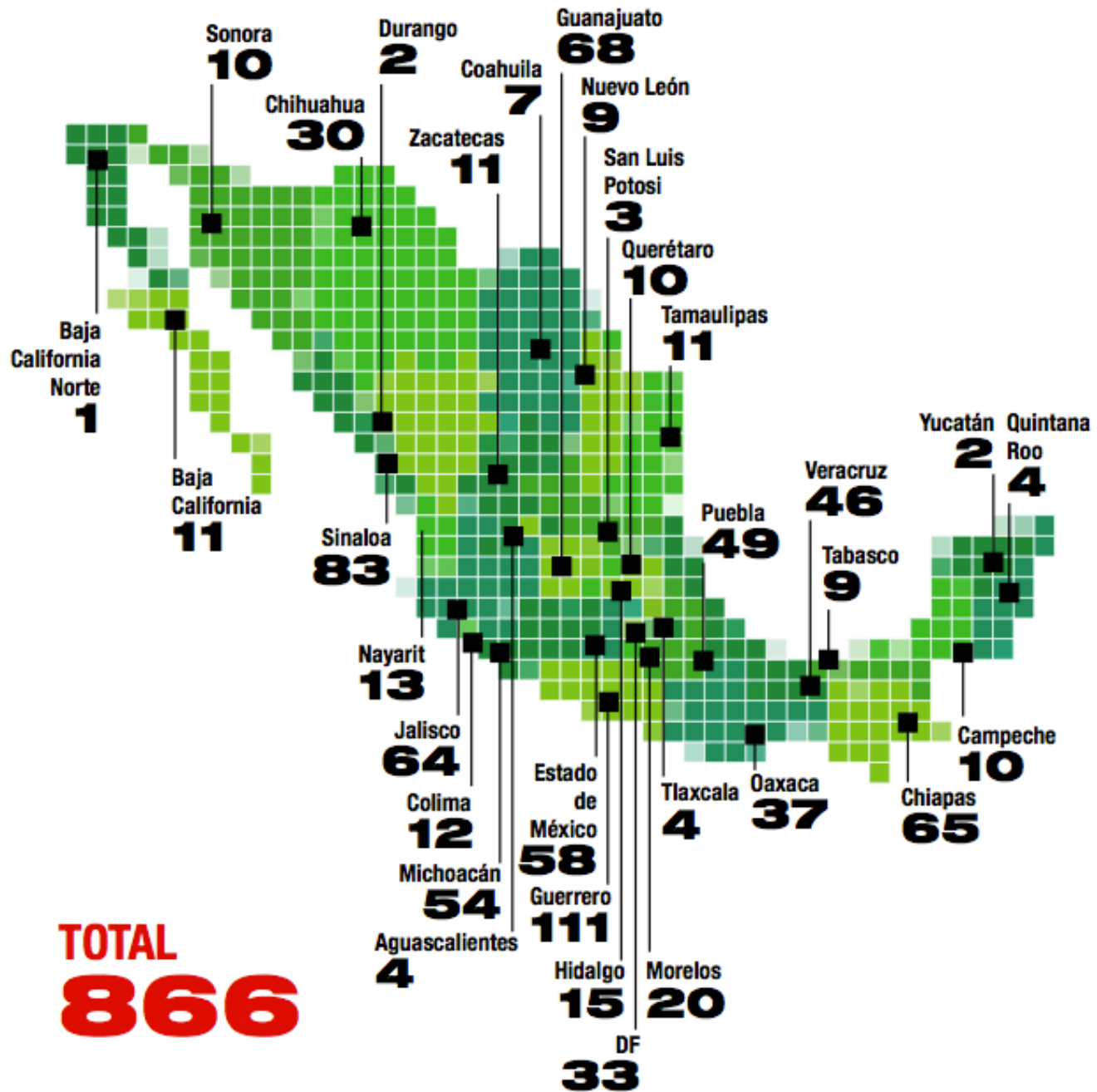
- 52.5% of reports were oral route exposures
- 26.7% of all pesticide-related reports were males exposed by oral route
- In second place, mixed (dermal + respiratory) route 22.4%

Filters: All reports from 01/01/2014 to 12/31/2014

All reported cases by States SINTOX January – December 2014



TOTAL ANUAL DE REPORTES POR ESTADO
OCTUBRE 2013 – SEPTIEMBRE 2014



Labels



Labels and new regulations

"ALTO, LEA LA ETIQUETA ANTES DE USAR EL PRODUCTO"

PRECAUCIONES Y ADVERTENCIAS DE USO.

Los aplicadores y personas que manejan el producto deben usar el equipo de protección personal adecuado como camisa de manga larga, pantalones largos, calcetines con zapatos o botas resistentes al agua. Se recomienda utilizar un overal sobre la ropa, que cubra los guantes y botas para evitar infiltración del producto al cuerpo. Los guantes que dan mayor protección en el manejo de productos químicos agrícolas son los de nitrilo, butilo y/o neopreno. Usar goggles o mascarilla protectora durante la aplicación, así como gorra o sombrero de plástico. Durante la preparación y aplicación del producto hágalo a favor del viento. No coma, beba o fume durante el manejo y aplicación. No destape las boquillas con la boca. Al terminar las labores descontamine el equipo de aplicación, quítese el overal y colóquelo en un lugar ventilado, la ropa utilizada durante la aplicación debe lavarse con agua y jabón y póngase ropa limpia.

PRECAUCIONES DURANTE EL MANEJO DEL PRODUCTO

"NO COMA, BEBA O FUME CUANDO ESTE UTILIZANDO ESTE PRODUCTO"
 "NO SE TRANSPORTE NI ALMACENE JUNTO A PRODUCTOS ALIMENTICIOS, ROPA O FORRAJES"
 "MANTENGASE FUERA DEL ALCANCE DE LOS NIÑOS, MUJERES EMBARAZADAS, EN LACTANCIA Y ANIMALES DOMESTICOS"
 "LAVESE LAS MANOS DESPUES DE UTILIZAR EL PRODUCTO Y ANTES DE CONSUMIR ALIMENTOS"
 "NO ALMACENE EN CASAS HABITACION"
 "NO USE EL PRODUCTO SIN EL EQUIPO DE PROTECCION ADECUADO"
 "LOS MENORES DE 18 AÑOS NO DEBEN MANEJAR ESTE PRODUCTO"
 "AL FINAL DE LA JORNADA DE TRABAJO BANESE Y PONGASE ROPA LIMPIA"
 "NO SE INGIERA, INHALE Y EVITESE EL CONTACTO CON LOS OJOS Y PIEL"
 "NO MEZCLE O PREPARE EL PRODUCTO CON LAS MANOS, USE GUANTES, USE UN TROZO DE MADERA U OTRO MATERIAL APROPIADO"
 "NO DESTAPE LA BOQUILLA CON LA BOCA".

Lea el instructivo anexo.

"LEA EL INSTRUCTIVO ANEXO"
 "USO AGRICOLA"

Metamidofos

metamidofos
 INSECTICIDA / LIQUIDO MISCIBLE

"COMPOSICIÓN PORCENTUAL"
 INGREDIENTE ACTIVO : % en peso
 METAMIDOFOS: O, S-dimetil fosforo amidatoatoNo menos de: 50.0
 Equivalente a 600 gr de i.a./L a 20°C

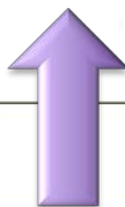
INGREDIENTES INERTES
 Disolvente y compuestos relacionados..... No más de: 50.0
 Total: 100.00

REG. RSCO-INAC-0144-363-012050 -CONTENIDO NETO: **0.950 L**



TITULAR DEL REGISTRO:

DISTRIBUIDO POR:



LOTE No.:
 FECHA DE ELABORACIÓN:

FECHA DE CADUCIDAD:
 DOS AÑOS DESPUÉS
 DE SU ELABORACIÓN.

HECHO EN MÉXICO

"USESE EXCLUSIVAMENTE EN LOS CULTIVOS Y PLAGAS AQUI RECOMENDADOS"

INSTRUCCIONES DE USO
 ¡SIEMPRE CALIBRE SU EQUIPO DE APLICACION!

MATON 600 es un insecticida organofosforado que actúa por contacto e ingestión, formulado como líquido soluble, recomendado para el control de las plagas que se indican abajo.

Lea el instructivo anexo.

METODO PARA PREPARAR Y APLICAR EL PRODUCTO

Forma de abrir el envase del producto: Desenrosque la tapa y quite con cuidado el sello protector, evitando salpicaduras y el contacto con la piel y ojos.

Diluya **MATON 600** en suficiente agua para conseguir una cobertura total y uniforme de todas las partes de la planta. Iniciar las aplicaciones cuando las condiciones climáticas sean favorables para la aparición y desarrollo de las plagas. Debe de añadirse la cantidad necesaria de **MATON 600** lentamente al tanque aspersor al momento del llenado, el agitador se debe mantener en movimiento mientras se llena el tanque. Se recomienda tanto el método de aplicación terrestre como aéreo, a menos que existan instrucciones específicas para determinados cultivos.

CONTRAINDICACIONES

No aplicar en horas de calor intenso, cuando exista una alta probabilidad de lluvia próxima o cuando la velocidad del viento sea alta (más de 15 Km/hora). No combine tensoactivos o fertilizantes, a menos que experiencias anteriores demuestren que la combinación es físicamente compatible y no causa daño.

FITOTOXICIDAD

MATON 600 no es fitotóxico si se utiliza de acuerdo a las recomendaciones de esta etiqueta. Si se requiere aplicarlo en mezcla con otros plaguicidas, deberá hacerse una prueba previa a su aplicación para evitar posibles riesgos de fitotoxicidad.

Lea el instructivo anexo.



PELIGRO



03 de abril
 2012

Common exposures & poisonings

NON REGULATED PRODUCTS

- Big concern, responsible for undiagnosed poisonings, difficult to recognize and manage
- Agricultural pesticides sold as household products in markets (Ops, carbamates)
- Forbidden products as sodium fluoroacetate (1080, Tres cabezas)

Prevention

- PREVENT THE PEST PROBLEM (Best approach to pesticide reduction)
- Integrated pest management:
 - Good sanitation and proper maintenance of structures and grounds
 - Mechanical traps for pests, fly swatters, mesh nettings
 - Control weeds by mowing, hoeing, mulching
 - Use minimum amount and least toxic pesticides only when necessary

Prevention

- Integrated pest management:
 - Select the right product according to the extent of the problem
 - Remember some pests can be helpful (bees)
 - Some plants attract predatory insects (ladybugs, spiders, centipedes, praying mantises)
 - Some plants repel insects (mint, garlic, marigolds)

Prevention

- Integrated pest management:
 - Read labels a minimum of five times from the time you buy it to the time you apply it
 - Follow directions and safety precautions
 - Use protective equipment (dust masks and gloves)
 - Outdoors: Apply on low-wind, no-rain days to prevent migration

Prevention

- Improve housekeeping:
 - Keep house clean, free from food crumbs, food in sealed containers
 - Block or destroy outdoor pest hiding places and entry points (cracks)
 - Eliminate sources of free standing water where mosquitoes like to breed
 - Door and window screens
 - Keep areas bathroom and kitchen dry and ventilated (molds and fungi)

Prevention

- ANTS
 - Prevent: Clean up food crumbs
 - Repel: Pour a line of cream of tartar or sprinkle red chili pepper, paprika or dried peppermint leaves
- MOSQUITOES
 - Prevent: Wear light clothes
 - Repel: Rub citronella oil r vinegar on exposed body parts

Prevention

- FLIES
 - Prevent: Seal up cracks around doors and windows
 - Repel: blend 6 cloves of crushed garlic, 1 minced onion, 1 tablespoon soap in 4 quarts of water. Let the solution sit for 1 day, strain the solution, and spray it on flies
- ROACHES
 - Prevent: Sealed food containers, clean crumbs
 - Repel: Rub citronella oil or vinegar on exposed body parts

Conclusions

- Preventive measures should be reinforced
- Less exposure everywhere
- Fight the cause instead of the problem
- Reduce pests at home
- Reduce exposure
- Reduce potential accidents

PRODUCT LABEL FOR IDENTIFICATION



SINTOX antidote kit

CONTENT

Toxogonin (Obidoxime)

Atropine

Vitamin K1

Loratadine

Sodium sulfate

Activated charcoal

Bentonite

Nitrile gloves

Guidelines



¿Qué hacer?



Asesoría médica en caso de
intoxicación.
Atención sin costo
24 horas



SINTOX
01800.009.2800
5611.2634
Servicio de Información
Toxicológica



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