

# Project Clean Environment for Healthy Kids

## *Recognition and Management of Health Problems Related to Pesticide Exposure Acute Effects*

**Selected Materials  
by Marion Moses, MD**

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Recognition and Management of Health Problems Related to  
Pesticide Exposure-Acute Effects

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# **Recognition and Management of Health Problems Related to Pesticide Exposure – Acute Effects**

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## Acute Effects of Pesticide Exposure

**Introduction:** The Environmental Protection Agency (EPA) ranks pesticides into four toxicity categories based on LD50, with category I being the most and category IV the least acutely toxic (see Table 1). The Agency has issued an excellent guide for clinicians on the recognition and management of pesticide poisoning (1), which is distributed to physicians and nurses at the workshops.

Arizona, California, and New Mexico require physicians to report all cases of definite or suspected pesticide-related illness (1a, 1b, 2-5a). In Texas, reporting is only required for known or suspected instances of occupationally-related pesticide exposures (5b). California has the most comprehensive system of investigating reported incidents. In the most recent annual report from California (1998), there were 1,012 reports of occupational illness, of which 914 were considered to be definitely (211), probably (362) and possibly (341) due to pesticide exposure. There were 95 nonoccupational reports of which 84 were considered to be definitely (5), probably (43) and possibly (36) due to pesticide exposure (6). Occupational deaths are rare in the United States and most fatalities are suicides (7,8).

**Systemic Poisoning:** The pesticides most often implicated in serious poisonings are the cholinesterase inhibiting organophosphate and N-methyl carbamate classes of chemicals. The signs and symptoms of mild to moderate poisoning from these cholinesterase inhibiting pesticides include: headache, fatigue, weakness, dizziness, hypersecretion (sweating, salivation, lacrimation, rhinorrhea), blurred vision, and nausea. Indications of worsening include: dyspnea /tachypnea, vomiting, abdominal cramps, diarrhea, muscle twitching, and tremor. Manifestations of severe poisoning include ataxia, miosis (this classic sign is not always present), hypotension, bradycardia, and involuntary urination and defecation, with loss of consciousness, seizures (much more common in children than adults), and respiratory depression indicate life-threatening severity resulting in death without prompt treatment. Central nervous system signs and symptoms which are also present include: anxiety, restlessness, insomnia, nightmares, confusion and memory loss (1).

**Reentry poisoning:** The reentry interval is the time after pesticides have been applied to a crop before workers are allowed back into the field for routine cultivation or harvest activities. There have been many instances of "reentry poisoning" in farm workers from pesticide residues on crops when the workers were sent back into the fields too soon. Some of these instances led to a lengthening of the reentry interval or a prohibition on a use of the pesticide. Reports of reentry poisonings include: California - carbofuran (9); Washington State - phosdrin (10); Florida - phosdrin (11); Texas-Mexico border - railcar fumigants (12); California - Omite (13,14); and California - phosalone (15).

**Cholinesterase Testing:** California is the only state that has mandatory red blood cell and plasma cholinesterase monitoring of workers who mix/load/or apply Toxicity Category I and II organophosphates and N-methyl carbamates (16,17,18,). These blood tests are only useful for exposure to organophosphates and N-methyl carbamates, and are not indicated for other classes of pesticides. The test should be done if there is doubt or suspected combined exposures. In general this test is useful only if the putative exposure was within the past week or less for OPs and a few hours for carbamates. Serum can be saved and frozen for possible later testing.

**Which Test to Do:** Both RBC (blood) and serum/plasma cholinesterase should be done. In general, plasma ChE activity is reduced earlier and regenerates quicker, usually within days. RBC activity takes much longer to regenerate; a rule of thumb is 1% per day, so a 30% reduction from baseline would take about a month to regenerate. RBC is more reflective of functional cholinesterase at nerve endings and in the brain.

**Difficulties in Interpretation:** Since the normal reference range is very wide, unless a test is clearly outside the lower range of normal, one test cannot confirm or exclude OP/CB overexposure or poisoning, in the absence of a pre-exposure baseline. Results "within normal limits" are useless without a baseline for comparison. Intra-individual variation can be as high as 25% even on the same day. If a baseline level is not available, two or more repeat tests over a period of two to three weeks using the same methods can be indicative of possible overexposure if the activity level increases 15% or more on each retest.

**Interpreting the Results:** A 15 to 25% reduction in RBC activity indicates mild poisoning; 25 to 35% reduction indicates moderate poisoning, and 35 to 50% reduction shows severe poisoning.

**Worker Monitoring:** A 20% decrease from baseline in RBC ChE needs investigation and repeat testing. A 30% decrease from baseline requires removal from exposure until the level returns to baseline. Approved methods include: Michel, microMichel, pH stat, Ellman, and micro-Ellman.

**Cardiotoxicity:** Cardiotoxicity is frequently reported with severe organophosphate poisoning including: QT prolongation (19-20,22-23,25-27); sinus tachycardia (25,27); sinus bradycardia (25); arrhythmias (ventricular more prevalent) (20-21,24-27); transient picture of myocardial infarction (20), and subendocardial lesion inferior wall, with elevated cardiac enzymes (23).

**Pancreatitis:** There are several reports of pancreatitis as a complication of pesticide poisonings, the majority related to organophosphates; malathion (28,29); organophosphates (30-35); aldicarb (36); parathion (37); pentachlorophenol (38); diazinon (39); and one report in children (40).

**Uncommon Complications:** Rare complications include reports of acute renal failure (41) and transient diabetes insipidus (42).

**Preexisting Conditions:** Pesticide exposure, even at very low levels can exacerbate preexisting conditions, particularly in those with asthma, hyperreactive airways, and allergies. Asthma has not been well studied in respect to pesticides. Most reports are of exacerbation of the disease, but in some the exposure apparently is etiological.

**Asthma:** Selected reports include: drift exposure to Ethoporp degradation product OR=6.0 (43); residents within ½ mile of environmental spill of metam sodium (44); Iowa farm children (45); organophosphate exposure (46-50); farmers (51-53); carbofuran use OR=2 (54); vineyard and orchard workers (55); greenhouse workers (56); pesticide manufacturing workers - chlorpyrifos (57); cynoxamil, mancozeb, thiophanate, paraquat and dodine (58-59); pesticide sprayers (60); formaldehyde (61-62); chloramines (63); home aerosol/coils/other exposures (64-68); fungicides - tetrachloroisophthalo-nitrile (69); tributyl tin oxide (70); captafol (71); and bronchospasm in sulfite-sensitive patients who use dry formulations of glyphosate (72). There is a report of a fatality from irreversible bronchospasm in a

young girl from a pyrethrin lice shampoo (73).

**Allergies:** Pesticides are among many irritant and potentially sensitizing contact allergens. In general irritant dermatitis is much more common; allergic reactions are less common from both occupational and environmental exposures. The following are reports of allergic reactions (primarily dermatitis) from specific pesticide exposures: chlorothalonil (74); resmethrin (75); trifluralin and benefin (76); deet: (77-78); norflurazon (79); d-limonene (80-81); malathion (82); methiocarb (83); herbicides (84-88); dyrene (89); thiabendazole (90); omethoate and dimethoate (91) and *Bacillus thuringiensis* (92).

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**Table 1**

**EPA Acute Toxicity Categories**  
by Lethal Dose 50 - LD<sub>50</sub> in rats in mg/kg of body weight

	<b>Tox I Danger</b>	<b>Tox II Warning</b>	<b>Tox III Caution</b>	<b>Tox IV Caution</b>
<b>Oral LD 50</b>	50 mg/kg	50-500 mg/kg	500-5,000 mg/kg	>5,000 mg/kg
<b>Inhal. LC 50</b>	0.2 mg/l	0.2-2 mg/l	2-20 mg/l	> 20 mg/l
<b>Dermal LD 50</b>	200 mg/kg	200-2,000 mg/kg	2,000-20,000 mg/kg	>20,000 mg/kg
<b>Eye</b>	Corrosive. Corneal opacity not reversible in 7 days	Corneal opacity reversible in 7 days. Irritation persists 7days	No corneal opacity. Irritation reversible in 7 days	No irritation.
<b>Skin</b>	Corrosive	Severe irritation at 72 hours	Moderate irritation at 72 hours	Mild or slight irritation 72 hours



## Major Classes of Insecticides

### Organophosphates

#### Irreversible Cholinesterase Inhibitors

Acephate /Orthene  
Azinphosmethyl -Guthion  
Chlorpyrifos / Dursban  
DEF (defoliant)  
Diazinon  
Dichlorvos (DDVP)  
Dimethoate  
Fenamiphos / Nema-cur  
Malathion  
Methidathion  
Methyl parathion  
Naled /dibrom  
Phorate / Thimet  
Phosmet / Imidan

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#### N-Methyl Carbamates

#### Reversible) Cholinesterase Inhibitors

Aldicarb (Temik)  
Bendiocarb (Ficam)  
Carbaryl (Sevin)  
Carbofuran (Furadan)  
Methomyl (Lannate)  
Oxamyl (Vydate)

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#### Chlorinated Nicotine Derivatives

Fipronil  
Imidacloprid

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#### Pyrethrum (petals)

#### Pyrethrins (extracts)

#### Pyrethroids (synthetic analogs) #

Allethrin  
Bioallethrin  
Cypermethrin\* \*  
Cyfluthrin  
Deltamethrin  
Esfenvalerate\* \*  
Fenvalerate\*\*  
Flucythrinate\*\*  
Fluvalinate\*  
Permethrin / Nix ,Elimite  
Resmethrin

Tetramethrin

Tralomethrin\*\*\*

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#### Fumigants - Current Use

#### Soil Sterilants -Nematocides

Chloropicrin  
Metam-sodium (MITC)  
Methyl bromide  
Telone II (1,3-dichloropropene)

#### Moth repellents

Paradichlorobenzene

Naphthalene

#### Termiticides

Methyl bromide  
Sulfuryl fluoride (Vikane)

#### Rodenticides

Al / Mg Phosphide (phosphine gas)

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#### Fumigants

#### Banned/Discontinued

Carbon tetrachloride  
Chloroform  
DBCP (dibromochloropropane)  
EDB (ethylene dibromide)  
Ethylene dichloride  
Methylene chloride

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#### Chlorinated Hydrocarbons

#### In Current Use

Dicofol  
Endosulfan  
Lindane  
Methoxychlor

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#### Chlorinated Hydrocarbons

#### Banned

DDT  
Aldrin/dieldrin  
Chlordane  
Heptachlor  
Hexachlorobenzene\*  
Kepone  
Mirex  
Toxaphene

\* Contaminates Dacthal, PCNB, Chlorothalonil. # See page 76-77 EPA's RMPP for brand names. \*\* Contain cyanogroups - increases toxicity. \*\*\* Degrades to deltamethrin

# Selected Pesticides Widely Used in the United States

## Insecticides

### Organophosphates

Azinphos-methyl (Guthion)  
Chlorpyrifos (Dursban, Lorsban)  
Diazinon (Spectracide)  
Dichlorvos (DDVP)  
Dimethoate  
Methamidophos (Monitor)  
Methidathion (Supracide)  
Methyl parathion  
Mevinphos (Phosdrin)  
Parathion (ethyl)

### N-methyl carbamates

Aldicarb (Temik)  
Carbaryl (Sevin)  
Carbofuran (Furadan)  
Methomyl (Lannate)  
Oxamyl (Vydate)  
Propoxur (Baygon)

### Chlorinated Hydrocarbons

Endosulfan (Thiodan)  
Lindane  
Methoxychlor

### Synthetic Pyrethroids

Cyfluthrin (Baythroid)  
Cypermethrin  
Deltamethrin  
Fenvalerate (Pydrin)  
Flucythrinate

## Herbicides

Alachlor (Lasso)  
Atrazine (Aatrex)  
2,4-D  
Glyphosate (Roundup)  
Paraquat (Gramoxone)  
Simazine (Princep)  
Trifluralin (Treflan)

## Fungicides

Benomyl (Benlate)  
Captan  
Chlorothalonil (Daconil, Bravo)  
Hexachlorobenzene  
Mancozeb  
Maneb  
Metiram  
Triadimefon (Bayleton)

## Fumigants

Chloropicrin  
Ethylene oxide  
Methyl bromide (Brom-O-Gas)  
Metam-sodium (Vapam)  
Sulfuryl fluoride (Vikane)  
Telone II (Dichloropropene)

## Multiple Use

DNOC  
Dinocap  
Pentachlorophenol

ed Sta

## Signs and symptoms of Organophosphate / N-methyl carbamate Poisoning

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### Mild to Moderate Poisoning

Headache	Fatigue, weakness
Dizziness	Hypersecretion*
Blurred vision	Nausea

\* sweating, salivation, lacrimation, rhinorrhea

### Indications of Worsening

Dyspnea /tachypnea	Diarrhea
Vomiting	Muscle twitching
Abdominal cramps	Tremor

### Severe Poisoning

Ataxia	Bradycardia
Miosis*	Involuntary urination/defecation
Hypotension	

\* although classic sign is not always present

### Life threatening severity

Loss of consciousness	Respiratory depression
Seizures*	Death without prompt treatment

\* much more common in children than adults

### CNS Signs and Symptoms

Anxiety	Restlessness
Insomnia	Nightmares
Confusion	Memory Loss

### Some Illnesses Which Present Similarly

Influenza	Asthma
Heat stress/stroke	Gastroenteritis
Alcohol intoxication	Pneumonia
Exhaustion	Stroke
Hypoglycemia	

**Cardiotoxicity  
(Severe OP Poisoning)**

39.4%	QT prolongation (1)
80%	QT prolongation, ST and T anomalies (2)
93%	Q-T prolongation (4)
CR*	QT prolongation (5)
67%	QT prolongation (7)
CR*	Q-T prolongation (8)
CR*	QT prolongation (9)
35%	Sinus tachycardia - nicotinic stim. (7)
CR*	Sinus tachycardia - nicotinic stim. (9)
28%	Sinus bradycardia - classic cholinergic (7)
42%	Arrhythmia (ventricular more prevalent) (2)
24%	Arrhythmia (7)
18-80%	Arrhythmia, vent. fib.; prolonged Q/T intervals, ST/T changes (6)
41%	ST-T change (7)
CR*	Polymorphic ventricular tachycardia (3)
40%	Malignant tachyarrhythmias "torsade de pointes" (8)
0%	Polymorphic ventricular tachycardia (torsade de pointes type) (7)
CR*	Pleomorphic ventricular tachyarrhythmia 'torsade de pointes' (8)
CR*	Advanced ventricular extrasystoles but not "torsades de pointes" (9)
9%	Conduction defects (7)
4%	Transient picture of myocardial infarction (2)
CR*	Subendocardial lesion inferior wall (5)
CR*	Elevated cardiac enzymes (5)
22%	Hypertension (7)
17%	Hypotension (7)

\* Case Report

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## Some Notes on Cholinesterase Testing

### When to Do the Test

- ▶ A test for organophosphate (OP) and N-methyl carbamate (CB) pesticides only
- ▶ Not indicated for poisoning with any other class of pesticides
- ▶ Order the test if in doubt or suspect combined exposures.
- ▶ In general useful only if the putative exposure within the past week or less for OPs and a few hours for CBs
- ▶ Serum can be saved and frozen for possible later testing if indicated.

### Which Test to Do

- ▶ Both RBC (blood) and serum/plasma cholinesterase should be done.
- ▶ In general plasma Che activity is reduced earlier and regenerates quicker, usually within days.
- ▶ RBC activity takes much longer to regenerate. Rule of thumb is 1% per day, so a 30% reduction from baseline would take about a month to regenerate.
- ▶ RBC more reflective of functional cholinesterase at nerve endings and in brain.
- ▶ RBC more effective in CB poisoning but neither is as useful as for OPs since can regenerate in test tube.

### Difficulties in Interpretation

- ▶ Normal reference range is very wide.
- ▶ Unless it is clearly outside the lower range of normal, one test cannot confirm or exclude OP/CB overexposure or poisoning.
- ▶ Findings that are "within normal limits" are useless without a baseline for comparison.
- ▶ Individual variation can be as high as 25% even on the same day.
- ▶ Value must be compared to a baseline level done prior to contact/exposure.
- ▶ Two or more repeat tests over a period of two to three weeks using same methods can be indicative of possible overexposure if the activity level increases.

### Interpreting the Results

- ▶ 15 -25% reduction in RBC activity - mild poisoning
- ▶ 25- 35% reduction in RBC activity - moderate poisoning
  - ▶ 35- 5% reduction in RBC activity severe poisoning

### Worker

- ▶ 20% decrease from baseline needs investigation and repeat testing
- ▶ 30% decrease from baseline requires removal from exposure until level returns to baseline

### Approved Methods

Michel, microMichel, pH stat, Ellman, micro-sEllman

## Pesticide Information Resources

### I. To Get The Name of a Pesticide To Which A Patient May Have Been Exposed

The federal Worker Protection Standard gives health professionals the right to obtain information from growers about a pesticide to which a patient may have been exposed. This information must be provided promptly. The grower must provide the name of the pesticide, the circumstances of the possible exposure and pertinent information from the pesticide label. You can call the grower directly or seek assistance from your state Department of Agriculture or Department of Health.

### II. To obtain information about first aid, treatment and health effects call:

#### EPA Pesticide Hotline

1-800-858-7378

(6:30 a.m. – 4:30 p.m., Pacific time)

#### Your State's Poison Control Center

### III. For pesticide/toxics information on the web:

US EPA: [www.epa.gov/pesticides](http://www.epa.gov/pesticides)

Exttoxnet: <http://ace.orst.edu/info/exttoxnet>

MSDS search sources: [www.ilpi.com/msds/index.html](http://www.ilpi.com/msds/index.html)

Pesticide Action Network pesticide database: [www.pesticideinfo.org](http://www.pesticideinfo.org)

Toxics database: [www.oehha.ca.gov/risk/chemicalDB/index.asp](http://www.oehha.ca.gov/risk/chemicalDB/index.asp)

### IV. For public interest groups reporting on pesticide policy:

Pesticide Action Network: [www.panna.org/panna](http://www.panna.org/panna)

National Coalition Against Misuse of Pesticides: [www.ncamp.org](http://www.ncamp.org)

Environmental Working Group: [www.ewg.org](http://www.ewg.org)

Natural Resources Defense Council: [www.nrdc.org](http://www.nrdc.org)

Farmworker Justice Fund: [www.fwjjustice.org](http://www.fwjjustice.org)

# MIGRANT CLINICIANS NETWORK

## Evaluation of Farmworker Pesticide Exposure

<b>PATIENT ID</b>	Name: _____ DOB: _____ SS#: _____																					
	Farm: _____ Address: _____																					
<b>EXPOSURE INFORMATION</b>	Date of exposure: _____ Last time field sprayed: _____																					
	Name of pesticide: _____ Crop: _____																					
	Method of pesticide application: <input type="checkbox"/> Aerial <input type="checkbox"/> Hand spray <input type="checkbox"/> Spray rig																					
	Type of work: <input type="checkbox"/> Mixing <input type="checkbox"/> Loading <input type="checkbox"/> Picking/thinning/pruning crops																					
	Exposure: <input type="checkbox"/> Aerial <input type="checkbox"/> Hand spray <input type="checkbox"/> Spray rig <input type="checkbox"/> Sprayed directly <input type="checkbox"/> Drift																					
	Other workers involved? <input type="checkbox"/> Yes <input type="checkbox"/> No Who? _____																					
	Had patient received training under the Worker Protection Standard? <input type="checkbox"/> Yes <input type="checkbox"/> No																					
<b>SYMPTOMS</b>	<table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Weakness</td> <td><input type="checkbox"/> Drooling</td> <td><input type="checkbox"/> Blurred vision</td> <td><input type="checkbox"/> Chest pain</td> </tr> <tr> <td><input type="checkbox"/> Skin rash</td> <td><input type="checkbox"/> Tiredness</td> <td><input type="checkbox"/> Excessive sweating</td> <td><input type="checkbox"/> Red eyes</td> </tr> <tr> <td><input type="checkbox"/> Headaches</td> <td><input type="checkbox"/> Nausea</td> <td><input type="checkbox"/> Loss of consciousness</td> <td><input type="checkbox"/> Convulsions</td> </tr> <tr> <td><input type="checkbox"/> Shortness of breath</td> <td><input type="checkbox"/> Dizziness</td> <td><input type="checkbox"/> Vomiting</td> <td><input type="checkbox"/> Abdominal pain</td> </tr> <tr> <td><input type="checkbox"/> Muscle twitches</td> <td><input type="checkbox"/> Productive cough</td> <td><input type="checkbox"/> Confusion</td> <td><input type="checkbox"/> Other: _____</td> </tr> </table>		<input type="checkbox"/> Weakness	<input type="checkbox"/> Drooling	<input type="checkbox"/> Blurred vision	<input type="checkbox"/> Chest pain	<input type="checkbox"/> Skin rash	<input type="checkbox"/> Tiredness	<input type="checkbox"/> Excessive sweating	<input type="checkbox"/> Red eyes	<input type="checkbox"/> Headaches	<input type="checkbox"/> Nausea	<input type="checkbox"/> Loss of consciousness	<input type="checkbox"/> Convulsions	<input type="checkbox"/> Shortness of breath	<input type="checkbox"/> Dizziness	<input type="checkbox"/> Vomiting	<input type="checkbox"/> Abdominal pain	<input type="checkbox"/> Muscle twitches	<input type="checkbox"/> Productive cough	<input type="checkbox"/> Confusion	<input type="checkbox"/> Other: _____
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	How long after exposure did symptoms occur? _____																					
	Other workers exposed who developed symptoms? <input type="checkbox"/> Yes <input type="checkbox"/> No																					
<b>PHYSICAL SIGNS</b>	<table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Hypotension</td> <td><input type="checkbox"/> Bradycardia</td> <td><input type="checkbox"/> Dermatitis</td> <td><input type="checkbox"/> ↓ DTRs</td> </tr> <tr> <td><input type="checkbox"/> Confusion</td> <td><input type="checkbox"/> Convulsions</td> <td><input type="checkbox"/> Ataxia</td> <td><input type="checkbox"/> Muscle weakness</td> </tr> <tr> <td><input type="checkbox"/> Paralysis</td> <td><input type="checkbox"/> Fasciculations</td> <td><input type="checkbox"/> Constricted pupils</td> <td><input type="checkbox"/> Other: _____</td> </tr> <tr> <td><input type="checkbox"/> ↓ Visual accommodation</td> <td><input type="checkbox"/> Sweating</td> <td><input type="checkbox"/> Drooling</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Bronchospasm</td> <td><input type="checkbox"/> Bronchial exudation</td> <td><input type="checkbox"/> Red eyes</td> <td>_____</td> </tr> </table>		<input type="checkbox"/> Hypotension	<input type="checkbox"/> Bradycardia	<input type="checkbox"/> Dermatitis	<input type="checkbox"/> ↓ DTRs	<input type="checkbox"/> Confusion	<input type="checkbox"/> Convulsions	<input type="checkbox"/> Ataxia	<input type="checkbox"/> Muscle weakness	<input type="checkbox"/> Paralysis	<input type="checkbox"/> Fasciculations	<input type="checkbox"/> Constricted pupils	<input type="checkbox"/> Other: _____	<input type="checkbox"/> ↓ Visual accommodation	<input type="checkbox"/> Sweating	<input type="checkbox"/> Drooling	_____	<input type="checkbox"/> Bronchospasm	<input type="checkbox"/> Bronchial exudation	<input type="checkbox"/> Red eyes	_____
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<input type="checkbox"/> Bronchospasm	<input type="checkbox"/> Bronchial exudation	<input type="checkbox"/> Red eyes	_____																			
	Cholinesterase testing: Date: _____ Results: _____																					
	Follow-up test ordered: <input type="checkbox"/> Yes <input type="checkbox"/> No Date: _____ Results: _____																					
<b>TREATMENT</b>	Atropine? <input type="checkbox"/> Yes <input type="checkbox"/> No Dose: _____ Response: _____																					
	2-PAM? <input type="checkbox"/> Yes <input type="checkbox"/> No Dose: _____ Response: _____																					
<b>PROVIDER ID</b>	Provider Signature: _____ Date: _____																					
	Address: _____ Phone: _____																					
<b>ABOUT THIS REPORT</b>	The original "Evaluation of Farmworker Pesticide Exposure" was developed by Mark Lyons, MPH, PAC, for the New Jersey Department of Health. This form was adapted by the Migrant Clinicians Network for use in a migrant health center setting and used with permission. This form may be duplicated as needed. For more information, contact MCN at 2512 South IH35, Suite 220, Austin, TX 78704, (512) 447-0770.																					

# MIGRANT CLINICIANS NETWORK

## Evaluación de los Campesinos Expuestos a Pesticidas

<b>Identificación del paciente</b>	Nombre: _____ Fecha de Nac.: _____ Núm. de SS: _____ Rancho: _____ Dirección: _____																				
<b>Información sobre el contacto</b>	Fecha del contacto: _____ Última fecha de regar la pesticida en los sembrados: _____ Nombre de la pesticida: _____ Cosecha: _____ Método de aplicar la pesticida: <input type="checkbox"/> Avión <input type="checkbox"/> Bomba de mano <input type="checkbox"/> Aparejo de rociar Tipo de trabajo: <input type="checkbox"/> Mezclar <input type="checkbox"/> Cargar <input type="checkbox"/> Recoger/enrarecer/podar la cosecha Contacto: <input type="checkbox"/> Avión <input type="checkbox"/> Bomba de mano <input type="checkbox"/> Aparejo de rociar <input type="checkbox"/> Rociada directamente <input type="checkbox"/> Derivado ¿Otros trabajadores comprometidos? <input type="checkbox"/> Sí <input type="checkbox"/> No ¿Quien(es)? _____ _____ ¿Se había entrenado el paciente bajo la "WPS" norma de protección del obrero? <input type="checkbox"/> Sí <input type="checkbox"/> No																				
<b>Síntomas</b>	<table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Debilidad</td> <td><input type="checkbox"/> Babear</td> <td><input type="checkbox"/> Visión borrosa</td> <td><input type="checkbox"/> Dolor de pecho</td> </tr> <tr> <td><input type="checkbox"/> Salpullido</td> <td><input type="checkbox"/> Cansancio</td> <td><input type="checkbox"/> Sudor exceso</td> <td><input type="checkbox"/> Ojos rojizo</td> </tr> <tr> <td><input type="checkbox"/> Dolores de cabeza</td> <td><input type="checkbox"/> Náusea</td> <td><input type="checkbox"/> Desmayo</td> <td><input type="checkbox"/> Convulsiones</td> </tr> <tr> <td><input type="checkbox"/> Falta de respiración</td> <td><input type="checkbox"/> Vértigo</td> <td><input type="checkbox"/> Vómitos</td> <td><input type="checkbox"/> Dolor de abdomen</td> </tr> <tr> <td><input type="checkbox"/> Espasmos de músculo</td> <td><input type="checkbox"/> Tos productivo</td> <td><input type="checkbox"/> Confusión</td> <td><input type="checkbox"/> Otro: _____</td> </tr> </table> ¿Cuánto tiempo después del contacto empezaron estos síntomas? _____ ¿Otros obreros expuestos mostraron síntomas? <input type="checkbox"/> Sí <input type="checkbox"/> No	<input type="checkbox"/> Debilidad	<input type="checkbox"/> Babear	<input type="checkbox"/> Visión borrosa	<input type="checkbox"/> Dolor de pecho	<input type="checkbox"/> Salpullido	<input type="checkbox"/> Cansancio	<input type="checkbox"/> Sudor exceso	<input type="checkbox"/> Ojos rojizo	<input type="checkbox"/> Dolores de cabeza	<input type="checkbox"/> Náusea	<input type="checkbox"/> Desmayo	<input type="checkbox"/> Convulsiones	<input type="checkbox"/> Falta de respiración	<input type="checkbox"/> Vértigo	<input type="checkbox"/> Vómitos	<input type="checkbox"/> Dolor de abdomen	<input type="checkbox"/> Espasmos de músculo	<input type="checkbox"/> Tos productivo	<input type="checkbox"/> Confusión	<input type="checkbox"/> Otro: _____
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<b>Señas físicas</b>	<table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Presión de sangre baja</td> <td><input type="checkbox"/> Bradycardia (latido lento)</td> <td><input type="checkbox"/> Dermatitis</td> <td><input type="checkbox"/> ↓ reflejo de los tendones profundos</td> </tr> <tr> <td><input type="checkbox"/> Confusión</td> <td><input type="checkbox"/> Convulsiones</td> <td><input type="checkbox"/> Ataxia</td> <td><input type="checkbox"/> Debilidad de músculos</td> </tr> <tr> <td><input type="checkbox"/> Parálisis</td> <td><input type="checkbox"/> Espasmo de músculos contiguos</td> <td><input type="checkbox"/> Pupilas encojidas</td> <td><input type="checkbox"/> Otro: _____</td> </tr> <tr> <td><input type="checkbox"/> ↓ ajuste visual</td> <td><input type="checkbox"/> Sudor</td> <td><input type="checkbox"/> Babear</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Bronquespasmo</td> <td><input type="checkbox"/> Exudado de los bronquios</td> <td><input type="checkbox"/> Ojos rojizos</td> <td></td> </tr> </table> Examen para colinesterase: Fecha: _____ Resultado: _____ Se mandó examen de continuación: <input type="checkbox"/> Sí <input type="checkbox"/> No Fecha: _____ Resultado: _____	<input type="checkbox"/> Presión de sangre baja	<input type="checkbox"/> Bradycardia (latido lento)	<input type="checkbox"/> Dermatitis	<input type="checkbox"/> ↓ reflejo de los tendones profundos	<input type="checkbox"/> Confusión	<input type="checkbox"/> Convulsiones	<input type="checkbox"/> Ataxia	<input type="checkbox"/> Debilidad de músculos	<input type="checkbox"/> Parálisis	<input type="checkbox"/> Espasmo de músculos contiguos	<input type="checkbox"/> Pupilas encojidas	<input type="checkbox"/> Otro: _____	<input type="checkbox"/> ↓ ajuste visual	<input type="checkbox"/> Sudor	<input type="checkbox"/> Babear		<input type="checkbox"/> Bronquespasmo	<input type="checkbox"/> Exudado de los bronquios	<input type="checkbox"/> Ojos rojizos	
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<b>Tratamiento</b>	Atropine? <input type="checkbox"/> Sí <input type="checkbox"/> No Dosis: _____ Reacción: _____ 2-PAM? <input type="checkbox"/> Sí <input type="checkbox"/> No Dosis: _____ Reacción: _____																				
<b>Identidad del proveedor</b>	Firma del proveedor: _____ Fecha: _____ Dirección: _____ Teléfono: _____																				
<b>Sobre este informe</b>	La "Evaluación de los Campesinos Expuestos a Pesticidas" original fue desarrollada por Mark Lyons, MPH, PAC, para el Departamento de Salud de New Jersey. Este formulario fue adaptado por el Migrant Clinicians Network para utilizar en un centro de salud migrante, y para usar con permiso. Se puede duplicar este formulario como necesario. Para más información, hable con MCN en 2512 South IH35, Sala 220, Austin, TX 78704, (512) 447-0770.																				



sticidas

## State-based Pesticide Reporting Requirements and Surveillance Programs

According to the National Institute for Occupational Safety and Health (NIOSH), state-based reporting systems are the best available data source for identifying epidemics, clusters of diseases, emerging pesticide problems, and populations at risk.

Currently, about half the states have laws that require health care professionals to report suspected or confirmed pesticide-related illnesses and injuries. However, only six states (California, Florida, New York, Oregon, Texas and Washington) have established formal reporting and investigation systems, and another three states (Arizona, Louisiana and New Mexico) have more limited systems.

California requires health care professionals to fill out a one-page form for each incident and report it to the local county health officer. Following is a copy of that form and the most recent report of the state's pesticide surveillance program. In 1999, California's Department of Pesticide Regulation (DPR) received reports of 1,629 people whose health may have been affected by pesticide exposure. DPR investigated these cases and determined that 1,201 of them (74 percent) were possible, probable or definite pesticide-related cases. Of the cases found to be related to pesticides, 555 (46 percent) occurred in agriculture.

# PESTICIDE ILLNESS REPORT

(For illnesses caused by pesticides--including sanitizers and disinfectants)

**PATIENT:**

Name: \_\_\_\_\_ Age: \_\_\_\_\_ Sex:  <sup>1</sup>M  <sup>2</sup>F  
Address: \_\_\_\_\_ City: \_\_\_\_\_ County: \_\_\_\_\_  
Phone No.: ( ) \_\_\_\_\_ Social Security Number: \_\_\_\_\_  
Occupation: \_\_\_\_\_ Language  <sup>1</sup>English  <sup>2</sup>Spanish  <sup>3</sup>Other

**PHYSICIAN FILING REPORT:**

Physician's name: \_\_\_\_\_  
Physician's address: \_\_\_\_\_

**INJURY:**

At Address: \_\_\_\_\_ City: \_\_\_\_\_ County: \_\_\_\_\_  
Was injury:  <sup>1</sup> At Home  <sup>2</sup> At Work--agriculture  <sup>3</sup> At Work--nonagriculture  <sup>4</sup> Other exposure  
If at work: a) Employer's name: \_\_\_\_\_  
Employer's address: \_\_\_\_\_  
b) Manager or Supervisor: \_\_\_\_\_

Date of exposure: / / Time of exposure: [ : ] a.m. [ : ] p.m.  
Date of illness: / / Date of death: / /  
Is there reason to believe others were exposed?  <sup>1</sup> No  <sup>2</sup> Yes

**PATIENT'S DESCRIPTION OF EXPOSURE:**

Activity at time of exposure:  
 <sup>1</sup> Applying pesticides  <sup>2</sup> Manufacturing pesticides  <sup>3</sup> Mixing pesticides  <sup>4</sup> Entering pesticide areas  
 <sup>5</sup> Disposing of pesticides or their containers  <sup>6</sup> Eating contaminated food  
 <sup>7</sup> Other exposure (explain): \_\_\_\_\_

Name of pesticide(s): \_\_\_\_\_ Ingredient(s) of pesticide(s): \_\_\_\_\_

Primary route of exposure:  <sup>1</sup> Oral  <sup>2</sup> Dermal  <sup>3</sup> Eye  <sup>4</sup> Inhalation  <sup>5</sup> Unknown

**PHYSICIAN'S DESCRIPTION OF EXPOSURE:**

Date first seen / / Time first seen: \_\_\_\_\_

Major signs, symptoms, adverse reactions: \_\_\_\_\_

Hospitalized?  <sup>1</sup> No  <sup>2</sup> Yes If Yes, hospital name: \_\_\_\_\_

Emergency room only?  <sup>1</sup> No  <sup>2</sup> Yes

Physician's office only?  <sup>1</sup> No  <sup>2</sup> Yes

Diagnostic studies ordered?  <sup>1</sup> No  <sup>2</sup> Yes If Yes, which studies? \_\_\_\_\_

Diagnosis: \_\_\_\_\_

Treatment: \_\_\_\_\_

Brief description of incident (if female, indicate if pregnant): \_\_\_\_\_

**AGENCY COMPLETING FORM:**

Agency/County: \_\_\_\_\_

Address: \_\_\_\_\_

Phone no.: \_\_\_\_\_

Form OEH-PETS 004 (Rev. 5/99)(PIR\_R99.doc)

By whom: \_\_\_\_\_