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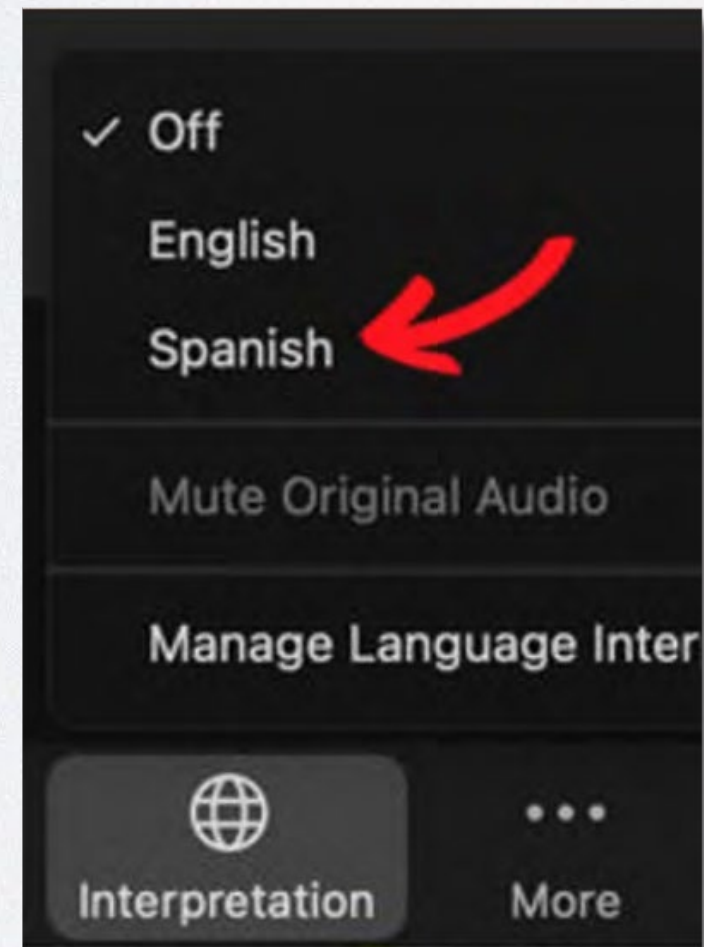
1) Locate the Interpretation Globe icon

2) Click the Interpretation Globe and select "Spanish"



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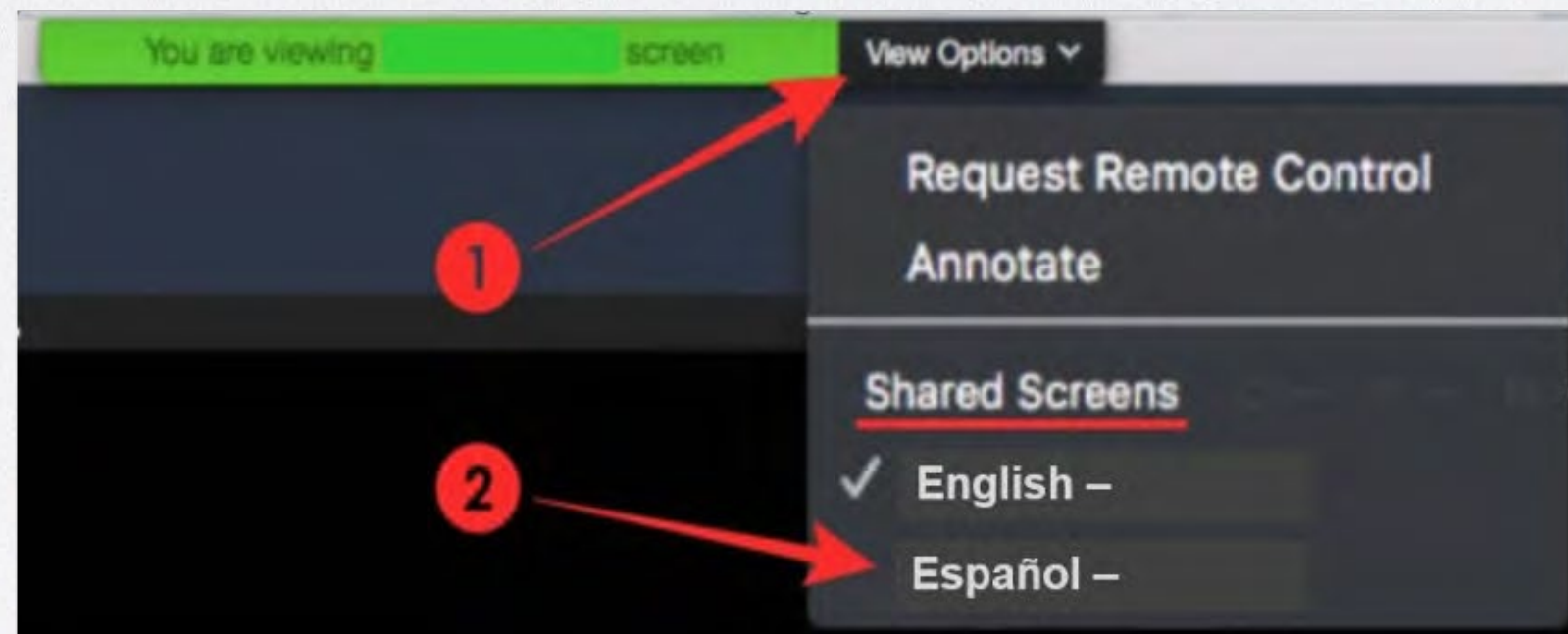
1. Touch the three dots that say "More"
2. Select "Language Interpretation"
3. Select "Spanish"



Selecting Your Viewing Language in Zoom

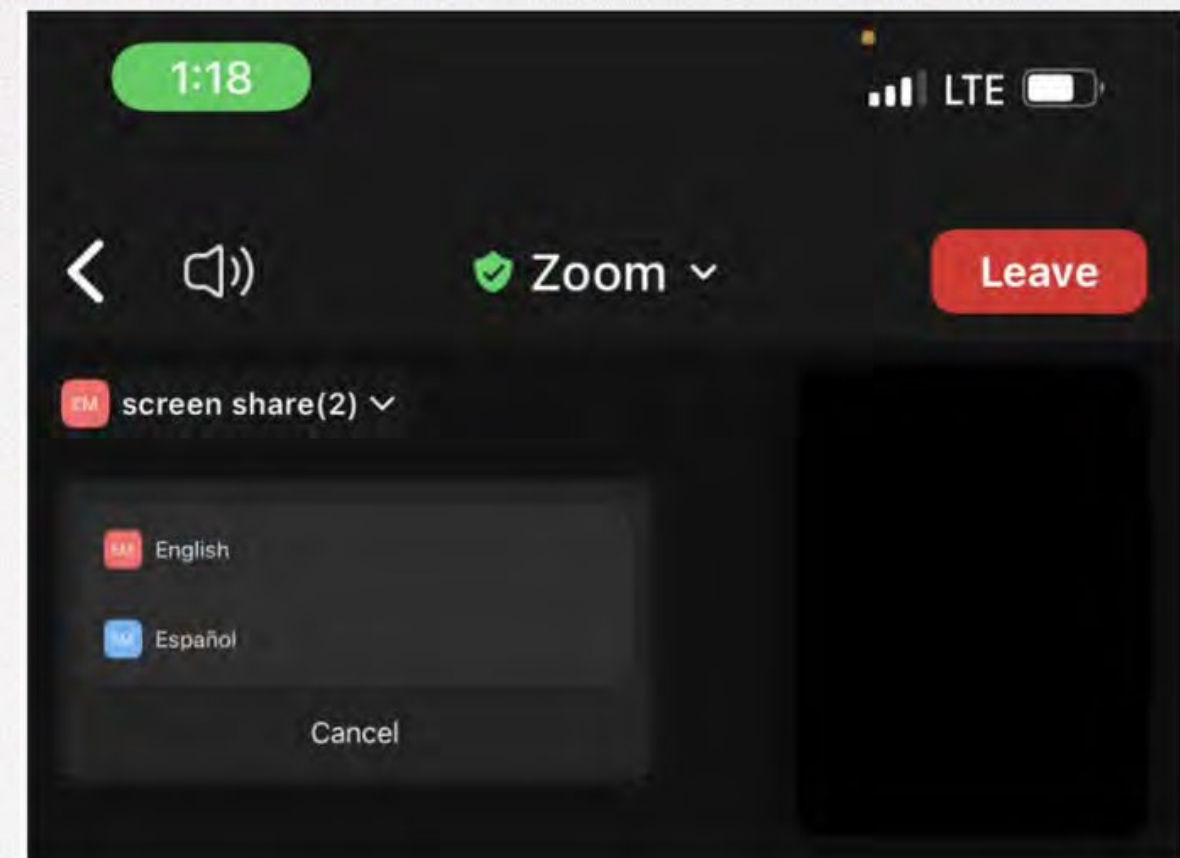
If you want to view the Spanish - language presentation...

- 1 At the top of the screen click on "View Options"
- 2 A dropdown menu will appear
- 3 Select "Español"



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- 1 Touch the screen to make the options appear
- 2 Touch the three dots that say "More"
- 3 Select "Language Interpretation"
- 4 Select "Español"
- 5 Touch "Done"



Continuing Education



Migrant Clinicians Network is accredited as a provider of nursing continuing professional development by the American Nurses Credentialing Center's Commission on Accreditation.



The AAFP has reviewed How to Prevent Pesticide Poisoning in Farmworkers: Three-part Webinar Series, and deemed it acceptable for AAFP Credit. Term of approval is from 10/01/2024 to 12/05/2024. Physicians should claim only the credit commensurate with the extent of their participation.

This session, *Public Health & Legal Considerations in Pesticide-Related Illness in Farmworkers*, is approved for 1.0 Live AAFP Prescribed credit(s).

Participants completing this educational activity (80% time in session) and completion of the post session evaluation will be awarded 1 Contact hour.

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UNIVERSITY OF
ILLINOIS CHICAGO

MIGRANT CLINICIANS NETWORK



How to Prevent Pesticide Poisoning in Farmwork

Public Health and Legal Considerations for
Pesticide Related Illness in Farmworkers

Linda Forst, MD, MPH
Thursday, November 7, 2024

Three -Part Webinar Series



Acknowledgement



The University of Illinois Chicago stands on the original homelands of the Miami, Three Fire Peoples, the Bodewadmi, Ojibwe, and Odawa, who have been stewards of this land for generations. Illinois is also home to a diverse Native community of more than 75,000 tribal citizens, many of whom live in the Chicago area.



Farmworker with a skin rash

A 23 yo female farmworker and her 48-year-old father were attending a health fair organized in the parking lot of the hotel where they were housed. They approached a table where health screenings were offered. They showed the Community Health Worker their skin and asked if she knew what the problem was and how to care for it.

The CHW thought they had contact dermatitis – the daughter, an acute case and the father, long-standing chronic dermatitis with lichenification. It wasn't clear if the daughter had an allergy or just irritation. The CHW asked what crops they worked with and if they were exposed to disinfectants or pesticides. She offered them either a telemedicine appointment or a visit to the clinic.



Contact dermatitis has been seen in 2-12% of studied farmworkers around the globe



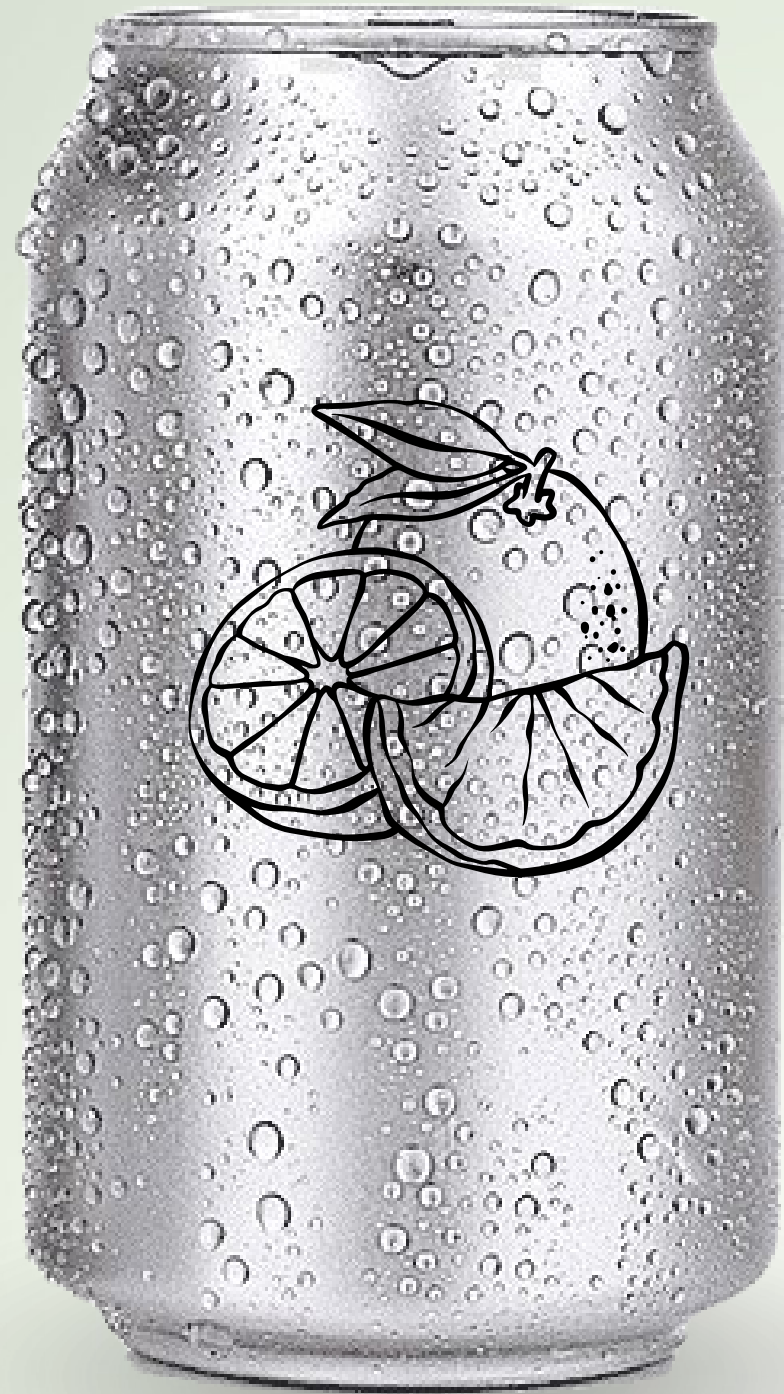
Bronchiolitis Revealing Pyrethroid Poisoning in a 2-Month-Old Infant

A farmworker family was living next to fields where pyrethroids were sprayed on a windy day. A child sleeping in the house suddenly became agitated with apparent difficulty breathing. An ambulance was called, and the child was taken to the hospital where he was diagnosed with bronchospasm secondary to pesticide inhalation.

The vast majority of domestic poisonings by pyrethroids are of little or no severity. In more than half of the cases, there are no symptoms. However, in cases of inhalation of aerosol in a confined environment there is a risk of bronchospasm in sensitive subjects.



Paraquat stored in food containers



In 2010, a 44-year-old man mistakenly drank paraquat, which he thought was fruit juice. He developed difficulty breathing and vomited blood. He was admitted to the hospital intensive care unit where he died after 20 days of aggressive treatment.

<https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-one-sip-can-kill>

Carpenter JE et al. Poisonings due to storage in a secondary container reported to the National Poison Data System, 2007-2017. Clin Toxicol (Phila). 2021 Jun;59(6):521-527. doi: 10.1080/15563650.2020.1833026. Epub 2020 Oct 20. PMID: 33078985.

Paraquat stored in food containers



In 2003, a 49-year-old man took a sip from his coffee cup in which he had poured paraquat because the product's bottle was deteriorating. He realized his mistake and went to the Emergency Department. At that time, he was vomiting, cold and sweating profusely. Doses of activated charcoal were administered, and his stomach was pumped; morphine was provided for esophageal pain; and he was intubated to support breathing function on the fourth day. Aggressive supportive care continued until he died on Day 10.

<https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-one-sip-can-kill>

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Learning objectives

- **Take an occupational history**
- **Obtain and interpret Safety Data Sheets**
- **Use the state Poison Control Center and online resources to assist in patient management**
- **Access government agencies for reporting and enforcement**



Why should you care about detecting acute and chronic pesticide poisoning?

1. Pesticide poisoning is common
2. Pesticides cause acute and fatal illnesses
3. Evidence that pesticides cause birth defects
4. Evidence that pesticides cause chronic diseases*
5. Reporting of cases of pesticide poisoning in workers is the law in 26 states
6. Pesticide poisoning is preventable
7. Pesticide poisoning intersects with Social Determinants
8. Climate change is causing increased pesticide use
9. Worker health and safety is a human right

*cancers, neurodegenerative diseases, respiratory, cardiac

Case fatality rates

Case fatality of pesticides with more than 10 admissions or any death

Pesticide	Deaths	<i>n</i> Patients	Percent Case Fatality	95% CI Binomial Exact	Rat Oral LD50 (mg/ kg)	WHO Tox Class
OPs						
Chlorpyrifos	104	1,376	7.6	6.2–9.1	135	II
Diazinon	4	84	4.8	1.3–11.7	1,000	II
Dimethoate	172	833	20.6	17.9–23.6	c.150	II
Fenthion	35	237	14.8	10.5–19.9	215	II
Malathion	4	209	1.9	0.5–4.8	2,100	III
Methamidophos	1	8	12.5	0.3–52.7	30	Ib
Oxydemeton-methyl	1	8	12.5	0.3–52.7	65	Ib
Phenthoate	11	168	6.5	3.3–11.4	c.400	II
Pirimiphos-methyl	0	12	0.0	0.0–26.5 ^a	2,018	III
Profenofos	16	146	11.0	6.4–17.2	358	II
Prothiofos	1	13	7.7	0.2–36.0	925	II
Quinalphos	15	124	12.1	6.9–19.2	62	II
Other OPs ^b	0	38	0.0	0.0–9.3 ^a	—	—
Summary	364	3,256	11.2	10.1–12.3	—	—
Carbamates						

Non-fatal Cases

- Average of 23 deaths/yr in U.S. – mostly suicides
- Clinicians diagnose 10-20,000 poisonings each year

<https://www.cdc.gov/niosh/docs/2012-108/default.html>

Case fatalities, global, lit review, 1990-2014

	WHO Class **	Publications	Cases	Case Fatality Ratio #deaths/#exposed X 100					
		<i>n</i>	Median	Min	Mean	Median	Max	CV	CV Norm
carbamates		9	60	0	5	5	14	98	35
organophosphate		31	94	3	15	11	73	92	17
chlorpyrifos	<u>II</u>	<u>7</u>	<u>208</u>	<u>5</u>	<u>7</u>	<u>6</u>	<u>8</u>	<u>19</u>	<u>8</u>
dimethoate	II	6	268	6	22	24	31	40	18
endosulfan	II	6	86	20	24	23	29	16	7
fenthion	II	4	111	4	12	14	16	44	26
<u>glyphosate</u>	III	16	102	0	7	6	29	100	26
malathion	III	7	23	0	10	7	25	93	38
<u>paraquat</u>	II	14	115	1	49	54	84	56	16

* only pesticides addressed in more than 3 papers, ** II = “moderately hazardous”, III = “slightly hazardous”, See WHO [6] for details, min = minimum, max = maximum, CV = coefficient of variation, CV norm = normalized CV.

PRI Common: Calls to U.S. POISON CONTROL CENTERS, 2021

Substance Category	Pediatric Cases		Adult Cases	
	No. Cases	%	No. Cases	%
Cosmetics/Personal Care Products	95,848	10.8		
Cleaning Substances (Household)	94,279	10.7	76,832	6.3
Analgesics	72,155	7.6	136,380	11.2
Dietary Supplements/Herbals/Homeopathic	61,827	7.0		
Foreign Bodies/Toys/Misc	57,493	6.5		
Vitamins	42,784	4.8		
Antihistamines	42,480	4.8		
Topical Preparations	37,362	4.2		
Plants	21,400	3.6		
Pesticides	28,972	3.3	36,599	3.0

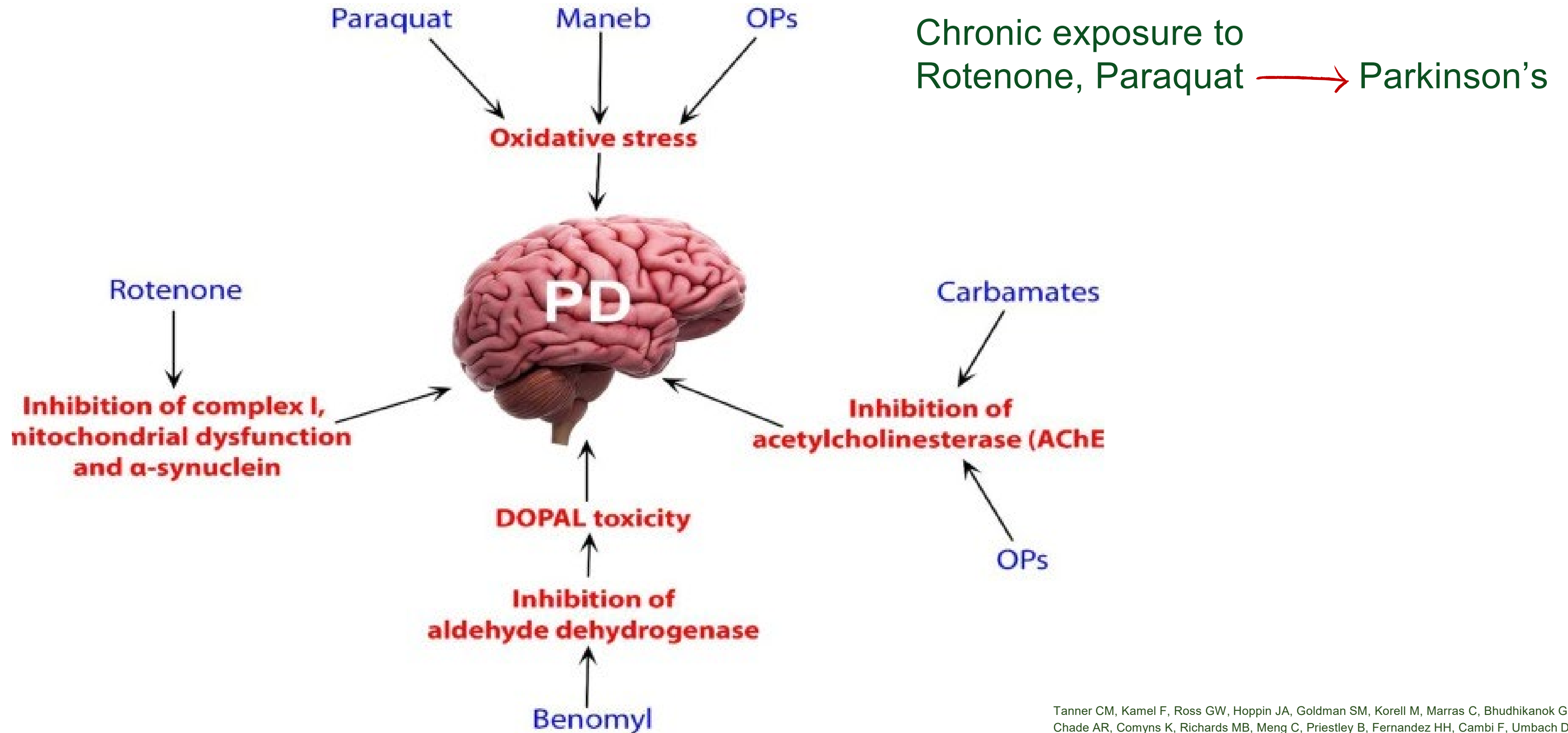
Main exposures in adults

- **Medical error**
- **Suicide**
- **Substance abuse**
- **Work-related**
- **Home repair**

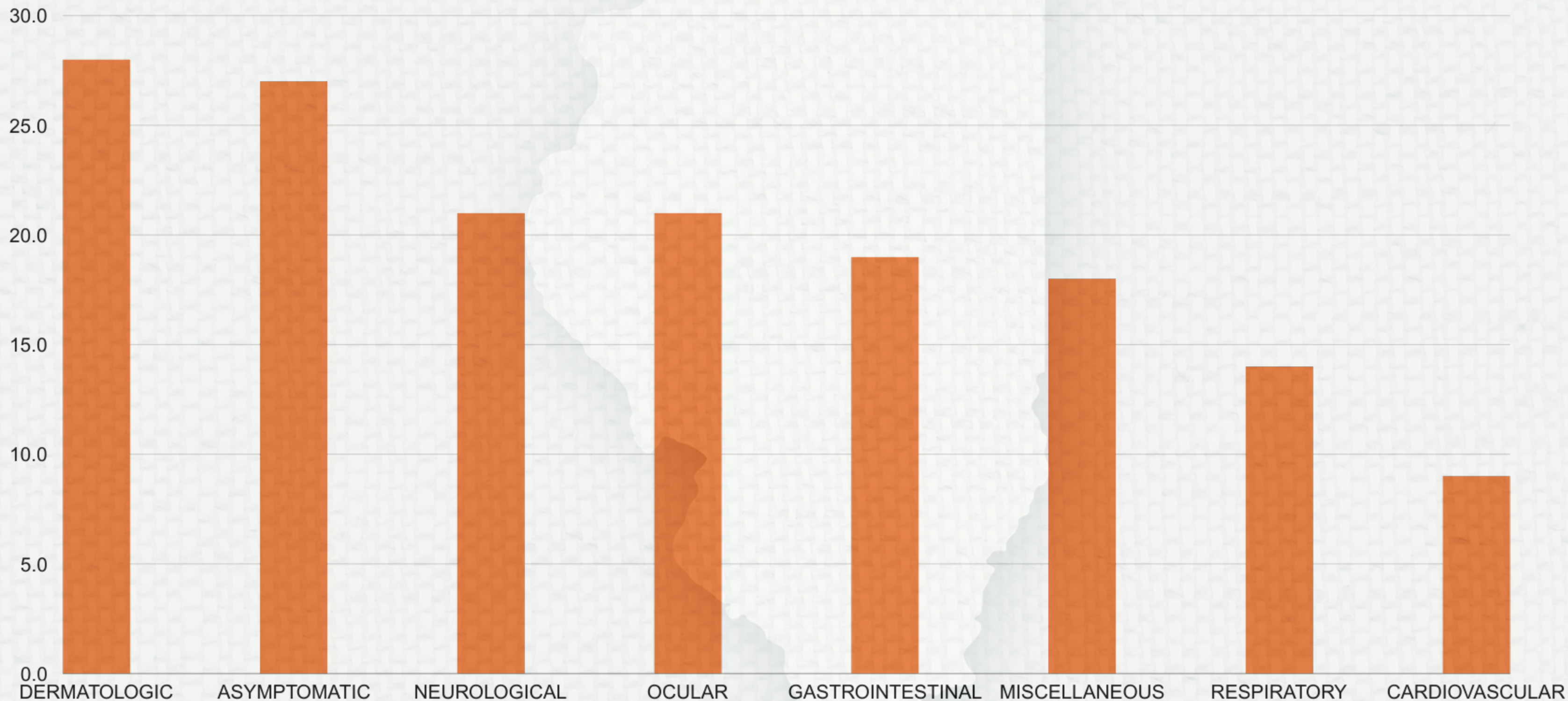
Pesticides and birth defects

- Meta analysis of 94 studies, internationally
- Pre and post-natal exposure may be linked to
 - Cancers in childhood
 - Neurological deficits
 - Fetal death
 - Intrauterine growth retardation
 - Preterm birth
 - Congenital abnormalities.
 - Neural tube abnormalities
 - Urogenital abnormalities
 - Cardiovascular abnormalities

Pesticides associated with chronic diseases



Occupational Pesticides Related Illness in Illinois 2016-2017 - Frequency of Signs and Symptoms by Organ System Affected



Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

governs the registration, distribution, sale, and use of pesticides in the US

Pesticide Definition: Any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest; for use as a plant regulator, defoliant, or desiccant; any nitrogen stabilizer

Regulation of spraying/pesticide application falls to the states, involves Depts of Agriculture



Insecticides



Herbicides



Fungicides



Fumigants

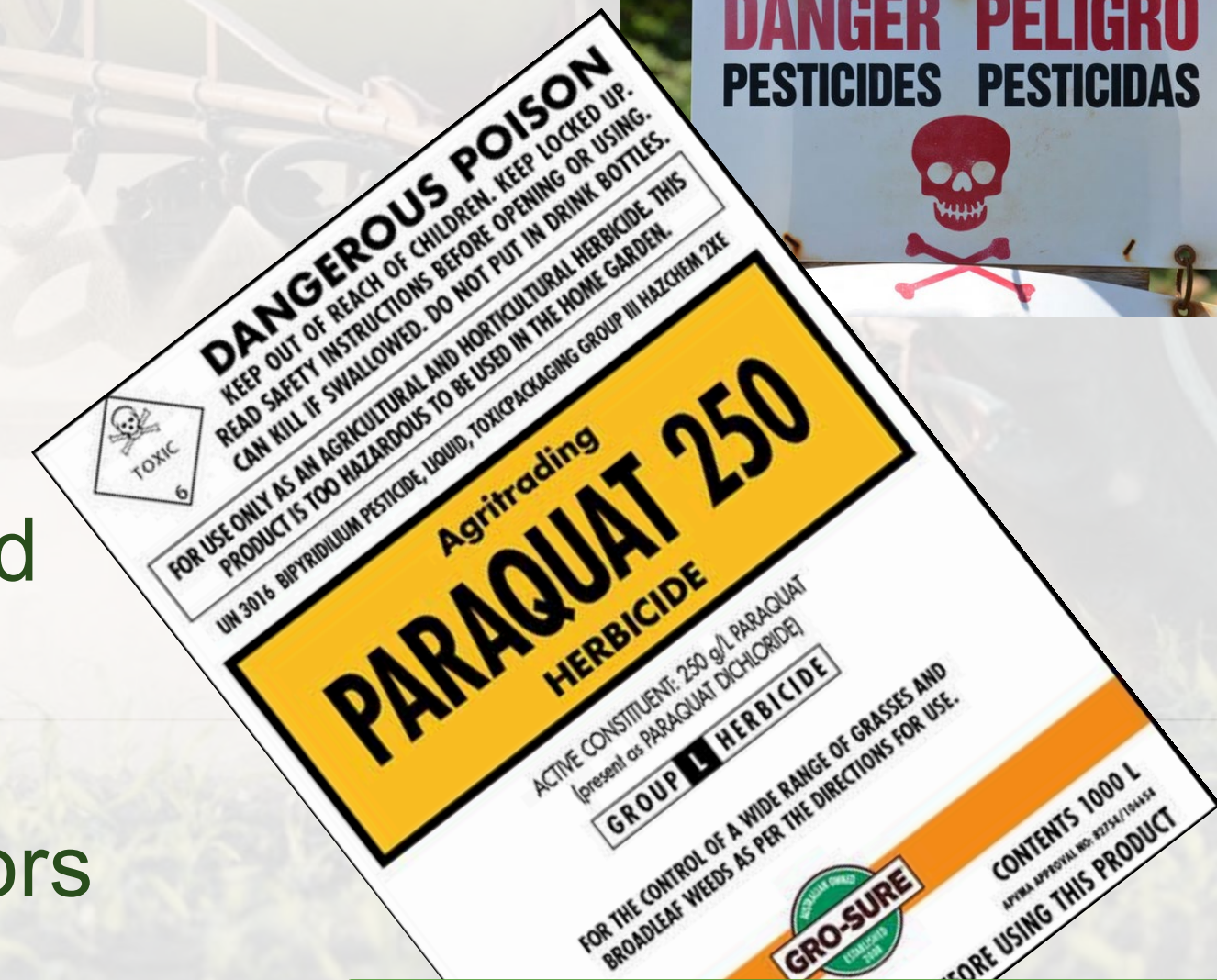



Rodenticides



EPA Worker Protection Standard

- People required to stay out of treated areas during and after an application
- Proper protective gear provided and worn by applicators
- Access to supplies for routine and emergency washing
- Annual safety training to reduce take-home residues




Paraquat 43.2 SL SAFETY DATA SHEET Page 1 of 6	
SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION	
COMPANY ADDRESS: RedEagle International LLC 5143 S. Lakeland Drive - Suite 4 Lakeland, FL 33813	EMERGENCY TELEPHONE NUMBERS: (800) 424-9300 (CHEMTREC, transportation and spills) (800) 222-1222 American Association of Poison Control Centers
PRODUCT NAME: CHEMICAL NAME: PRODUCT USE: PRODUCT CODE:	PARAQUAT 43.2 SL Paraquat dichloride Herbicide - Restricted Use EPA Reg. No. 85678-58
SECTION 2 - HAZARDS IDENTIFICATION SUMMARY	
As defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200	
Blue to green liquid	
HEALTH HAZARDS: DANGER - PELIGRO. Fatal if inhaled or in contact with skin. Harmful to toxic if swallowed. Causes serious eye damage and severe skin irritation. Repeated or prolonged exposure may cause damage to organs.	
PHYSICAL HAZARDS: Not classified.	
ENVIRONMENTAL HAZARDS: Not classified.	
	
HAZARD STATEMENTS:	
<ul style="list-style-type: none">• H330 - Fatal if inhaled.• H302 - Harmful if swallowed.• H319 - Causes serious eye irritation.• H315 - Causes skin irritation.	

EPA Worker Protection Standard

- Access to information about pesticides used onsite
 - List of pesticides being applied and the date/time
 - Safety data sheets for all applied pesticides
 - Pesticide safety info and emergency contacts
 - Must provide info to workers, handlers, medical providers
- Age limits for applicators
- Employers to keep records of all pesticide applications
- Protections from retaliation and discrimination



Paraquat 43.2 SL		SAFETY DATA SHEET		Page 1 of 6	
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Reading a pesticide label




Safety Data Sheets—what's on them?

- **An Identifier:** Name of chemical + synonyms, manufacturer contacts, recommended use
- **Hazard Identification:** pictogram, hazard info, precautionary statement
- **Composition** (info on ingredients)
- **First Aid Measures**
- **Firefighting Measures**
- **Accidental Release Measures**
- **Handling and Storage**
- **Chemical Properties**
- **Stability and Reactivity**
- **Disposal Considerations**
- **Other**

OSHA, 29 CFR 1910.1200(g) and Appendix D. United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), third revised edition, United Nations, 2009.

<p>Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (Harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases Under Pressure 	<p>Corrosive</p>  <ul style="list-style-type: none"> • Skin Corrosion/Burns • Eye Damage • Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p>Flame Over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p>Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p>Skull and Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (Fatal or Toxic)

Case 1. Farmworkers sprayed overhead while working

- 
- In July 2019, 95 workers were detasseling corn in a field, were sprayed overhead by a crop duster
 - Farmworkers ran off the field, with clothes doused in pesticides
 - Eyes and throats burned, some had trouble breathing
 - Someone called IDAg who called IDPH; workers referred to the hospital
 - Hospital called Illinois Poison Center (IPC)
 - IPC got Safety Data Sheets, advised doctors who cared for the patients



The Poison Control Center is your friend

The Poison control center is your friend

Raison d'être: To reduce the incidence and severity of poisonings

- Immediate telephone treatment recommendations
- Professional education for healthcare and public health personnel
- Pesticide poisoning surveillance
- Focused research
- Can help with accessing SDS and product labels

Setup

- Hotline format (call 800-222-1222)
- Staffed with pharmacists, nurses, doctors trained in poisoning and toxicology
- Help community residents and clinicians manage patients

Results

- Poison Control Centers field over 75,000 calls each year, related to pesticides
- Much of the pesticide and other case surveillance data in the U.S. comes from PCC

Offerings

- PCCs offer all kinds of online training for clinicians and the public



webPOISONCONTROL

Did you know you can get help from Poison Control without calling? There's a do-it-yourself poison control tool and app.

webPOISONCONTROL has helped nearly a million people figure out what to do after a possible poisoning. Just answer a few questions about what happened and you'll get a safe and accurate recommendation in less than 3 minutes.

webPOISONCONTROL will tell you exactly what to do.

[Learn more.](#)

Get Help Online



First Aid for Poisonings

Poison Control is here to help if you swallow or come in contact with something that might be poisonous. Don't wait for symptoms to develop. Contact Poison Control immediately if you suspect a poisoning. Before you contact us, there are first aid measures that make a difference if accomplished within seconds to minutes of the poison exposure. Be sure you know about them.

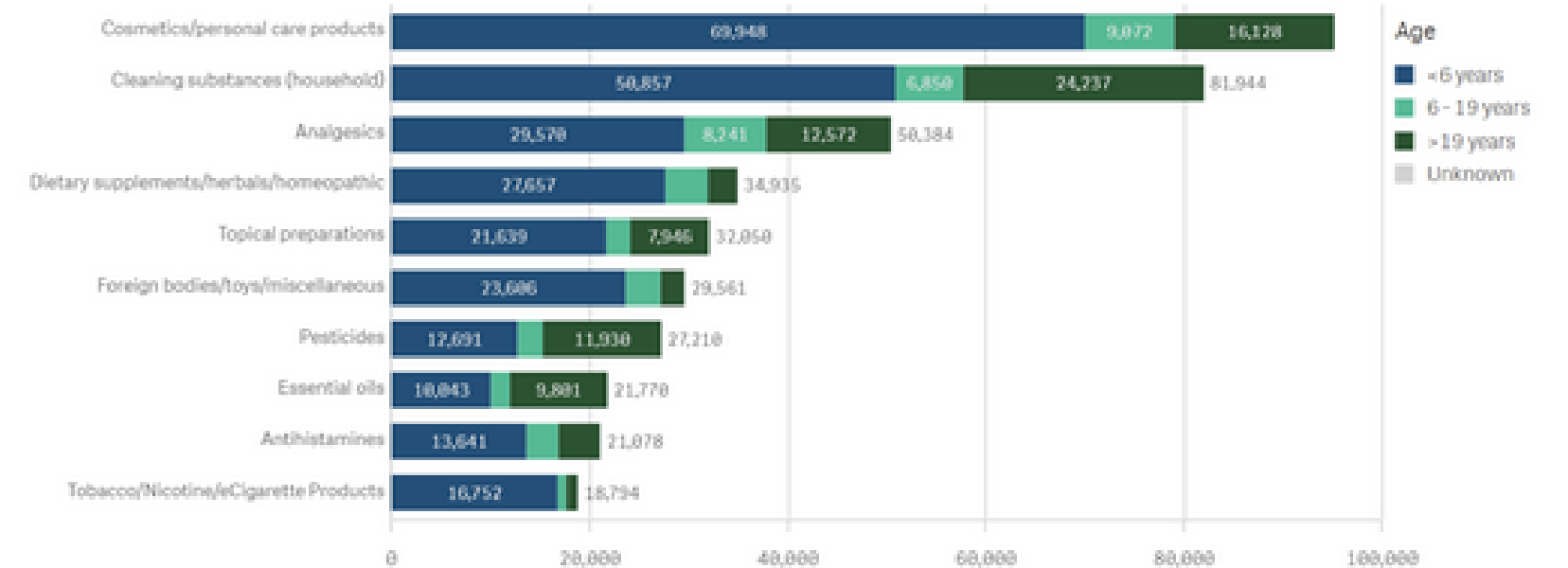
First Aid Tips



webPOISONCONTROL Data Dashboard

The webPOISONCONTROL data analysis dashboard is the only free and publicly available online source of national (U.S.), near real-time poison exposure data. [Find out more](#) about the dashboard so you can fully explore data summaries and trends of poisonings from common substances like personal care products, cleaning substances, medicines, pesticides, plants, bites and stings, and more.

Top 18 Generic Substance Categories

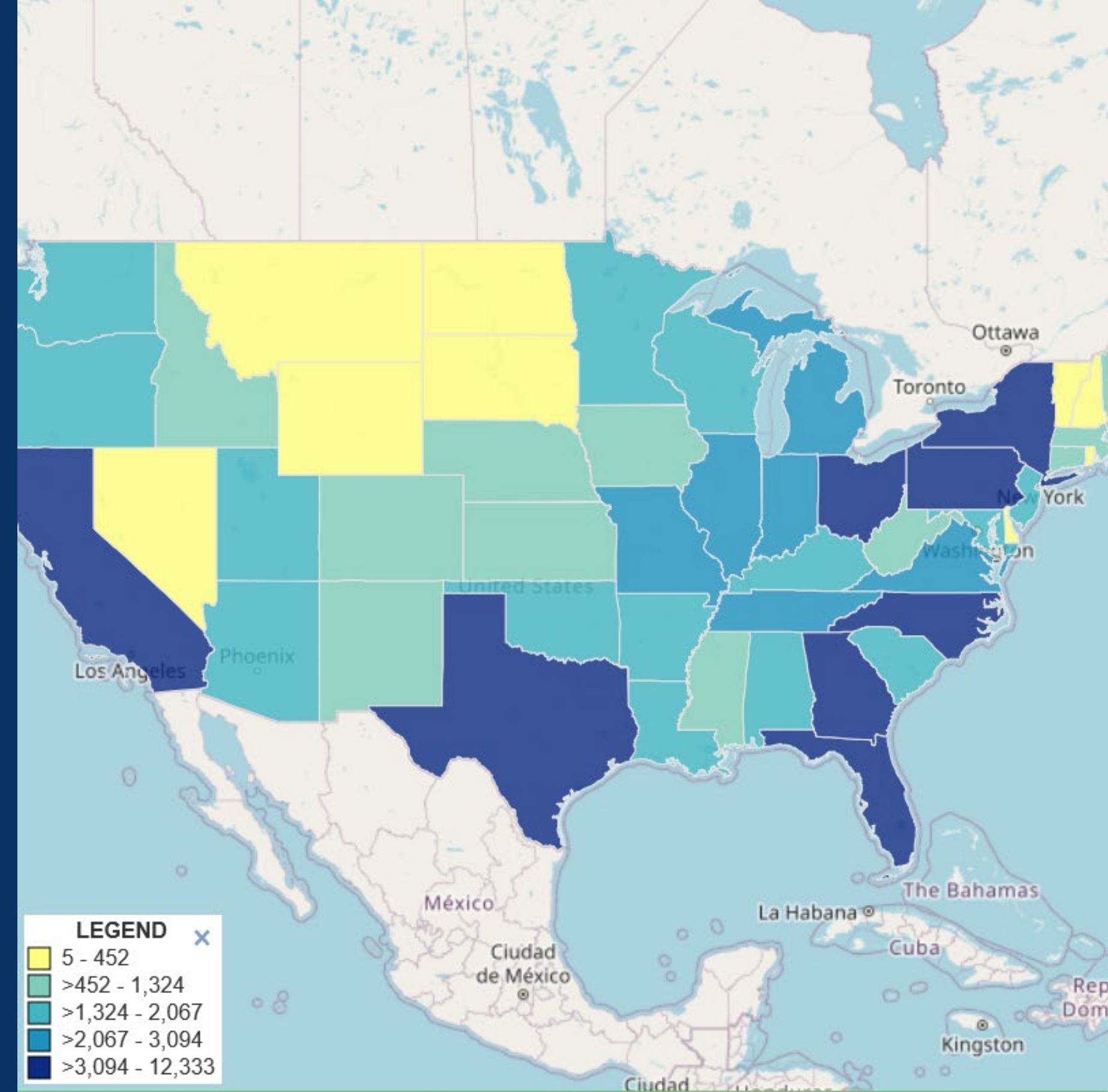


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webPOISONCONTROL Dashboard

Environmental Health Tracking Network (EHTN)

- PCCs contribute to CDC EHTN
- Data visualization
- Target states, regions for interventions
- Publish papers, reviews



PESTICIDE EXPOSURES | REPORTED PESTICIDE EXPOSURES | ANNUAL NUMBER OF EXPOSURES TO ALL PESTICIDES REPORTED TO AMERICA'S POISON CENTERS (APC) | ALL STATES | 2017



PRI Common: Calls to U.S. POISON CONTROL CENTERS, 2021

Substance Category	Pediatric Cases		Adult Cases	
	No. Cases	%	No. Cases	%
Cosmetics/Personal Care Products	95,848	10.8		
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Main exposures in adults

- **Medical error**
- **Suicide**
- **Substance abuse**
- **Work-related**
- **Home repair**

Case 1 Resolution (sort of)

Legal Aid Chicago represented the workers in a lawsuit: Violated the Migrant and Seasonal Agricultural Worker Protection Act (MSPA) and Fair Labor Standards Act (FLSA) by

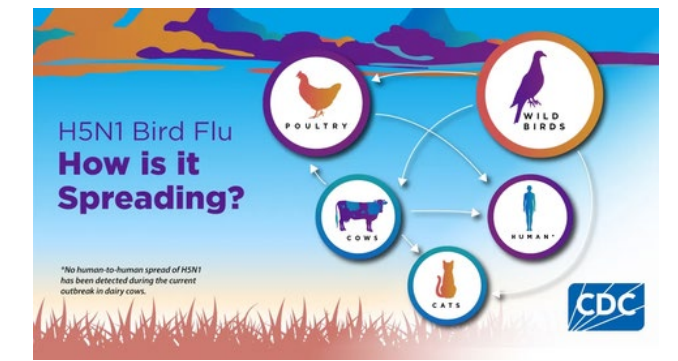
- Failing to provide them with facilities to wash off the chemicals after being sprayed.
- Ordering the workers to go back into the fields still enveloped by the toxic compounds.
- Lying to them about what had been sprayed.
- Failing to pay for the workers' hospital bills, despite carrying the legally required workers' compensation coverage.
- Battery and assault of workers

Case 1 Resolution (sort of)

RESULTS

- ▶ The case settled against the workers' employer
- ▶ Ongoing lawsuit against companies that did the spraying
- ▶ Illinois passed a law to increase fines for illegal spraying

Case (Series) 2



Case 1. March 2024, a dairy farm worker in Texas had onset of conjunctivitis from infection with HPAI A(H5N1); worker tested positive, and later the lactating cows he cared for.

Case 2. After working with sick cows,² in May 2024, two adult dairy farm workers (designated as MI-A and MI-B) in Michigan were identified as having HPAI A(H5N1) virus infection. Dairy worker MI-A had discomfort in the right eye 1 day after milk had splashed in that eye while the worker was milking a cow; examination on the day after symptom onset revealed mildly erythematous conjunctiva, consistent with conjunctivitis in the right eye; the left eye was unremarkable. The conjunctival and nasopharyngeal specimens were tested at the (CDC), positive for HPAI A(H5N1); the nasopharyngeal specimen was negative.

Case 3. Dairy worker MI-B, had onset of cough, shortness of breath, headache, sore throat, fatigue, nasal congestion, and rhinitis. The symptoms were the most severe on days 3 and 4 of illness, and the worker presented to a local urgent care clinic. No influenza virus testing was performed, and no treatment was prescribed. Signs of illness in dairy cows at the farm were observed 1 day before onset of the worker's illness, and HPAI A(H5N1) virus infection was confirmed in the dairy cows 1 week later. This worker's duties involved caring for ill cows, including administering oral fluid therapy ("drenching," which typically involves direct handling of oral secretions). The worker used eye protection and gloves but did not use a respirator or a mask. There were no lung abnormalities on Day 8. Home isolation and treatment with oral oseltamivir (75 mg twice daily for 5 days) were initiated. The symptoms abated within 24 hours after initiation of treatment. A nasopharyngeal swab specimen was positive for influenza A(H5; the virus was identified as HPAI A(H5N1).

Taking an occupational history

COMMON FARMWORKER HEALTH CONDITIONS AND DIAGNOSTIC TOOLS

Diagnostic Tools

A. WHACS – Simple mnemonic device for taking a farmworker occupational health history

What do you do?

- Tell me exactly what you have been doing on your job. For how long?

How do you do it?

- Are there awkward postures? Heavy loads? Repetitive motions?
- What kinds of tools do you use?
- How many hours do you usually work each day?
- Do you have any days off?
- Other possible hazards/protections to ask about:
 - heat, cold, chemicals (pesticides and others), fumes, insects, ultraviolet light
 - dusts and natural plant materials
 - protective eyewear, hearing protection, long sleeves, pants
 - boots, gloves
- shields on machinery, roll-bars on tractors, lighting, anti-slip surfaces
- rest-breaks, stretching
- water, bathrooms

Are you near any dangerous or bothersome things on the farm?

- Did you have skin contact with any chemicals or plant materials?
- Did you breathe any chemicals or dusts that bothered you?
- Can you wash hands before eating or smoking?

Co-workers or others with similar problems?

Satisfied with your job?






- Are you having problems with your boss or crew chief?
- Do you get along with your co-workers?
- Are there problems with your housing?
- Are there problems at home?

Older Workers in the North West Life Event Calendar

_____ Date: _____ Time: _____ Place: _____

Interviewer: _____ D.O.B: _____ Age: _____ Ethnicity: _____

Marital Status: _____ Current Employment Status: _____

Year	JAN to MAR	APR to JUN	JUL to SEP	OCT to DEC	Historical Context
1950					•Korean War started •Uruguay win World Cup
					•Churchill re-elected
					•King George VI dies •Helsinki Olympics
					•Coronation of Elizabeth II
					•Bannister 4 minute mile •West Germany win World Cup
					•Anthony Eden elected
					•Suez Crisis •Melbourne Olympics
					•Space Race •Sputnik Launch

Occupational History

Name: _____
 Birthdate/age: _____ Gender: M F

The following questions refer to your current or most recent job:

Job title: _____
 Type of industry: _____
 Name of employer: _____
 Date job began: _____

Describe this job:

Are you still working in this job? Yes No
 If no, when did the job end? _____

Fill in the table below, listing all jobs you have worked including short-term, seasonal, part-time employment, and military service. Begin with your most recent job. Use additional paper, if necessary.

Dates of Employment	Job Title and Description of Work	Hazards*	Protective Equipment

Have you ever worked at a job in which you came into contact with any of the following by breathing or touching them?

_____ Acids	_____ Liquid metals?	_____ Pesticides
_____ Alkalis	_____ Mercury	_____ Which ones?
_____ Ammonia	_____ Lead	_____ Dusts?
_____ Solvents	_____ Arsenic	_____ Asbestos
_____ Alcohols	_____ Cyanide	_____ Coal dust
_____ Benzene	_____ Any other metals?	_____ Silica sand
_____ Toluene	_____	_____ Diesel
_____ Any other solvents?	_____	_____

Have you ever worked at a job with exposure to:

_____ Noise	_____ Operating machinery	_____ Mandatory overtime
_____ Vibration	_____ Work at heights	_____ Evening/night shift
_____ Extreme Heat	_____ Electrical work	_____ Other (specify)
_____ Extreme Cold	_____ Driving	
_____ Infrared radiation	_____ Repetitive/forceful tasks	
_____ UV Radiation	_____ Lifting	
_____ Microwaves	_____ Infectious Diseases	
_____ Lasers	_____ Work with animals	

Have you ever been off work for more than one day because of an illness or injury related to work? Yes No

Have you ever been advised to change jobs or work assignments because of any health problems or injuries? Yes No

Has your work routine changed recently? Yes No

Is there poor ventilation in your workplace? Yes No

If you answered Yes to any of the questions, please explain.

Taking an occupational history

Occupational History

Name: _____
Birthdate/age: _____ Gender: M F

Job: _____

Seasonal, part-time
occupational paper, if

Protective Equipment

of the following by

	Yes	No
problems or injuries?	Yes	No
Has your work routine changed recently?	Yes	No
Is there poor ventilation in your workplace?	Yes	No

If you answered Yes to any of the questions, please explain.

Q1 [Industry] "What kind of business or industry have you worked in during the past year, for example, hospital, elementary school, clothing manufacturing, restaurant, farming?"

(Examples can be changed for regional relevance, common industries)

Q2 [Occupation] "What kind of work do you do, for example, registered nurse, janitor, cashier, auto mechanic, livestock work, crop or nursery work?"

(Consider changing the time frame, depending on the first question and what you want to know—if job is temporary, seasonal)

Occupational History

Name: _____
 Birthdate/age: _____ Gender: M F

The following questions refer to your current or most recent job:

Job title: _____
 Type of industry: _____
 Name of employer: _____
 Date job began: _____
 Describe this job: _____

Are you still working in this job? Yes No
 If no, when did the job end? _____

Fill in the table below, listing all jobs you have worked including short-term, seasonal, part-time employment, and military service. Begin with your most recent job. Use additional paper, if necessary.

Dates of Employment	Job Title and Description of Work	Hazards*	Controls

*List the chemicals, dusts, fibers, fumes, radiation, biologic agents, physical agents (extreme heat, vibration, noise, etc), trauma hazards (lifting, repetitive motion, work at heights, driving, operating machinery, etc.), and psychological hazards.

Have you ever worked at a job in which you came into contact with any of the following by breathing or touching them)? Think of all the jobs you've ever had.

[Put a check mark for any reported hazards]

[Note: add locally relevant hazards; remove irrelevant hazards]

<input type="checkbox"/> Any chemicals?	<input type="checkbox"/> Liquid metals?	<input type="checkbox"/> Asbestos
<input type="checkbox"/> Acids	<input type="checkbox"/> Mercury	<input type="checkbox"/> Coal dust
<input type="checkbox"/> Alkalis	<input type="checkbox"/> Lead	<input type="checkbox"/> Saw dust
<input type="checkbox"/> Ammonia	<input type="checkbox"/> Arsenic	<input type="checkbox"/> Silica sand
<input type="checkbox"/> Solvents	<input type="checkbox"/> Cyanide	<input type="checkbox"/> Diesel
<input type="checkbox"/> Alcohols	<input type="checkbox"/> Any other metals?	
<input type="checkbox"/> Benzene	<input type="checkbox"/> Pesticides	
<input type="checkbox"/> Toluene	<input type="checkbox"/> Which ones?	
<input type="checkbox"/> Other solvents?		

Use this space for other chemicals

Have you ever worked at a job with exposure to:

<input type="checkbox"/> Noise	<input type="checkbox"/> Operating machinery	<input type="checkbox"/> Confined space
<input type="checkbox"/> Vibration	<input type="checkbox"/> Work at heights	<input type="checkbox"/> Mandatory overtime
<input type="checkbox"/> Extreme Heat	<input type="checkbox"/> Electrical work	<input type="checkbox"/> Evening/night shift
<input type="checkbox"/> Extreme Cold	<input type="checkbox"/> Driving	<input type="checkbox"/> Trauma
<input type="checkbox"/> Infrared radiation	<input type="checkbox"/> Repetitive/forceful tasks	<input type="checkbox"/> Harassment or bullying
<input type="checkbox"/> UV Radiation	<input type="checkbox"/> Lifting	<input type="checkbox"/> Robbery
<input type="checkbox"/> Microwaves	<input type="checkbox"/> Infectious Diseases	<input type="checkbox"/> Other (specify below)
<input type="checkbox"/> Lasers	<input type="checkbox"/> Work with animals	

Have you ever been off work for more than one day because of an illness or injury related to work? Yes No

Have you ever been advised to changes jobs or work assignments because of any health problems or injuries? Yes No

Has your work routine changed recently? Yes No

Is there poor ventilation in your workplace? Yes No

 If you answered Yes to any of the questions, please explain here.

Case 3. Farmworkers at FQHC in rural area



- 32 yo woman and 35 yo husband
- Fertility problems
 - Together for 10 years
 - Had 3 miscarriages, no other pregnancies
- Spanish speakers from Mexico

- Immigrated to U.S. 10 yrs before
- No known medical problems
- ROS negative
- On no medications
- Live in a mobile trailer

What else do you want to know?

What work do they do?



Fertility/fecundity

Studies show these abnormalities, specifically

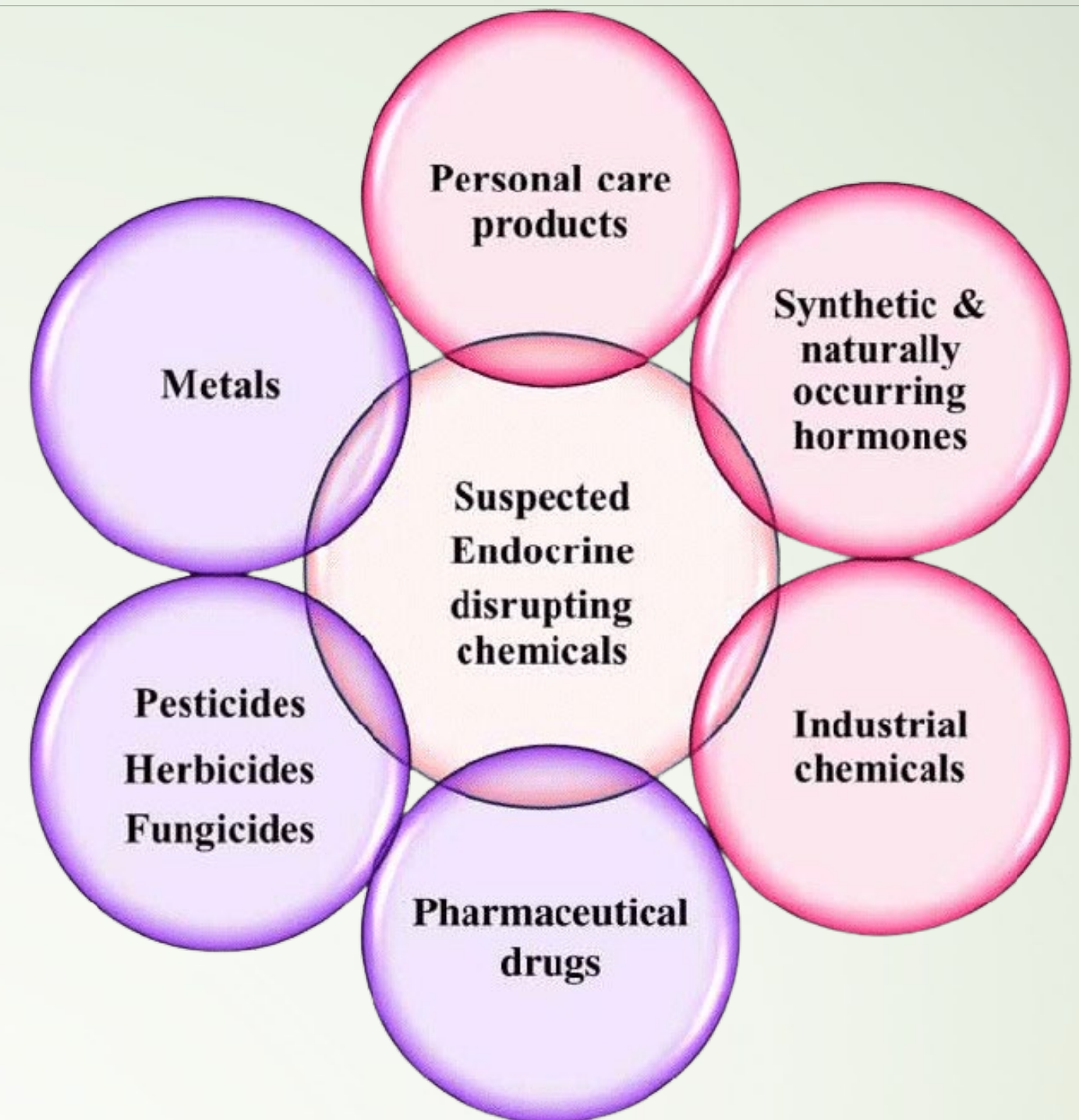
- Sperm concentration lower
- Reduced sex hormones in females
- Sperm: concentration low, morphology abnormal, motility reduced
- Hormone levels: reduced, abnormal
- DNA fragmentation
- Sex hormones change with changes in cholinesterase
- Still births, spontaneous abortions
- Chromosomal aberrations



Working on a farm

Living on a farm

Self reported exposure to specific pesticides



<u>Demographic Life Events</u>	AGE	CALENDAR YEAR	LIFE EVENTS	FARM ACTIVITIES	JOBS	HISTORICAL EVENTS
Date of Birth	16	1941		<i>First used tractor</i>		Pearl Harbor
Education						
Graduations	17	1942	<i>SS graduation</i>			
Last year of school						
Military Service	18	1943	<i>ARMY</i>			
Marriages	19	1944	↓			D-Day
Children	20	1945	↓			Atomic Bomb dropped
<u>Farming Life Events</u>						
Farms worked on	21	1946	<i>Married</i>	<i>Bought farm</i>	<i>ZISPS</i>	
Tractor						
First use	22	1947		<i>Grew collards for first time</i>	↓	Jackie Robinson in Major Leagues
Purchases						
Crop or Livestock Disasters	23	1948	<i>Son born</i>			
Farm Accidents	24	1949		<i>Added land</i>		
<u>Occupational Life Events</u>	25	1950		<i>Drought</i>		Korean War starts
Job history	26	1951	<i>Daughter born</i>			
<u>External Events</u>	27	1952		<i>Bought new tractor</i>		Eisenhower elected
Presidents	28	1953				
Civil Rights Events	29	1954				Brown vs. Topeka Board of
Football and Boxing Titles						
Major National Events						

Using a calendar to get a longitudinal history

Perinatal and early childhood exposure to pesticides using life history calendar

In utero exposure to pesticides and other toxic chemicals, comparing number and percent for month ranges, by children in farmworker ($n = 73$) and non-farmworker ($n = 65$) families.

Variable	Months					
	Missing	0	1-6	7-9	10-17	18-27
		<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Mother lived adjacent to fields, months						
Farmworker	0	12 (17)	1 (1)	60 (82)	na	na
Non-farmworker	7	57 (98)	0	1 (2)	na	na
Household residents worked in toxic jobs, months						
Farmworker	0	19 (26)	4 (5)	30 (41)	11 (15)	9
Non-farmworker	3	46 (74)	0	15	1	0
Household residents mixed or applied chemicals, months						
Farmworker	0	61 (84)	2 (3)	10 (14)	0	0
Non-farmworker	3	59 (95)	0	2 (3)	1 (2)	0

Early childhood (birth-35 months) exposure to pesticides and other toxic chemicals, comparing number and non-missing percentages for person-month ranges, by children in farmworker ($n = 73$) and non-farmworker ($n = 65$) families.

Variable	Person-Months						
	Missing	0	1-12	13-36	37-60	61-84	85-108
		<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Child lived adjacent to fields, person-months							
Farmworker	0	6 (8)	3 (4)	64 (88)	na	na	na
Non-farmworker	4	57 (93)	1 (2)	3 (5)	na	na	na
Household residents worked in toxic jobs, person-months							
Farmworker	0	7 (10)	13 (18)	22 (30)	22 (30)	7 (10)	2 (3)
Non-farmworker	0	39 (60)	4 (6)	18 (28)	3 (5)	1 (2)	0
Household residents mixed or applied chemicals, person-months							
Farmworker	0	56 (78)	6 (8)	11 (15)	0	0	0
Non-farmworker	0	58 (89)	1 (2)	5 (8)	1 (2)	0	0

Lookup--exposure hazards related to occupation: onetonline

The screenshot shows the O*NET OnLine website interface. At the top left is the O*NET OnLine logo. To the right is an "Occupation keyword search" box containing the text "farmworkers". Below the search box is a navigation bar with links for "Help", "Find Occupations", "Advanced Searches", "O*NET Data", "Crosswalks", "Share", and "Site". The main heading is "Farmworkers and Laborers, Crop, Nursery, and Greenhouse" with the code "45-2092.00" and an "Updated" button. A brief description follows: "Manually plant, cultivate, and harvest vegetables, fruits, nuts, horticultural specialties, and field crops. Use hand tools, such as shovels, trowels, hoes, tampers, pruning hooks, shears, and knives. Duties may include tilling soil and applying fertilizers; transplanting, weeding, thinning, or pruning crops; applying pesticides; cleaning, grading, sorting, packing, and loading harvested products. May construct trellises, repair fences and farm buildings, or participate in irrigation activities." Below this is a "Sample of reported job titles" list: Farm Laborer, Farmer, Field Irrigation Worker, Gardener, Greenhouse Worker, Grower, Harvester, Nursery Worker, Orchard Worker, and Orchard Picker. A navigation bar includes "Summary" (selected), "Details", "Custom", "Easy Read", "Veterans", and "Español". A "Contents" dropdown is visible. The "Occupation-Specific Information" section is expanded to show "Tasks", with a sub-header "5 of 27 displayed".

Tasks

- Record information about crops, such as pesticide use, yields, or costs.
- Direct and monitor the work of casual and seasonal help during planting and harvesting.
- Participate in the inspection, grading, sorting, storage, and post-harvest treatment of crops.
- Harvest plants, and transplant or pot and label them.
- Repair and maintain farm vehicles, implements, and mechanical equipment.

Work Context

All 20 displayed

- Face-to-Face Discussions — 74% responded "Every day."
- Outdoors, Exposed to Weather — 65% responded "Every day."
- Spend Time Making Repetitive Motions — 51% responded "Continually or almost continually."
- Duration of Typical Work Week — 56% responded "More than 40 hours."
- Spend Time Using Your Hands to Handle, Control, or Feel Objects, Tools, or Controls — 57% responded "Continually or almost continually."
- Time Pressure — 49% responded "Every day."
- Very Hot or Cold Temperatures — 40% responded "Every day."
- Spend Time Bending or Twisting the Body — 49% responded "Continually or almost continually."
- Spend Time Standing — 42% responded "Continually or almost continually."
- Spend Time Walking and Running — 39% responded "More than half the time."
- Contact With Others — 35% responded "Constant contact with others."
- Work With Work Group or Team — 39% responded "Important."
- Structured versus Unstructured Work — 29% responded "A lot of freedom."
- Importance of Being Exact or Accurate — 34% responded "Important."
- Exposed to Minor Burns, Cuts, Bites, or Stings — 35% responded "Every day."
- Wear Common Protective or Safety Equipment such as Safety Shoes, Glasses, Gloves, Hearing Protection, Hard Hats, or Life Jackets — 29% responded "Every day."
- Exposed to Contaminants — 29% responded "Every day."
- Freedom to Make Decisions — 24% responded "A lot of freedom."
- Physical Proximity — 56% responded "Moderately close (at arm's length)."
- Responsible for Others' Health and Safety — 38% responded "High responsibility."

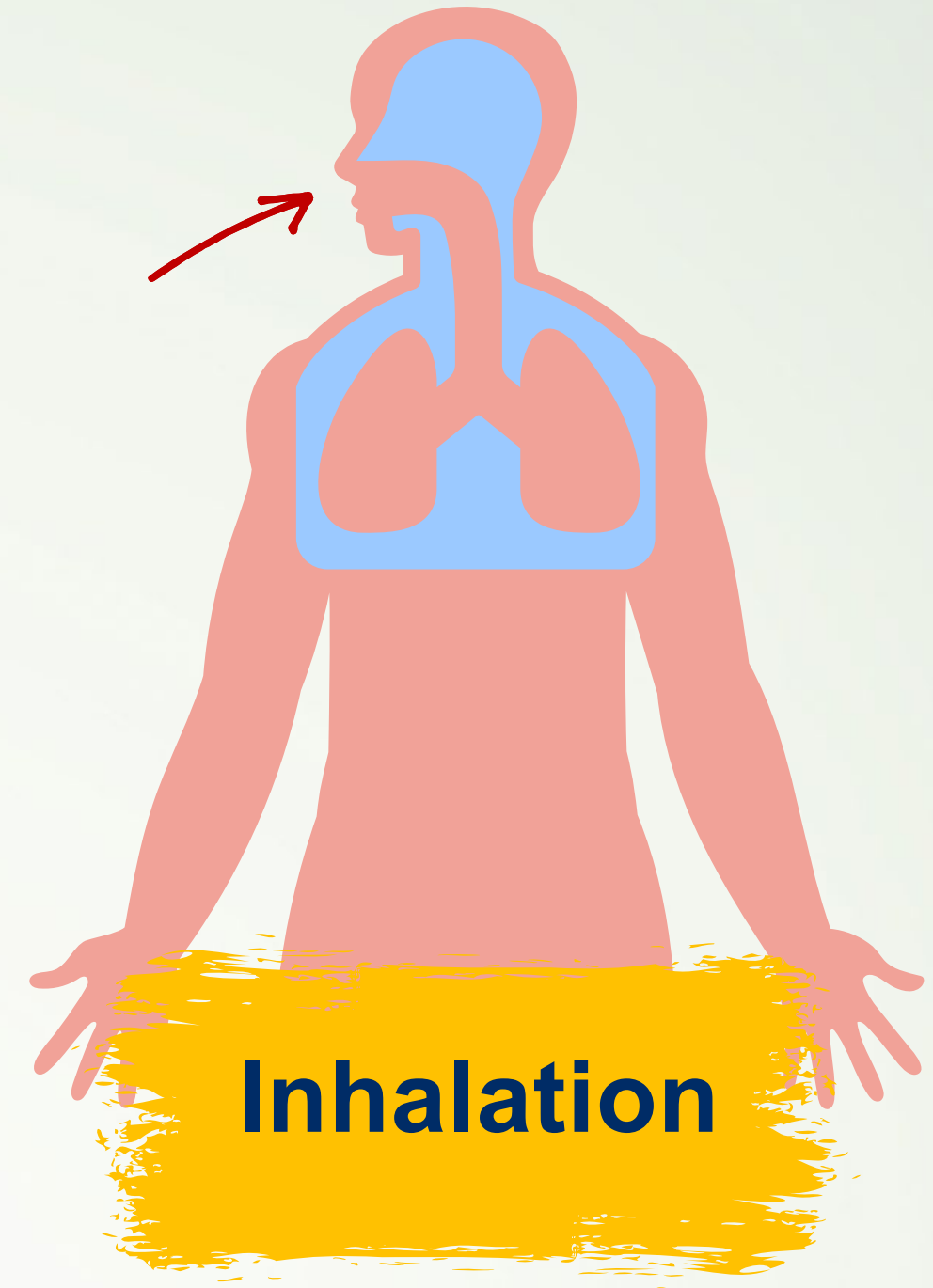
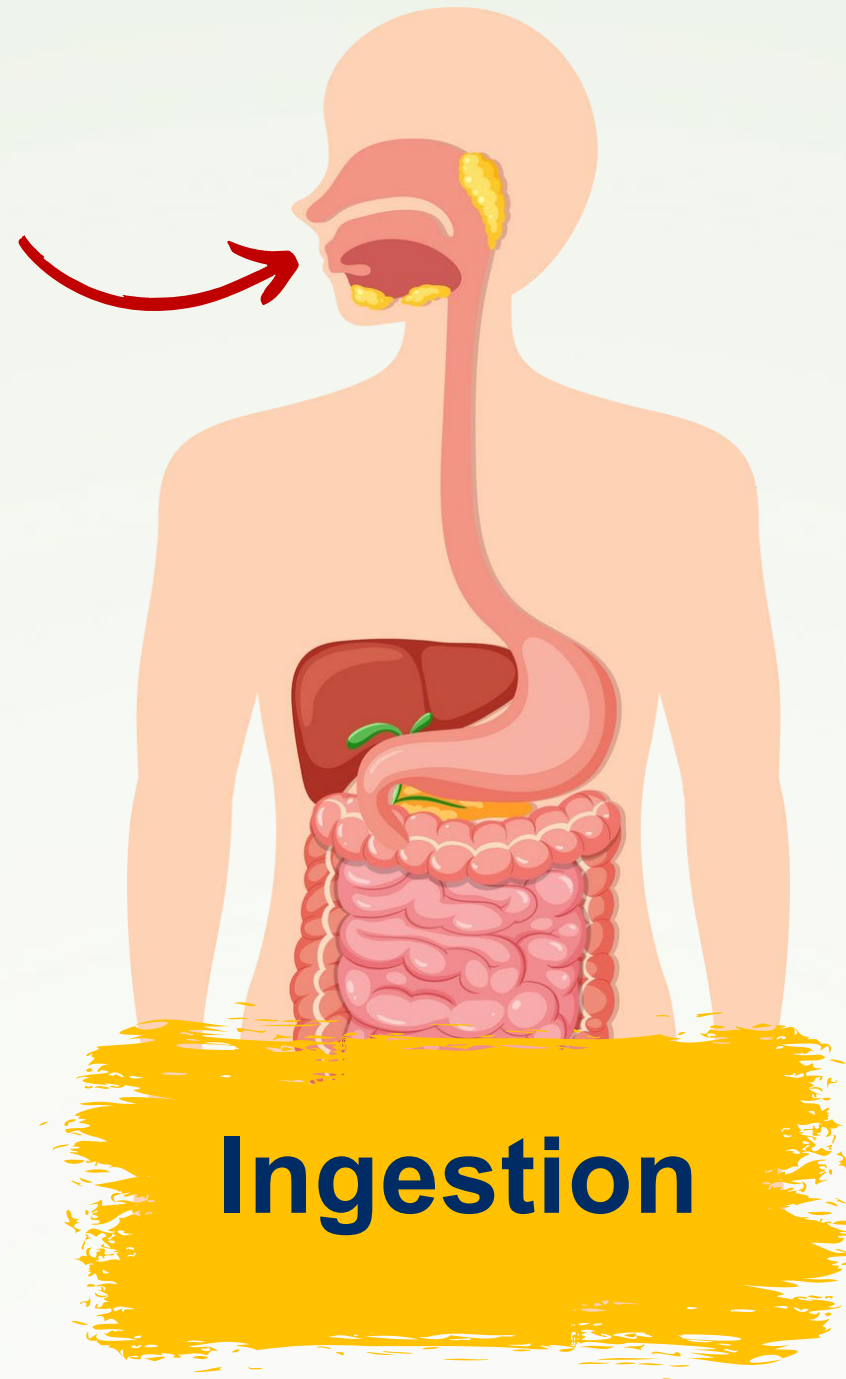
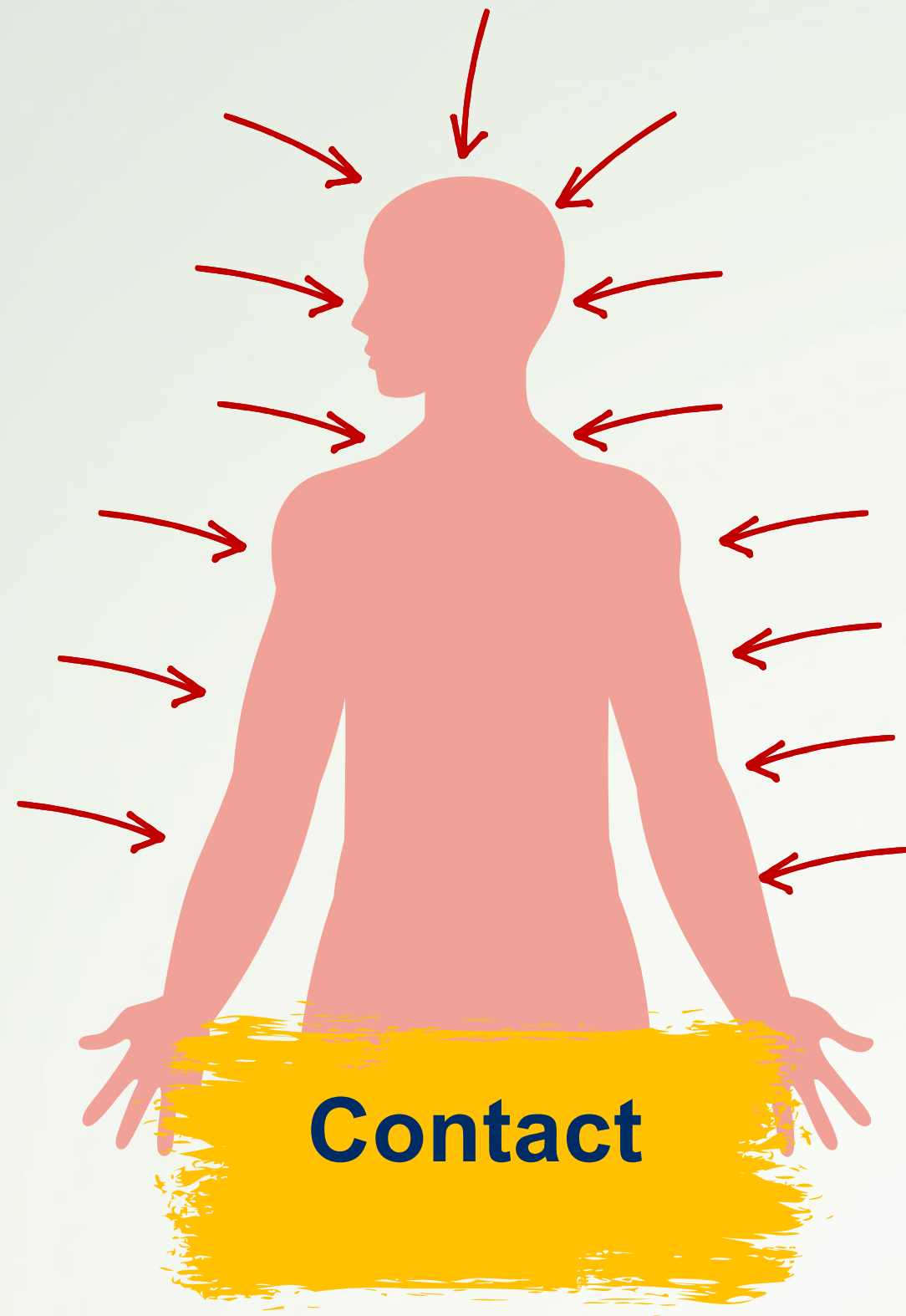
Format for thinking about hazardous exposures at work

Job/ Occupation	Chemical (pesticides, solvents, metals, etc)	Biological (bacteria, mosquitoes, fungus, viruses, etc)	Physical (noise, UV light, vibration, radiation, etc)	Biomechanical (heavy lifting, awkward postures, repetitive work, work with hand tools and machines, etc)	Psychosocial (long hours, shift work, deadlines, piece work, angry boss, low wages, more than one job, etc)

Anticipate exposure scenarios (Mechanisms of pesticide exposure)



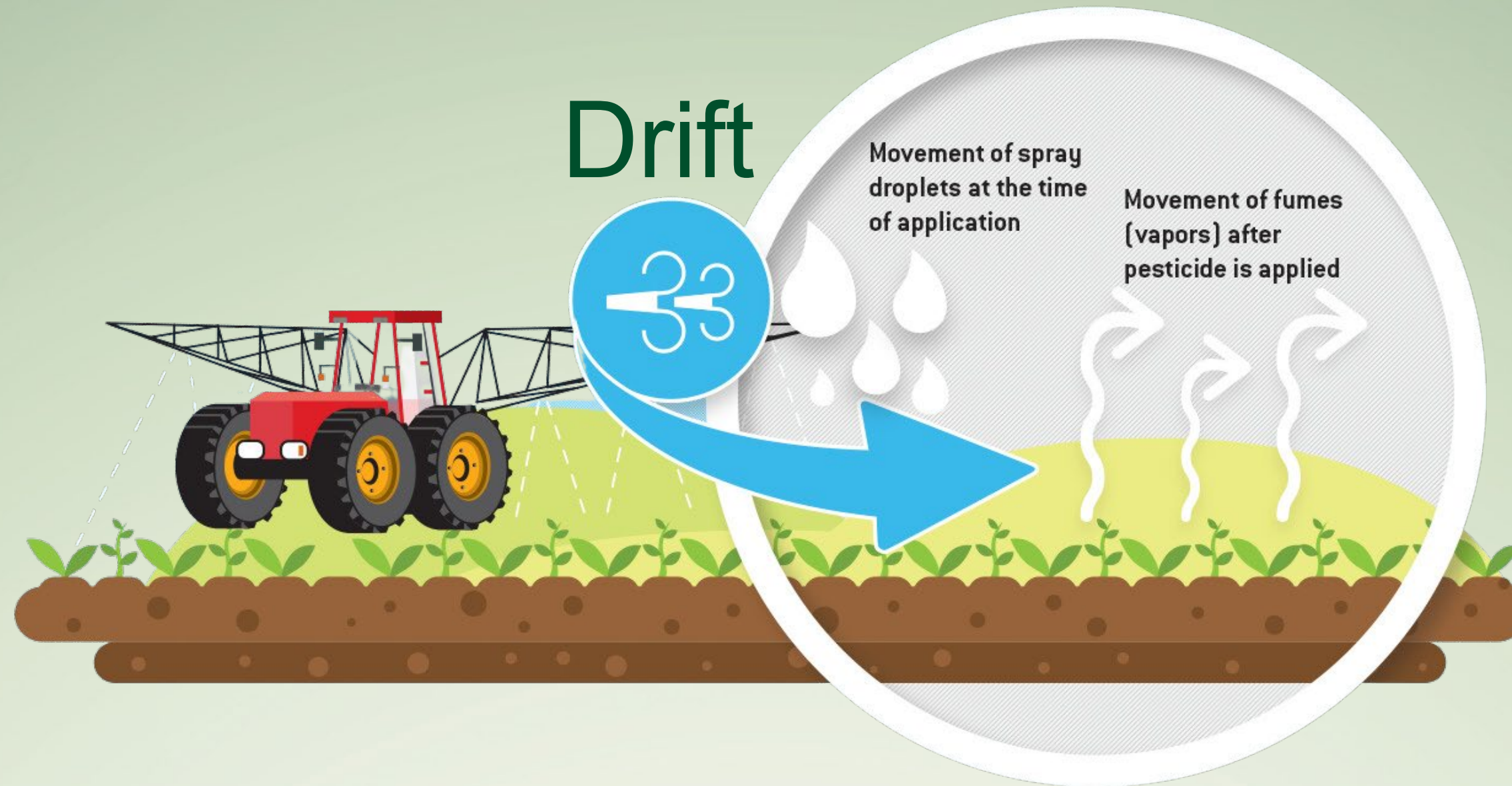
Routes of entry (routes of exposure)



Absorption through skin and mucous membranes

Spraying





- **Definition: aerial movement, and unintentional deposit, of pesticide outside the target area**

- Physical drift: off-target movement of pesticide droplets; small particles travel farther than large ones
- Vapor drift: can move a lot farther than particles

- **III effects:**

- Illegal, financial loss reduced crop quality/quantity, if an application is unsuccessful, the operator may have to re-apply—cost, environmental effects
- Risk of damage to human health, susceptible plants (e.g. adjacent crops), non-target organisms (e.g. wild and domestic animals, pollinating insects, etc.), the environment, and property.

Filling a backpack sprayer

Can spill onto hands, back--be pressed against skin

→ dermal absorption



Livestock application

Pesticides applied to livestock to suppress houseflies and other pests → residue → skin absorption, ingestion

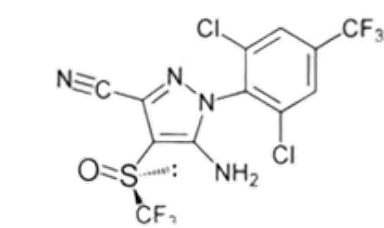
Pesticides in feed (corn, hay, etc) end up in animal waste—env pollution, present in drinking water



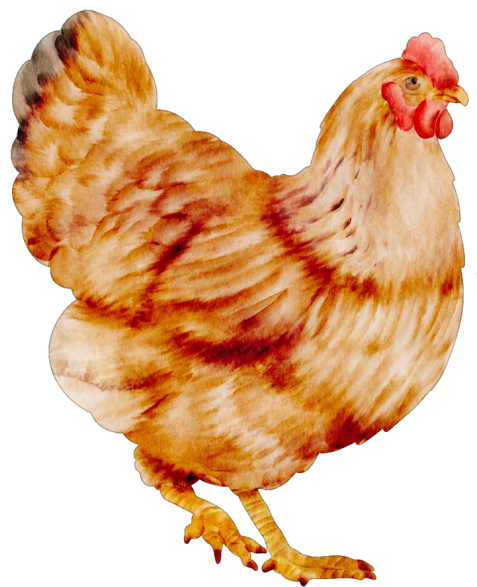


Pesticides contaminate feed, drinking water, soil contact

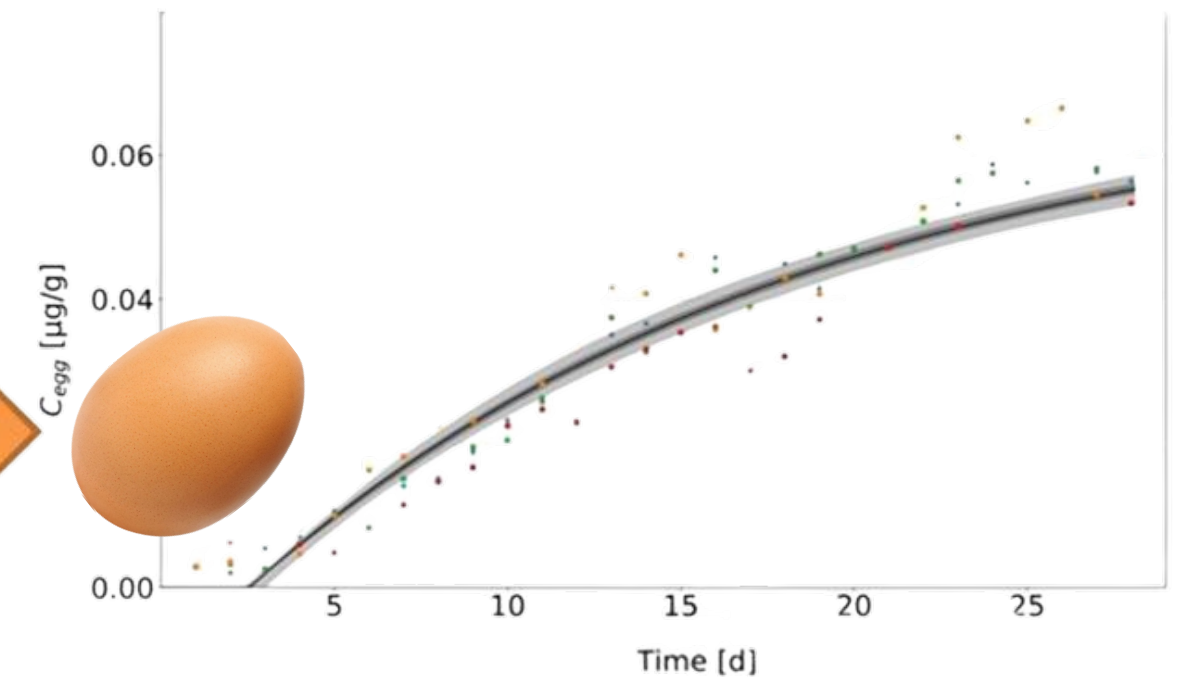
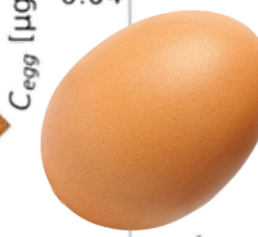
→ **eggs**



FIPRONIL →



→ **TRANSFER**



Pesticide residue

¿QUE SON LOS RESIDUOS DE PESTICIDA? PESTICIDAS SON QUIMICOS QUE SON VENENOSOS A LAS PERSONAS.



Muchas veces, los pesticidas son invisibles. Aunque no los puedas ver, todavía pueden ser dañinos.



Algunos trabajadores ponen pesticidas a las plantas y necesitan protección especial.



Todos los que trabajan con plantas tienen riesgo de contaminación.



El residuo de pesticida es lo que queda en la planta o en el suelo después de la fumigación.



Tocando las plantas se puede contaminar las manos.



Si no se lava bien las manos, la contaminación puede afectar sus ojos, piel y boca.

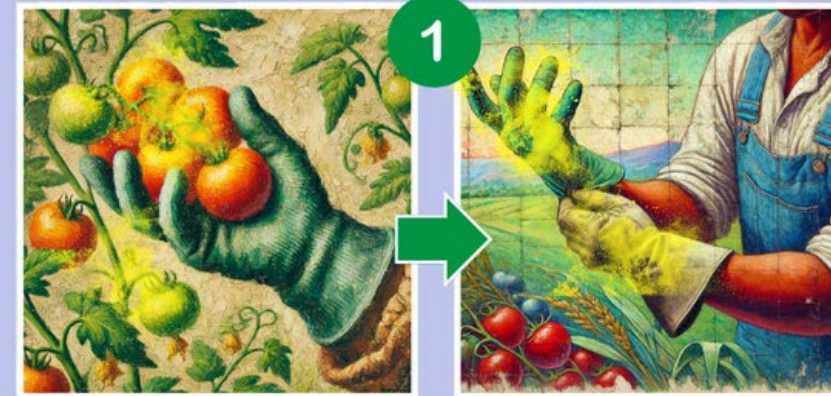


Caminando en la tierra les puede contaminar los zapatos.



Los zapatos pueden contaminar la casa y los que viven adentro.

COMO PREVENIR LA CONTAMINACIÓN DE PESTICIDAS



1. Qítense el guante agarrándolo desde adentro para no tocar con su mano expuesta.



2. Deje sus zapatos de trabajo afuera de la casa o en un solo cuarto.



3. Lave sus manos frecuentemente y báñese tan pronto al regresar a su casa.



4. Lave su ropa de trabajo separado de su otra ropa.



GREAT LAKES CENTER FOR FARMWORKER HEALTH AND WELLBEING
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Opportunities for prevention

Primary
Prevention



Secondary
Prevention



Tertiary
Prevention



Time



Healthy
Worker

Reversible
Disease

Symptomatic
Irreversible
Disease

Learning objectives

- ✓ **Take an occupational history**
- ✓ **Obtain and interpret Safety Data Sheets**
- ✓ **Use the state Poison Control Center and online resources to assist in patient management**
- ✓ **Access government agencies for reporting and enforcement**



Connect with us!

<https://farmworkerhealth.uic.edu>



lforst@uic.edu



ILLINOIS OCCUPATIONAL SURVEILLANCE PROGRAM

National Institute for Occupational Safety and Health #U60OH010905

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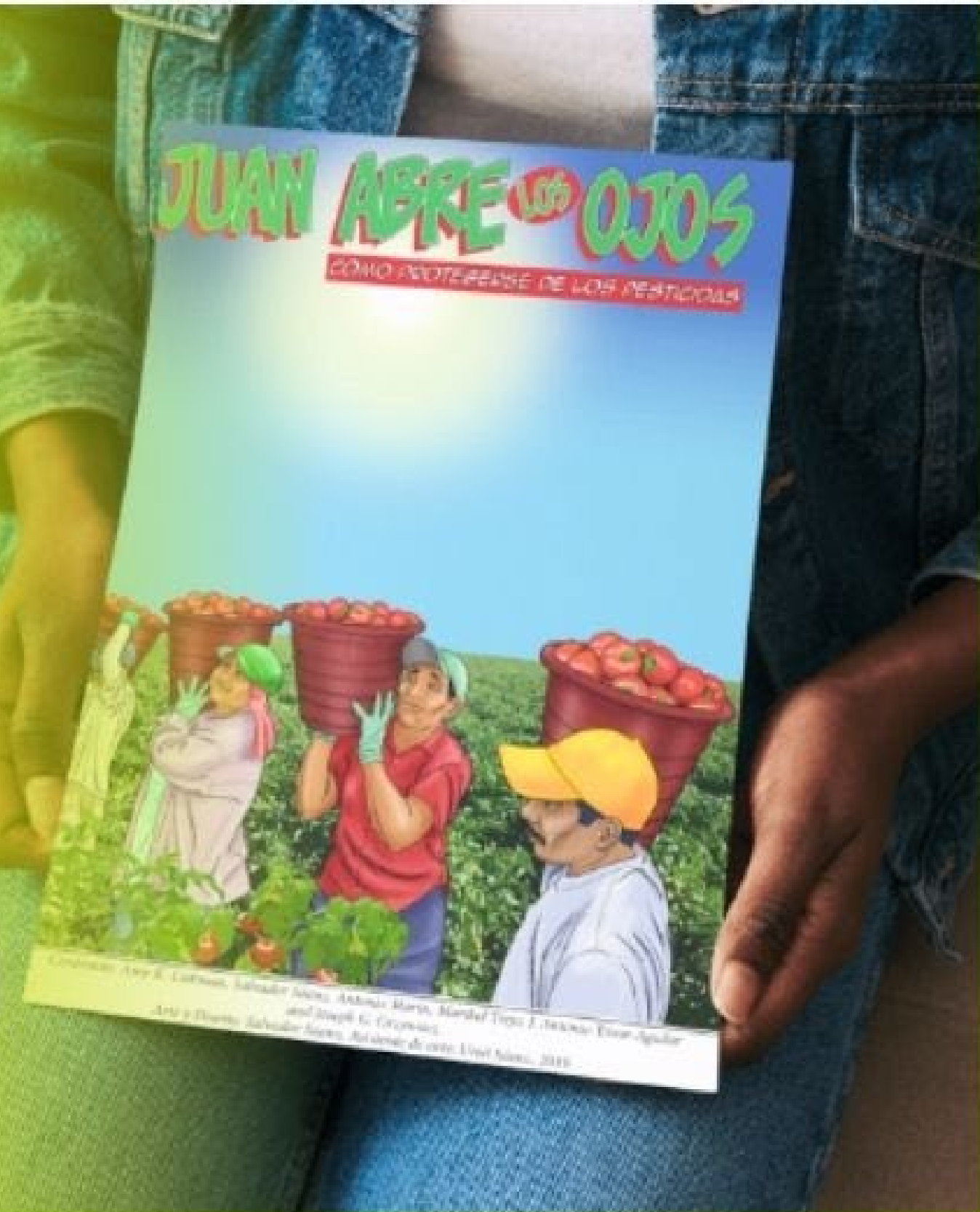
Upcoming webinar

How to Prevent Pesticide Poisoning in Farmworkers

Session 3:
Culture is key! Prevention of
Farmworker Pesticide-Related
Illness Using Cultural
Contextual Education

Thursday, December 5, 2024

1:00 pm PT / 3:00 pm CT / 4:00 pm ET / 5:00 pm AT



Upcoming webinar



Bird Flu & Farmworkers

An Update on H5N1
During Influenza Season

Tuesday, November 12, 2024

10:00 am PT / 12:00 pm CT / 1:00 pm ET / 2:00 pm AT

MIGRANT CLINICIANS NETWORK

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<https://greatnonprofits.org/reviews/write/migrant-clinicians-network-inc>



Questions / Evaluation

Public Health & Legal
Considerations in Pesticide-
Related Illness in Farmworkers



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