

Data on Pesticide Poisoning in the Philippines



Objectives:

- 1. To present relevant data on acute and chronic pesticide poisoning**
- 2. To provide data on the incidence rates/ case fatality rates**



Acute Pesticide Poisoning

A stylized graphic of a mountain range in shades of blue, located in the bottom right corner of the slide.

Castaneda, CP; Maramba, NPC.

A Three-Year Retrospective Study of Acute Poisoning due to Anti-cholinesterase Insecticides (1974-1977)

Incidence of Insecticide Poisoning According to Specific Anti-Cholinesterase Agent and Their Toxic Rating (n=25)

| Generic Name | Toxicity Rating | Total Number of Patients | Percentage |
|---------------------|------------------------|---------------------------------|-------------------|
| Mevinphos | 6 | 1 | 4% |
| Methyl Parathion | 5 | 11 | |
| Dichlorvos | 5 | 3 | |
| Monocrotophos | 5 | 1 | |
| Carbofuran | 5 | 3 | 72% |
| Mercaptothion | 4 | 3 | |
| Diazinon | 4 | 1 | |
| Carbaryl | 4-5 | 1 | 20% |

Incidence rates of pesticide poisoning

| SOURCE | YEAR | NUMBER OF PESTICIDE POISONING | INCIDENCE RATE (per 100,000) |
|--------------------------------------|-----------|-------------------------------|------------------------------|
| Department of Health (12 regions) | 1982-1985 | 1,704 | 3.27 |
| NPCIS National Capital Region | 1986-1990 | 221 | 2.6 |
| NPCIS Region XI | 1986-1990 | 166 | 4.08 |
| Department of Health (10 regions) | 1991-1995 | 333 | 1.08 |

*Pesticide poisoning in selected hospitals in
four regions in the Philippines, 2000-2001
(WHO-Philippine DOH -NPCIS Project)*

General Objective :

To estimate the extent of human pesticide exposure and poisoning in selected areas of the Philippines with a view to implement preventive and education strategies to reduce morbidity and mortality from pesticide poisoning

Pesticide poisoning in selected hospitals in four regions in the Philippines

| Region | # of Pesticide Poisoning Cases Reported (%) | Populations (in millions) |
|------------------|--|----------------------------------|
| CAR | 41 (12.58%) | 1.35 |
| Region II | 118 (36.2%) | 2.76 |
| Region VI | 35 (10.74%) | 6.15 |
| Region XI | 132 (40.49%) | 5.12 |
| TOTAL | 326 (100%) | |

Proportion of Deaths Compared to In-hospital Admissions

| | CAR | Region 2 | Region 6 | Region 11 |
|---|---------------------|----------------------|---------------------------------------|-----------------------|
| Total no. of patients admitted to hospitals for pesticide poisoning | 41 (9 hospitals) | 118 (7 hospitals) | 31 up to December (7 hospitals) | 132 (18 hospitals) |
| Total no. of in-hospital deaths from pesticide poisoning | 2 (9 hospitals) | 6 (7 hospitals) | 6 (7 hospitals) | 4 (18 hospitals) |
| Deaths as percent of patients admitted for pesticide poisoning | 4.87% | 5.08% | 19.35% | 3.03% |

Pesticide poisoning in selected hospitals in four regions in the Philippines

- Hospital data underestimate true picture of health related effects of pesticide exposure
 - health effects could be minor and do not require hospitalization
 - health effects could be vague and not attributed to pesticide exposure.

Some Lessons Learned **(WHO Advisory Group of the Epidemiology of Pesticide Poisoning Project, 2001)**


- ◆ Hospital based surveillance were relatively inept in measuring occupational poisoning but good for intentional poisoning, perhaps severe/occupational/accidental poisoning
- ◆ There is the need to distinguish intentional, accidental and occupational poisonings as separate entities
- ◆ **Community-based studies can provide better information related to questions of public health and may augment surveillance of severe pesticide poisoning**

Cheng (1994)


**“Pesticides and Its hazardous Effects on
the Benguet Vegetable Farmers”**

JPMA 69(3,4):169-1988

**Among 2,000 Benguet vegetable farmers,
common complaints included allergic reactions
both in the skin and the eyes, abdominal pain,
dizziness, chest pain, headache and nose bleeding.**



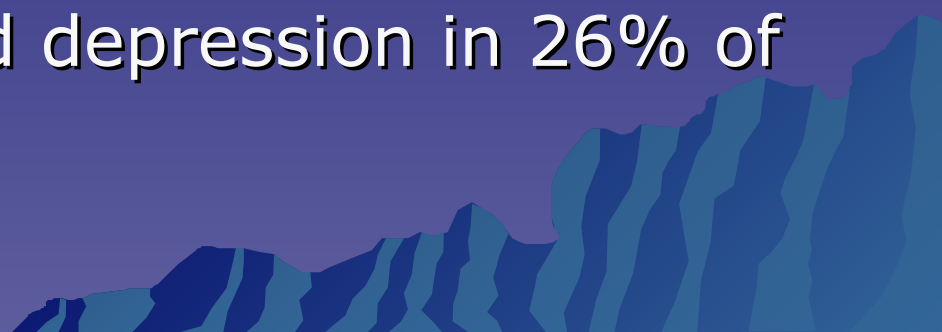
Assessment of the Health Effects of Commonly Used Pesticides Among Pesticide Mango Sprayers in Sal-lapadan, Abra (2000)

- ◆ **Twenty pesticide mango sprayers in Sal-lapandan, Abra were interviewed and examined.**
 - ◆ **Symptoms were headaches, skin irritation, shortness of breath, blurring of vision, lacrimation, weakness and palpitations.**
 - ◆ **Abnormal physical examination findings were skin lesions, pterygium and nystagmus.**
 - ◆ **50% of the workers had mild rbc cholinesterase depression and the remaining 50% had moderate depression which were observed even after 6 months of the last spraying activity.**
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Prevalence of Acute Pesticide Poisoning among Cut-Flower Farmers in Sitio Sadag, Barangay Bahong, La Trinidad (November 2003)

- ◆ **52 out of 104 households randomly selected (n=101); backpack sprayers**
- ◆ **33.7% claimed to be sick because of work**
- ◆ **Symptoms appeared immediately after exposure during application in 62.5%**
- ◆ **Symptoms were allergic and neurologic in nature**
- ◆ **Symptoms lasted for 1-3 days in 60%**
- ◆ **Only 11.8% sought medical consultation**
- ◆ **Prevalence rate is 9 per 100,000 population**

Acute pesticide poisoning among farmers engaged in cut-flower industry in La Trinidad, Benguet (2004)

- ◆ 208 farmers randomly selected and interviewed; backpack sprayers
 - ◆ Thirty four percent claimed to be sick because of work.
 - ◆ Symptoms last for 1-3 days in 78%
 - ◆ 14% sought medical consult.
 - ◆ Clinical manifestations were allergic, neurologic and cardiovascular in nature
 - ◆ The red cell cholinesterase was abnormal in 51% of cases with mild depression in 26% of cases
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A Cross-sectional Study on the Health Effects of Ethylenebisdithiocarbamate Exposure among Plantation Workers in the Philippines (1999-2000)

- ◆ **88 banana plantation workers compared with 44 organic farmer workers**
 - ◆ **Backpack and aerial spraying**
 - ◆ **More medical complaints among banana plantation workers**
 - **respiratory complaints (cough, colds, nasal congestion)**
 - **eye irritation (pterygium),**
- 


A Cross-sectional Study on the Health Effects of Ethylenebisdithiocarbamate Exposure among Plantation Workers in the Philippines (1999-2000)

- ◆ ETU was detected in both soil and air samples from all plantations.
- ◆ The elevated air ETU (16.17 ng/m³) and the presence of ETU in the soil on the organic farm are possibly due to spray drift coming from an adjacent plantation as enhanced by prevailing meteorologic conditions.

Health and Environmental Assessment of Sitio Camocaan, Hagonoy, Davao del Sur (2006)

- ◆ **38 community residents randomly selected and examined**
- ◆ **31 out of 38 (81.6%) reported exposure to aerial pesticides; only 3 of them were agricultural workers in the banana plantation.**
 - **16 (52%) out of the 31 exposed individuals reported symptoms post-exposure with almost half experiencing symptoms at least 51% of the time**
 - **No hospitalizations/medical consultations reported due to the symptoms.**


Health and Environmental Assessment of Sitio Camocaan, Hagonoy, Davao del Sur (2006)

- ◆ **Symptoms are consistent with mancozeb and chlorothalonil, both of which are irritating to the body surfaces**
 - ◆ **34.3% had elevated ethylene thiourea (metabolite of EBDC)**
 - ◆ **57.1% had depressed rbc cholinesterase**
 - ◆ **Environmental monitoring showed levels of ETU in soil and air (2/6); chlorothalonil in soil samples (6/6)**
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Chronic Pesticide Poisoning



Correlation between blood ethylenethiourea and thyroid gland disorders among banana plantation workers in the Philippines, 1999-2000

- ◆ **Randomly selected 57 directly exposed workers and 31 indirectly exposed workers from four banana plantations and 43 workers from an organic farm; Backpack sprayers also exposed to aerial spray**
 - ◆ **Exposed workers had higher mean thyroid-stimulating hormone measurement**
 - ◆ **Nine of the exposed farmers had abnormal ultrasound findings, consisting mostly of solitary nodules**
 - ◆ **Blood ETU levels were higher among the directly exposed workers**
 - ◆ **Among farmers with solitary thyroid nodules, we found a very good direct correlation between the size of the nodule and blood ETU level.**
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Pregnancy outcome among farming households: (Crisostomo, 2000)

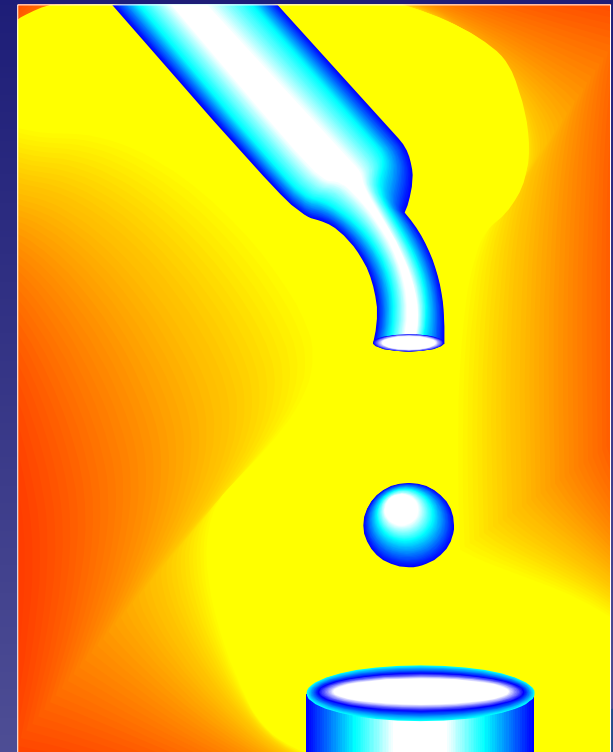
· *Retrospective study (1998 - 1999)*

345 pregnancies (CPU)

331 pregnancies (IPM)

RESULTS:


| Pregnancy Outcomes | CPU | IPM |
|-----------------------|-------|-------|
| Spontaneous abortions | 4.06% | 0.60% |
| Preterm births | 1.16% | 3.02% |
| Birth defects | 3.48% | 0.91% |



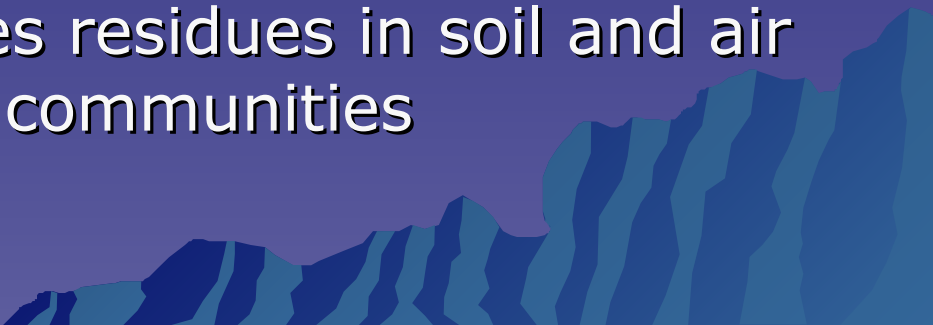
Adjusted Risk Ratio for spontaneous abortion is **6.17**

Adjusted Risk Ratio for birth defect cases is **4.56**


Health Assessment of Agusan del Sur Farmers (December 2008)

- ◆ **15 farmers exposed to paraquat:9 directly exposed,
5 indirectly exposed**
 - ◆ **Various ailments involving the eyes, skin and lungs reported**
 - ◆ **Abnormal laboratory findings consisted of low hemoglobin, reticulocytosis, eosinophilia, abnormal Chest X-ray, abnormal simple spirometry studies, (+) KOH stain**
 - ◆ **Disease in 3 individuals can be attributed to paraquat exposure.**
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Summary

- ◆ Pesticides are toxic substances
 - ◆ Acute illnesses among workers and residents in adjacent communities arise from exposure
 - supported by the presence of pesticides or their metabolites in blood/urine
 - ◆ Environmental contamination occurs even in areas away from planting fields
 - supported by pesticides residues in soil and air samples in residential communities
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Summary

- ◆ Occupational health programs in plantations have to be strengthened and externally audited
 - ◆ Health surveillance activities among workers in informal sectors and community residents need to be improved
 - ◆ More stringent policies on the use of pesticides have to be formulated and implemented primarily to protect the health of our people
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“A man reaps what he sows.”

Gal 6:7



Thank you and good day.