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Session 18: Pesticide Evaluation Reports and Safer Use Action Plan (PERSUAP) Basics

Asia Regional Environmental Compliance—ESDM Workshop
Bangkok, Thailand
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Presentation Overview



- ❖ Definition of Pest & Pesticide
- ❖ Pesticide Diversity
- ❖ Pesticide Risks & Exposure Pathways
- ❖ USAID's response
 - ❖ Policy: commitment to IPM
 - ❖ Regulatory: USAID's pesticide procedures
- ❖ Resources





A pesticide is. . .

Any substance or mixture of substances intended for: preventing, destroying, repelling, or mitigating any pest.*

***living organisms that occur where they are not wanted or that cause damage to crops, animals, humans or other animals.**



USAID follows the US EPA definition of pesticides.

“Natural” or “biological” pesticides (e.g. pyrethrum) are pesticides

Disinfectants are pesticides (except household bleach, common cleaners.)

Drugs used to control human or animal diseases are NOT pesticides

A diverse, confusing market. . .

*About **900** active ingredients in **20,700** products are currently sold in world markets*



High diversity of chemical classes & AIs

“Traditional” synthetic organic pesticides

Chlorinated Hydrocarbons (DDT, Aldrin, Dieldrin), Organophosphates, Carbamates

+



Newer insecticides modeled after plant extracts

Plant extracted pyrethrum (mix of pyrethrins) revived from the 1800s
Synthetic pyrethroids (cypermethrin, deltamethrin, lambda-cyhalothrin)
Chloro-nicotinyl (imidacloprid, thiacloprid)

+



“Next Generation Insecticides”

- ❖ **Microbes (bacteria, fungi, virus)**
- ❖ **Microbial extracts (BT, abamectin, sphinosad)**
- ❖ **Insect Growth Regulators—IGRs (diflubenzuron, hexythiazox, methoprene)**



The need for extra scrutiny & concern



Pesticides are often essential.

But pesticides are potent killing agents. Their use has intrinsic dangers.

In developing areas, these dangers are worse because:

- ***Quality control in manufacture, handling, labeling and packaging is often poor.***
- ***Poor use practices are widespread.***

pesticide mis-use and mis-management can. . .

- Acute poisoning
- Cause chronic sickness, birth defects, cancers, & even death
- Damage non-target ecosystems
- Affect non-target organisms (e.g., the “good bugs”)
- Persist/accumulate in the environment
- Lead to resistance and to resurgence of pests
- Result in loss of export markets

Human Exposure Route: Unsafe Application/Handling Practices

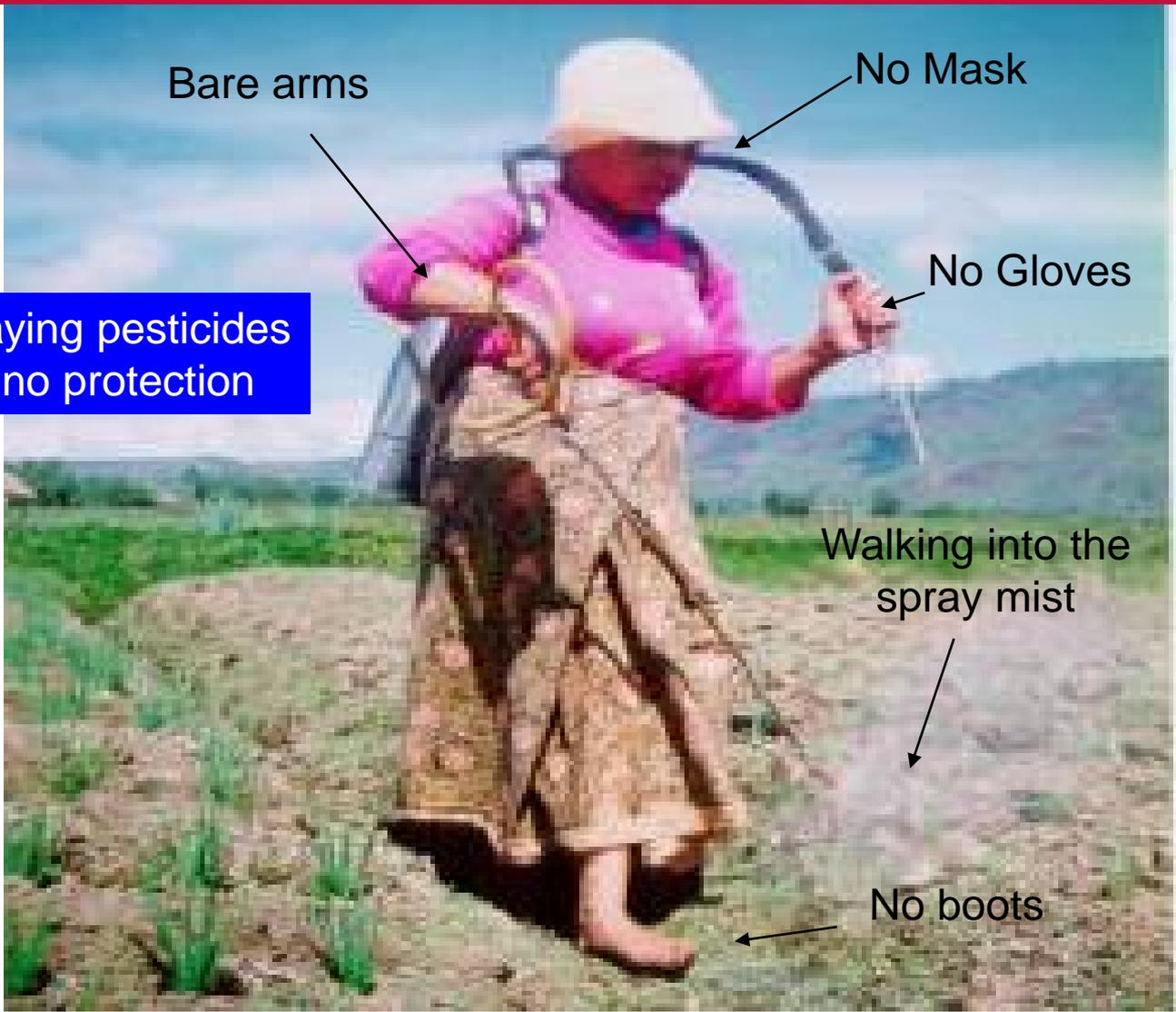


Mixing pesticides
with bare hands



Pouring pesticide into
sprayer without
protection

Pesticide Handling: What Not to Do



Spraying pesticides with no protection

Bare arms

No Mask

No Gloves

Walking into the spray mist

No boots

The result . . .



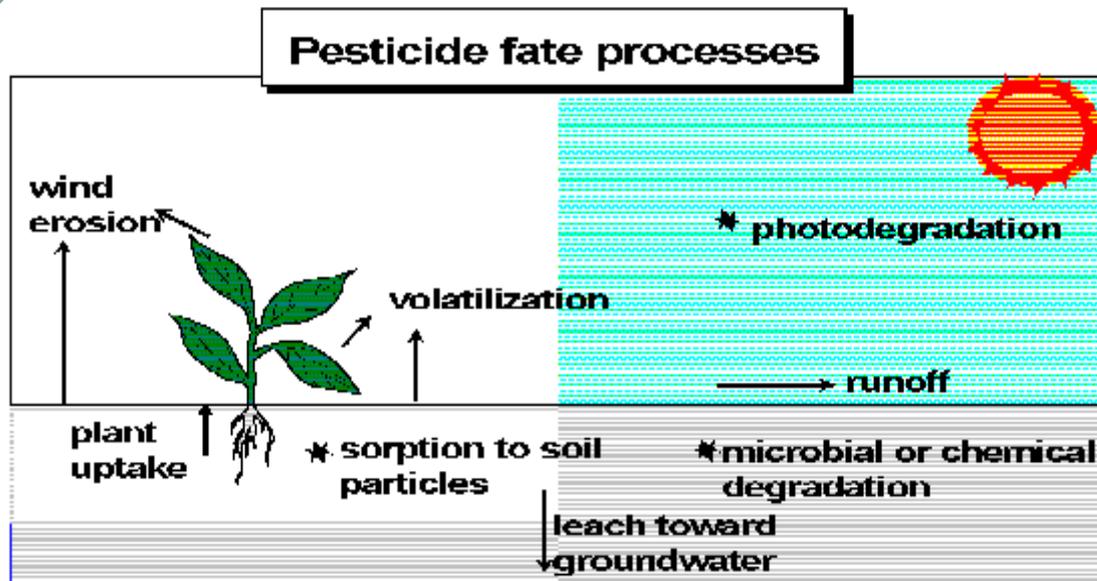
Skin lesions



and unfocused vision

And far worse is possible (acute poisoning, cancers, birth defects, death. . .)

Human Exposure Route: Food



Only a portion of pesticide ends up on/in food. But this portion can be dangerous (residues), can lead to loss of export markets AND impact non-target organisms.

Spraying too close to harvest

Using the wrong pesticide

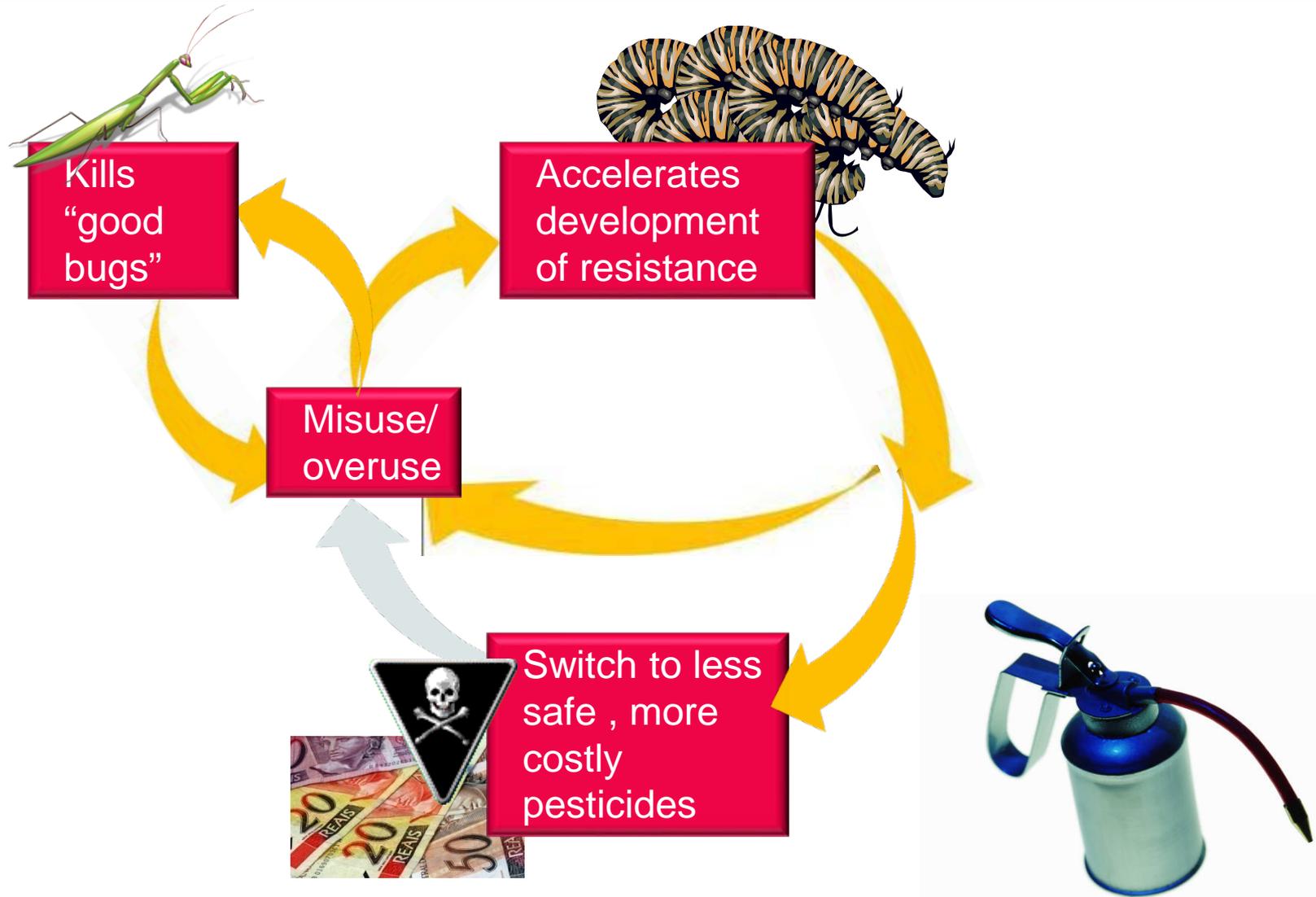
Using too much

Excess levels of pesticide in soil

...can all lead to harmful pesticide residues on/in food

Dangers of mis-use:

Commonly observed “vicious circles”





In Asia & Worldwide, the Risks are Real. Pesticide Challenges are Cross-cutting



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2010 Pesticide Action Network Study:

interviews with 1300 peasant farmers in China, Cambodia, Sri Lanka, the Philippines, Vietnam, India, Indonesia and Malaysia

2/3rds of crop pesticide active ingredients highly hazardous, but use of proper PPE rare, even in middle-income countries

Bangladesh: pesticide poisoning a leading cause of death in official statistics, and the 2nd-highest cause of death among 15-49 age group

Cambodia: At least 88% of farmers surveyed had experienced symptoms of acute pesticide poisoning.

Indonesia: widespread use of pesticides as mosquito repellants

Etc.

USAID's response. . .

- 1 Agency-level policy commitment to Integrated Pest Management and SAFER USE more broadly
- 2 The “Pesticide Procedures” (Special and additional environmental review requirements under 22 CFR 216.)



USAID & Integrated Pest Management (IPM)

USAID policy: IPM is the framework for every activity (agricultural, health or other) that involves pesticide procurement or use

IPM...

Is **ecologically-based pest management** that promotes the health of crops and animals, and **makes full use of natural and cultural control processes and methods**, including host resistance and biological control.

Uses **chemical pesticides only where and when the above measures fail to keep pests below damaging levels.**

All interventions are need-based and applied in ways that **minimize undesirable side effects.***

**CGIAR policy statement on IPM*



If a pesticide is used, it is the “least toxic” one to do the job.

Safer Pesticide Use: 3 Basic Elements

1. Integrated Pest Management

- *Reduce the volume & toxicity of pesticides used*

2. Safer storage, application and disposal

- *Minimize human exposure and environmental contamination from the pesticide that is used.*

3. Safe Purchase/ Quality assurance

- *Make sure the bottle contains what the label says.*

HAZARD CLASSIFICATIONS	
GROUP Ia	VERY TOXIC
GROUP Ib	VERY TOXIC
GROUP II	HARMFUL
GROUP III	CAUTION
GROUP IV	LESS TOXIC

aak CropLife KENYA



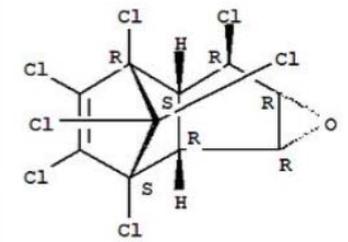
Pesticide Procedures: 22 CFR 216.3(b)

- ❖ Apply to every activity that will **procure, use, or recommend for use** one or more pesticides (certain emergency conditions exempted)
- ❖ The IEE or EA must assess the proposed pesticide use in terms of the following 12 factors;
 - ✓ US EPA registration status
 - ✓ Basis for selection
 - ✓ Extent to which IPM is used
 - ✓ Application methods and safety equipment
 - ✓ Toxicology and mitigation measures
 - ✓ Efficacy
 - ✓ Target vs. nontarget species
 - ✓ Environmental conditions at the location of proposed use
 - ✓ Availability of alternatives
 - ✓ Country's ability to control and regulate pesticides
 - ✓ User training
 - ✓ Monitoring provisions



Pesticide Procedures: the PERSUAP

- ❖ This analysis usually takes the form of a standalone **PESTICIDE EVALUATION REPORT & SAFER USE ACTION PLAN (PERSUAP)**
- ❖ 2-part document:
 - ❖ PER = 12-factor analysis
 - ❖ SUAP = sets out mandatory safer use conditions
- ❖ PERSUAP is formally an amendment to the activity's IEE or EA
 - ❖ Requires MD/unit head clearance & BEO concurrence
- ❖ PERSUAP authorizes specific pesticides for specific uses and establishes (via SUAP) mandatory conditions for use.



“pesticide procurement or use” includes. . .

Procurement includes . .

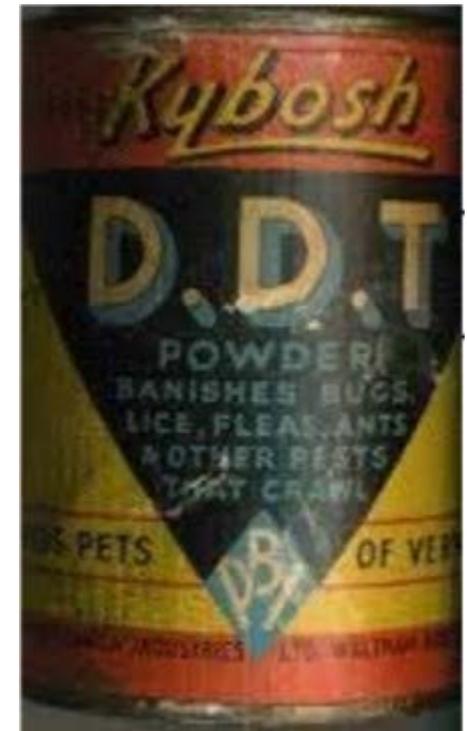
- 1. Direct purchase of pesticides*
- 2. Payment in kind, donations, provision of free samples and other forms of subsidies*
- 3. Provision of credit to borrowers could be procurement*
- 4. Guarantee of credit to banks or other credit providers could be procurement*

Use includes . .

- 1. Sale*
- 2. Handling, transport, storage,*
- 3. Mixing, loading, application*
- 4. Disposal*
- 5. Provision of fuel to transport pesticides*
- 6. Technical assistance in pesticide management*

The definition of “procurement or use” does NOT include...

- ❖ Pesticide used in supervised research or limited field evaluation*
 - **Usually interpreted as < 4 ha.*
 - *treated products generally cannot be consumed by people or livestock,*
- ❖ TA for development of host country pesticide regulatory capabilities
- ❖ Training in safer pesticide use, **not involving actual application or use of pesticides.**





Why is EPA registration status important?

Under US law, US EPA “registers” particular pesticides to particular uses.

When the proposed pesticide IS approved for a similar use by US EPA, BUT the proposed use is RESTRICTED by US EPA on the basis of USER HAZARD,

The PERSUAP must also contain a user hazard evaluation.

When the proposed pesticide is NOT approved for a similar use by USEPA, or restricted for any reason other than user hazard

more detailed study is required in the form of a full Environmental Assessment

Useful Web Sites

- www.epa.gov/pesticides/reregistration/status.htm
- www.pmep.cce.cornell.edu/profiles/extoxnet
- www.pesticideinfo.org
- www.epa.gov/pesticides/safety/healthcare/handbook/handbook.htm (English and Spanish versions of pesticide poisoning recognition handbook)

Note: The information in these websites is useful for development professionals but does not substitute for an expert to apply it correctly

Group Work

❖ **Using online resources, evaluate the following 3 pesticides for use as a contact/residual pesticide for warehoused food commodity protection**

NOT sprayed directly on food commodities, but on warehouse surfaces (when empty) and surrounding areas as a complement to phosphine fumigation.

- *deltamethrin 2.5% AI*
- *lambda-cyhalothrin 5% AI*
- *imidacloprid 20% AI*

❖ **Choose the preferable pesticide with reference to toxicity profile, US EPA registered uses/status**

- *assume that all are registered for this use in the host country*

❖ **To extent time permits, document findings in provided PERSUAP template.**

Warehouse, Commodity & Pest context

- ❖ Large → small facilities
- ❖ Industrial (port warehouses) → village contexts
- ❖ Variety of grains and beans
- ❖ Wide variety of possible stored grain/commodity pests
 - *Grain borers, beetles, weevils, moths, etc.*

