



International Finance Corporation

Environmental, Health and Safety Guidelines for

Pesticide Handling and Application

Integrated Pest Management Strategy

- a) The sponsor must develop an integrated pest management (IPM) strategy that is consistent with the following principles:
- i) The objective is pest management (i.e., keeping pests below economically harmful levels) rather than pest eradication.
 - ii) As pests are notorious for rapidly developing resistance to pesticides, chemicals should be used sparingly and considered as a last resort. Biological and other non-chemical control measures should be preferred methods whenever available and practical.
 - iii) Where pesticides are used, they must be selected and applied in such a way as to avoid or reduce adverse impact on human health, beneficial plant and insect organisms, and the environment.
- b) The use of highly persistent and highly toxic pesticides must be avoided to the maximum extent possible. If use of such pesticides is necessary, an environmental evaluation must be prepared and submitted to IFC to demonstrate the need for the pesticide use and include a proposed pesticide management and monitoring plan.

Choice Of Pesticides

- a) The criteria for choosing pesticides should be based on the following factors in decreasing order of importance as shown:

- i) biodegradability;
- ii) toxicity to mammals and fish;
- iii) occupational health and safety risks; and
- iv) cost.

b) Formulations containing chlorinated hydrocarbons should be avoided to the maximum extent possible.

c) The pesticides listed below are banned under all but the most extenuating circumstances:

<i>Pesticide/Chemical Compound</i>
2,4,5-T (2,4,5-trichlorophenoxyacetic acid)
Aldrin
Arsenic compounds
Chlordane
DBCP (dibromochloro propane)
DDT
Dieldrin
EBDC (ethylenedisithiocarbamate)
Heptachlor
Mercury compounds
MIREX (dechlorane)
Phosvel (leptophos)

The use of these pesticides must be specifically justified based on a demonstration that no alternative means of pest management are available; justification based on cost alone is not acceptable under World Bank policy.

d) EDB (ethylene dibromide) is a proven carcinogen and should be used only if there are no acceptable substitutes.

e) The following pesticides should be avoided if suitable alternatives are available, and used only under close supervision:

<i>Pesticide/Chemical Compound</i>	
Aramite	Kepone
Benomyl	Lindane
BHC	Merphos
Cadmium compounds	Monourea
Carbaryl	PCP
Chloranil	Piperonyl butoxide
Chlorobenzilate	Promide
Chloroform	Rotenone
Creosote	Safrole
DDVP	(SST) DFF
DECP	Strobane
Diallates	Strychnine
Dimethoate	Toxaphene
Endrin	Triallates
EPN	1080
Ethylene oxide	

Application

- a) Aerial spraying (by helicopter or fixed wing aircraft) should be avoided wherever possible.
- b) Application rates must not exceed manufacturer's recommendations.
- c) Ultra low volume (ULV) application is a proven technology that should be encouraged wherever practical. The application method requires proven equipment and proper training and supervision. (Major pesticide manufacturers will supply technical bulletins on ULV and often will provide training assistance).
- d) Pesticides must not be directly applied to streams, ponds, lakes, or other surface water bodies unless specifically designed and intended for control of aquatic vegetation or disease vectors. In this case, the project sponsor must carefully identify existing uses of the water supply and notify all identified users of the intended treatment prior to application.

Disposal

- a) Metal and plastic product containers should be triple rinsed and the rinse water used in

application. Then, the containers should be returned to the manufacture for recycling, or rendered unusable, crushed and buried.

- b) Combustible containers (paper bags) which held organic or inorganic compounds (including mercury, lead, cadmium and arsenic compounds) should be triple rinsed and the rinse water used in application. Then, the bags should be disposed of in accordance with local regulations.

- c) Outdated pesticides should be returned to the supplier or manufacturer whenever possible. High temperature incineration (e.g., in a cement kiln) of unused pesticides or combustible containers is permitted subject to local regulations and only under the direct supervision of technically qualified personnel.

General Health

- a) Any employee who becomes ill during or within 24 hours of using pesticides should promptly notify the supervisor and receive medical care.
- b) Eating room must be separate from work areas where pesticides are present.
- c) Pre-employment and periodic medical examinations should be provided for all personnel.

Handling

- a) All pesticide products must be shipped and stored in adequate containers with clearly identifiable labels in the local language showing content, expiration date, health hazards and first aid measures in case of accidental exposure or ingestion.
- b) Pesticides should be stored in a locked and posted area.
- c) Pesticides must not be transported or stored in common with food or beverages (including potable water).
- d) Protective gloves, shoes, a long-sleeved shirt and full trousers made from closely woven fabric should always be worn by employees when mixing or applying pesticides. Employees

should be encouraged to have a spare change of clothing nearby. Contaminated clothing should be promptly changed and washed.

e) Respiratory devices as appropriate (per label or other manufacturer recommendations) must be provided and used by all handlers and applicators.

f) Employees should be discouraged from smoking, eating or drinking while handling pesticides. Workers should be encouraged to wash their hands thoroughly with soap and water before engaging in such activities. Adequate washing facilities must be made available to allow thorough hand washing prior to meals.

g) When the job is finished, all workers should be required to wash themselves and their clothing thoroughly with soap and water. Adequate facilities must be made available for this purpose.

h) Equipment should be cleaned in a special area where wash water will not come into contact with food or drinking water supplies.

Training

a) Employees should be trained on the hazards, precautions and procedures for the safe storage, handling and use of all potentially harmful materials relevant to each employee's task and work area.

b) Training should incorporate information from the Material Safety Data Sheets (MSDSs) for potentially harmful materials.

c) Personnel should be trained in environmental, health and safety matters including accident prevention, safe lifting practices, the use of MSDSs, safe chemical handling practices, and proper control and maintenance of equipment and facilities.

d) All applicators must be properly trained in handling, mixing, application, and disposal of pesticides and product containers.

e) All newly trained employees must work initially under supervision of trained and experienced applicators.

f) All personnel involved in pesticide handling or use must be trained in emergency response including: recognition of symptoms of pesticide poisoning; first aid procedures for pesticide poisoning; notification of supervisors and medical personnel; and proper response actions for each reasonably foreseeable emergency situation.

g) Temporary or seasonal workers should not be assigned to work involving handling of pesticides unless they are fully trained and directly supervised by experienced, permanent staff.

Record Keeping and Reporting

a) The sponsor should maintain records of significant environmental matters, including monitoring data, accidents and occupational illnesses, and spills, fires and other emergencies.

b) This information should be reviewed and evaluated to improve the effectiveness of the environmental, health and safety program.

c) An annual summary of the above information should be provided to IFC.