



International Finance Corporation

Environmental, Health and Safety Guidelines for

Plantations

These general guidelines for plantations address concerns with agricultural operations in the field and the associated operations at the plantation. Also, IFC's Pesticide Handling and Application guidelines will usually apply to plantations. For integrated facilities with more substantial processing on site, additional guidelines will apply to the processing operations. Separate guidelines should be used for tree plantations for wood or pulp and paper production.

Land Use

The development or conversion of land for plantation crops should conform to the environmental objectives of preserving regional bio-diversity, ecologically sensitive areas, unique habitats, forests, endangered species and sites of cultural significance. Land development and cultivation should utilize accepted techniques for erosion control, watershed protection and water quality protection. Resettlement of affected human populations and compensation for property acquired should be economically and socially just. When warranted by the scale of the project, the World Bank policy on Resettlement should also be addressed.

Water Use

Irrigation management should be conducted in a manner to conserve water usage and to ensure the sustainability of the sources. This includes protection of water quality and maintenance of adequate drainage.

Use Of Pesticides

The use of pesticides must be carefully managed in conformity with the IFC guidelines on

Pesticide Handling and Application. Generally, the sponsor must develop an integrated strategy for pest management (i.e., keeping pests below economically harmful levels) rather than pest eradication which uses pesticides sparingly and considers them as a last resort. Biological and other non-chemical control measures should be preferred. 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. 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 as well as describe the proposed pesticide management and monitoring plan. Pesticide Handling and Application Guidelines should be applied if the scope of the project includes significant pesticide usage.

Use Of Chemical Fertilizers

The use of chemical fertilizers must be carefully managed to avoid harm to ground and surface water supplies. The rate of application and the timing and methods of application may need to be selected to keep loss of fertilizer through runoff or leaching to an acceptable level which is dependent in part on the capacity of the receiving water system to assimilate added nutrients.

Liquid Effluents

Process wastewater, domestic sewage and contaminated stormwater should be treated to meet the following specified limits before being discharged to surface waters:

| <i>Parameter/Pollutant</i> | <i>Maximum Value</i> |
|----------------------------|--|
| pH | 6 to 9 |
| BOD ₅ | 50 mg/L |
| Oil and Grease | 10 mg/L |
| Total Suspended Solids | 50 mg/L |
| Temperature increase | Less than or equal to 3°C ¹ |

¹The effluent should result in a temperature increase of no more than 3 degrees Celsius at the edge of the zone where initial mixing and dilution take place. Where the zone is not defined, use 100 meters from the point of discharge.

Solid and Liquid Wastes

- a) Project sponsors should recycle or reclaim materials where possible.
- b) If recycling or reclaim is not practical, wastes must be disposed of in an environmentally acceptable manner and in compliance with local laws and regulations.
- c) All hazardous materials, process residues, solvents, oils, and sludges from raw water, process wastewater and domestic sewage treatment systems must be disposed of in a manner to prevent the contamination of soil, groundwater and surface waters.

Other General Environmental Requirements

- a) Formulations containing chromates should be avoided in water treatment processes.
- b) Transformers or equipment containing polychlorinated biphenyls (PCBs) or PCB-contaminated oil should not be installed, and existing equipment involving PCBs or PCB-contaminated oil should be phased out and disposed of in a manner consistent with the requirements of the host country.
- c) Processes, equipment and central cooling systems involving the use or potential release to the environment of chlorofluorocarbons (CFCs), including halon, should not be installed, and their use in existing processes and systems should be phased-out and disposed of in a manner consistent with the requirements of the host country.

d) Storage and liquid impoundment areas for fuels, raw and in-process materials, solvents, wastes and finished products should be designed with secondary containment (e.g. dikes, berms) to prevent spills and the contamination of soil, groundwater and surface waters.

Workplace Noise

- a) Feasible administrative and engineering controls, including sound-insulated equipment and control rooms should be employed to reduce the average noise level in normal work areas.
- b) Plant equipment should be well maintained to minimize noise levels.
- c) Hearing protection must be used by personnel exposed to noise levels above 85 dBA.

Hazardous Material Handling and Storage

- a) All hazardous (reactive, flammable, radioactive, corrosive and toxic) materials must be stored in clearly labeled containers or vessels.
- b) Storage and handling of hazardous materials must be in accordance with local regulations, and appropriate to their hazard characteristics.
- c) Fire prevention systems and secondary containment should be provided for storage facilities, where necessary or required by regulation, to prevent fires or the release of hazardous materials to the environment.
- d) Pesticides must not be transported or stored in common with food or beverages (including potable water).
- e) Protective gloves, clothing, and 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) Pesticides should be stored in a locked and posted area.

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

Field Application of Pesticides

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

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

c) 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.

d) 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.

Health - General

a) Sanitary facilities should be well equipped with supplies (e.g., protective creams) and employees should be encouraged to wash frequently, particularly those exposed to dust, chemicals or pathogens.

b) Ventilation systems should be provided to control work area temperatures and humidity.

c) Personnel required to work in areas of high temperature and/or high humidity should be allowed to take frequent breaks away from these areas.

d) Pre-employment and periodic medical examinations should be conducted for all personnel, and specific surveillance programs

instituted for personnel potentially exposed to toxic or radioactive substances.

e) Any employee who becomes ill during or within 24 hours of using pesticides should promptly notify the supervisor and receive medical care.

f) Eating room must be separate from work areas where pesticides are present.

Safety - General

a) Shield guards or guard railings should be installed at all belts, pulleys, gears and other moving parts.

b) Elevated platforms and walkways, and stairways and ramps should be equipped with handrails, toeboards and non-slip surfaces.

c) Electrical equipment should be grounded, well insulated and conform with applicable codes.

d) Personnel should use special footwear, masks and clothing for work in areas with high dust levels or contaminated with hazardous materials.

e) Field personnel should use protective clothing which is appropriate to their activity, such as metal reinforced gloves, long trousers and steel tipped boots for sugar cane cutters using machetes.

f) Eye protection should be worn by personnel when in areas where there is a risk of flying chips or sparks, or where intense light is generated.

g) Personnel should wear protective clothing and goggles when in areas where corrosive materials are stored or processed.

h) Emergency eyewash and showers should be installed in areas containing corrosive materials.

i) A safety program should be established for construction and maintenance work.

j) A fire prevention and fire safety program should be implemented and include regular drills.

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) Emergency response training should include the location and proper use of emergency equipment, use of personal protective equipment, procedures for raising the alarm and notifying emergency response teams, and proper response actions for each foreseeable emergency situation.
- e) All personnel involved in pesticide handling or use must receive training in handling pesticide emergencies including: recognition of symptoms

f) 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 the handling of pesticides unless they are fully trained and directly supervised by experienced 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.