European Bank
for Reconstruction and Development

Sub-sectoral Environmental and Social Guidelines: Agricultural Production - Crops

PROCESS DESCRIPTION

This guideline covers the sowing, transportation, growing and harvesting of plant material, including crops, tobacco, vegetables, fruit, horticulture or biofuel. These crops may be grown in open fields or under cover.

Agricultural crops are usually grown as large single crops (monocultures) and modern farming techniques often involve the use of fertilisers and pesticides, irrigation systems and large-scale machinery for ploughing, sewing and harvesting.

KEY ENVIRONMENTAL, HEALTH AND SAFETY RISK/LIABILITY ISSUES

Soil, Surface Water and Groundwater Contamination

Chemical and organic fertilisers and pesticides are applied to fields to enhance production capability and restore soils following nutrient depletion. The excessive application of fertilisers and pesticides can lead to the contamination of water supplies.

Chemical fertilisers containing compounds of nitrogen and phosphorus can cause nutrient enrichment (eutrophication) of surface water receptors, resulting in adverse impacts on watercourses.

Toxic pesticides, which can biodegrade slowly, can accumulate in body tissues and are harmful to ecosystems and potentially to human health. Pesticides can end up in agricultural crop produce, groundwater and surface water and the human body through ingestion of crop products.

Irrigation might be required in certain areas. If not managed correctly irrigation can adversely impact soils. Different sources of irrigation water can contain different concentrations of salts. Salts are essential to healthy plant growth but too much salt can also contribute to poor crop growth.

Farming mechanisms, using heavy machinery and regular movements across crop growing areas can lead to compaction of soils. This reduces the ability for free movement through the soil for water, roots and other activities essential to maintain healthy crops.

Agrochemical Storage, use and Disposal

The application of agrochemicals poses potential nuisance risks, health and safety hazards, and third party liability issues (such as the misapplication of pesticides resulting in damage to neighbouring crops, habitats and residential areas by spray drift).

Disposal of empty drums and packaging of agrochemicals may pose both contamination risks to soil and groundwater, and health and safety risks.

Pesticide Resistance and Bioaccumulation

Over-application of pesticides, herbicides and insecticides may lead to the build up of pest resistance which in turn leads to a greater reliance upon the use of pesticides and this in turn leads to greater resistance in the insect and plant communities.

This resistance/pesticide cycle can have significant financial implications in terms of yield and the quantity of agrochemicals that need to be applied to a crop. Inappropriate use of pesticides can cause build-up in crops and wildlife (bioaccumulation) which can have adverse effects on the product, and in cases of

significant pesticide build-up, an adverse effect on the consumer.

Water Supply and Effluent Discharge

Having a sufficient supply of good quality water when required is essential to all major crop production activities. Abstraction rates may be high, especially where irrigation schemes are required. Large scale irrigation schemes may require formal authorisation from the authorities. Abstraction for agricultural purposes is likely to require a license.

Agricultural water consumption is often in competition with industrial water requirements and during periods of water shortage this may cause local/regional difficulties and disputes.

Crop Contamination

Contamination of agricultural crops can occur when the crop is growing, when it is harvested, and during transport and storage.

Contaminants may include heavy metals (from past industrial uses on land) fertilisers and pesticides (residual levels in the soil, and the pesticides used on the crops) or neighbouring industrial activities (air, water or soil). Soils and produce should be tested to ensure that any contamination present is below acceptable limits in the country for import and/or export.

Handling, Lifting or Carrying

Many injuries from farming are associated with handling, lifting and carrying heavy or unconventional shaped objects.

Slips, Trips and Falls

Slips, trips and falls are regular occurrences in farming environments and result in many injuries. Typically these are because of uneven ground and poor housekeeping.

Strike Injuries from Moving Objects

Being struck by moving objects, such as tractors or other farm machinery pose a hazard to employees of crop production facilities. This can occur within the agricultural fields or on roads within and outside the farm compound.

OTHER ENVIRONMENTAL, HEALTH AND SAFETY RISK/LIABILITY ISSUES

Damage to Soil and Habitats

In addition to soil erosion by water and wind processes, overuse of fertilisers, compaction of soils and habitat clearance for expansion of growing areas can impact soil production capability. The type of damage that occurs depends to a great extent on the crop being grown. For example, soil compaction is a problem for crops such as cotton and tobacco where heavy machinery is used on highly irrigated soils.

Soil can be eroded at crop production facilities where inappropriate farming practices are employed.

Storage of Chemicals, Fuels and Oils

Chemicals, fuels and oils are used in agricultural machinery. Over several years, spillages from poor handling practices and leakages from above or below ground storage tanks may lead to localised contamination of soils, or more widespread contamination of groundwater.

Farming Practices

General farming practices which may cause nuisance or a hazard include:

- Burning of organic matter (particulate emissions) including crop stubble or crop wastes;
- Use of public highways by farm vehicles causing congestion and dangerous driving conditions due to mud deposited on roads;
- Damage to sensitive areas or those which are protected by legislation such as areas of high ecological value, or archaeological or historic interests.

Waste Dumps

Some farms may operate waste dumps that have been used for a number of years for redundant machinery, vehicles, oil and pesticide drums and a variety of scrap materials. These waste dumps are often located along the edge of fields, on a farm's boundary, or in former mineral workings, ponds or marshy ground. They may result in localised pollution or more significant contamination where the farms have operated waste schemes on a commercial basis. On site storage and/or disposal of wastes may require licensing.

Release of Genetically Modified Organisms to the Environment

Organisms, such as plants and animals, whose genetic material has been altered by man, are regarded as genetically modified organisms (GMOs). The food and feed which contain or consist of such GMOs, or are produced from GMOs, are called genetically modified (GM) food or feed. Where GMOs are used in crop production, specific plants or seeds may migrate to land other than that set aside for GMO crop production. This may result in mutation or contamination of neighbouring non GMO crops. In some regions there are concerns about GMOs used in food production.

The use of GMO's is heavily regulated on an international level and it is essential if crops are to be supplied into the EU that there is traceability on the source of the crop and methods of farming.

KEY SOCIAL, LABOUR, AND COMMUNITY RISK/LIABILITY ISSUES

Collision Risk

Moving vehicles and moving equipment is core to the operation of an arable farm. Accidents with vehicles colliding with people are a common occurrence.

Dust Inhalation

Harvesting and grain handling create large amounts of dust that can be hazardous to health when inhaled. Occupational asthma is common in the farming industry.

Hazardous Substances

Contact burns and inhalation of fumes can occur as a result of poor storage of hazardous substances such as pesticides, herbicides and fertilizers.

Contact Dermatitis

Inflammation of skin occurs due to contact with substances that cause irritation or allergy.

Noise

Operating farm machinery e.g. tractors, grain driers and guns can result in hearing loss to those exposed to the noise.

Asbestos

Asbestos has been used on a large scale for many years as fire proofing and insulation material and may be encountered in a wide range of forms including asbestos cement boards, as fire retardant gaskets in pipe work and as fire retardant insulation around boilers and furnaces. Particular attention should be paid to farm buildings constructed prior to the 1980s.

Exposure to Polluted Drinking Water

Exposure to pesticide or nitrate contaminated drinking water from extraction points close to the farm may adversely impact human health.

Noise Pollution

Noise from grain driers or other machinery may cause a nuisance to local residents.

FINANCIAL IMPLCATIONS

Potential financial implications from the risks and liabilities identified in the previous section are wide ranging and may include:

- Potential clean up costs for soil and groundwater contamination (e.g. nitrate treatment) arising from the use, storage and application of agrochemicals or resulting from past site contamination;
- Fines for the contamination of watercourses or groundwater from runoff containing pollutants or effluent discharges to surface water without license;
- Capital expenditure for installing or upgrading irrigation systems, water storage provisions and water conservation/recycling systems;
- Pesticide resistance may require the use of more expensive pesticides;
- Spread of plant bourn diseases may affect production capabilities;
- Spray drift may lead to compensation claims from neighbouring properties;
- Inadequate safety provisions for workers may lead to health and safety claims from affected employees;
- Crop contamination e.g. with non-authorised GMOs, may result in restrictions on international markets available for export (e.g. EU);
- Loss of productivity of soil from erosion results in lower yields.

IMPROVEMENTS

Environmental Improvements:

- Upgrade existing pesticide and hazardous materials storage to allow for appropriate containment to mitigate accidental release;
- Provide secondary containment of tanks to prevent spills reaching natural ground and surface watercourses;
- Conduct and document regular inspection/integrity testing of tanks;

- Protect areas of high ecological value or areas protected by state/local authorities;
- Dredge watercourses on a regular basis to mitigate sedimentation of soil has occurred; and reduce flood risk impact of operations;
- Avoid on site burning (e.g. crop stubble) that may give rise to odour or air quality nuisance complaints or could present fire risks;
- Ensure any GMO application is controlled to a specific site and follows application/use legislation and guidelines;
- Avoid nuisance complaints for noise pollution from grain silos by closing windows, operating during the day only, maintaining equipment regularly, and considering the use of sound proofing;
- Implement waste segregation and reclamation programmes;
- Make improvements to general housekeeping.

Health and Safety Improvements

- Separate people from vehicles were practicable;
- Ensure drivers are properly trained to operate the machinery and equipment;
- Fit vehicles with rollover protective structures;
- Use mechanical lifting devices where possible;
- Enclose noisy machines to isolate people from the noise;
- Reduce exposure times for people working near noisy machinery;
- Use and maintain effective filters in vehicle cabs to keep air free of dusts and fumes from spraying activities;
- Improve ventilation in buildings;
- Ensure that machinery is adequately guarded to reduce likelihood of entrapment;
- Introduce accident, fire and explosion precautions and emergency procedures;
- Ensure security of storage areas to prevent third parties misusing chemicals (or their containers).

GUIDE TO INITIAL DUE DILLIGENCE SITE VISITS

During the tour of the farm it is important to gather information on the following issues:

- Perform a complete tour of the works, accompanied by someone knowledgeable about all the activities at the works. Check discharge points and check the condition of receiving waters;
- Check for signs of pollution in watercourses (e.g. algal growth) and note the colour of water;
- Observe signs of bad housekeeping e.g. open fertiliser/pesticide stocks near to drains;
- Is the farm in an area where groundwater is protected?

- Look for localised spills, leaking pipes etc; check whether fuel storage tanks are tested regularly for leakages;
- Check vehicle maintenance and storage areas for signs of oil staining or accidental spillage history;
- Review any nature conservation designations on or in close proximity to the site (both land and water designations); note condition assessments;
- Assess emergency procedures to respond to fires, pollutant spillages etc;
- Check that wages and working hours are consistent with the average for the sector and national standards;
- Is the facility next to any industries which may pollute ground water used in the process?
- Note/enquire about communications from/with the relevant local regulators regarding non compliance/fines and/or warning letters;
- Note any fines/fees against the site;
- Find out whether there have been any fatalities/significant environmental health and safety incidents in the past 3 years;
- Check waste discharges and water abstraction permits;
- Note any excessive noise or emissions that may cause a nuisance;
- Assess the level of health and safety awareness at the farm, for example the presence of safety notices and the general appearance of the site;
- Find out what insurances are in place (health, hygiene, fire etc);
- Note any complaints made by customers, general public and/or employees directly to the site and/or to the relevant local regulators;
- Is the facility subject to any audits by customers? What was the outcome of these audits?
- Does the business plan have line items for Environment, Health and Safety improvements?
- Check that labour standards, contracting and remuneration are in line with national law and are consistent with the average for the sector.
- Check that hours worked, including overtime, are recorded and staff should receive written details of hours worked and payment received.
- Has the Company received inspections from the local labour inspectorate in the previous three years? Have these resulted in any penalties, fines, major recommendations or corrective action plans?
- Does the organisation have a grievance mechanism which allows employees to raise workplace concerns?
- Are employees free to form, or join, a worker's organisation of their choosing?

Take note/ask questions relating to any activities that address the improvements listed in the improvements section of this document.

ACTION PLANS

Dependent on the individual business, select appropriate improvements from the list above to include in the action plan. Many organisations will be family run businesses so it may be impractical to operate all these measures. As a minimum, any business should be required to have the following in place:

- Operational procedures to manage environmental, health and safety risks,
- Monitoring programmes,
- Improvement objectives, targets and project plans,
- Training for personnel,
- Regular inspections, checks and audits with records to demonstrate achievement of the required level of performance against legal requirements and improvement action,
- Emergency plans for environment, health and safety accidents,
- Management review/demonstrated involvement in environment, health and safety management.

REFERENCES AND ADDITIONAL SOURCES

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