European Bank
for Reconstruction and Development

Sub-sectoral Environmental and Social Guidelines: Poultry Production

PROCESS DESCRIPTION

This guideline focuses on intensive poultry production including chicken (laying hens and broilers), turkeys, ducks and guinea fowls. It does not specifically address the impacts of smallholdings or free-range poultry production or smaller sectors such as foie gras production.

The majority of poultry farms are part of the production chain for chicken eggs or for chicken broilers meat and are family run enterprises.

Egg Production

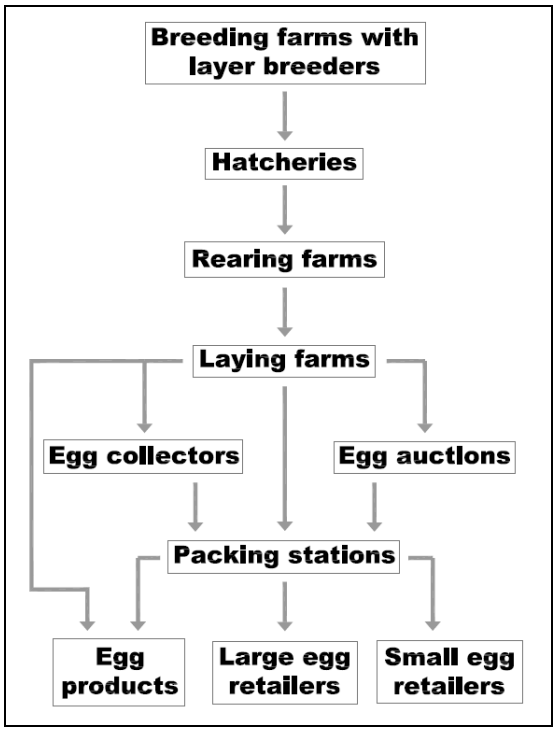

Fig 1: Egg Production

The production chain is a sequence of activities (Fig 1), each taking place at different sites and on different farms to prevent the spread of disease. Farms often include grading and packing of eggs and deliver directly to market (retail and or wholesale).

The majority of laying hens are kept in cages although non-cage production is gaining in popularity with systems such as barn, semi-intensive, free range and deep litter. The number of laying hens per farm varies between a few thousand to several hundred thousand. Other species, e.g. duck, goose and quail only form a very small proportion of activity in comparison with the chicken egg sector.

Broiler Production

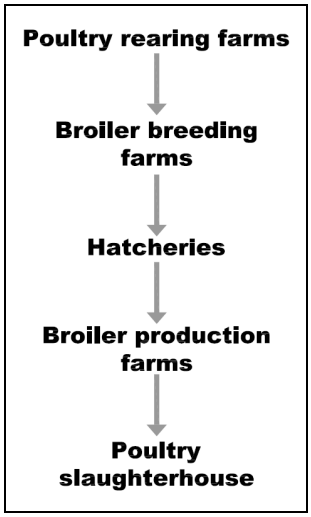

Fig 2: Broiler Production

Broilers are those birds reared for their meat rather than their eggs. The different steps in the production are shown in Fig 2. Broilers are generally not housed in cages. It is common for farms to have over 40,000 birds at any one time. The production cycle takes between 5 and 8 weeks depending on the species, slaughter weight, feeding and condition of the birds. The production system is normally operated on an all-in all-out system to minimise the spread of disease. After every cycle the houses are fully

cleaned and disinfected which can take from 1 to 3 weeks depending on national legislation.

KEY ENVIRONMENTAL, HEALTH AND SAFETY RISK/LIABILITY FACTORS

Waste Management

Solid wastes generated from poultry production include:

- **Waste feed:** this may contain a range of additives such as amino acids, enzymes, vitamins, mineral supplements, hormones, antibiotics and heavy metals. If exposed to rain and wind it can contribute to contamination of waters;

- **Animal Waste:** mainly manure but also includes other materials such as bedding and broken eggs. The waste management options depend largely on the housing system and type of litter used. Manure is sometimes composted and is generally used as a fertilizer on agricultural land (see Land Spreading);

- **Poultry Carcasses:** animals that die prematurely of disease or other factors can be a significant source of disease and odours and can attract pests and vermin. They should be properly and quickly managed according to local regulations;

- **Packaging Waste:** Eggs are typically packaged in shaped cardboard, plastic or a combination of both. Solid waste will arise from the packaging process primarily in the form of improperly packaged and broken eggs. Companies operating within the European Union (either as a manufacturer or as a supplier into European Union countries) will be subject to the European Union Packaging and Packaging Waste Directive (94/62/EC), which aims to reduce the amount of packaging that is being introduced into the waste streams.

Waste materials that cannot be recycled due to biosecurity issues must be disposed of according to the requirements of local health authorities.

Land Spreading

Spreading manure to land is responsible for emissions to soil, groundwater, surface water and air. When applied in excess to soil and crop requirements it can contaminate ground and surface waters.

Wastewater

Process wastewater is generated as runoff from poultry housing, feeding and watering, and from waste storage and management facilities. This effluent has the potential to contaminate surface and groundwater.

Wastewater treatment will be required either with an on site waste water treatment plant or discharging to a municipal waste water treatment plant. In either case a permit is likely to be required.

Emissions to Air

- Odour can be emitted from storage areas and during landspreading, depending on the spreading technique applied. Its impact increases with farm size and can cause a nuisance to neighbouring residential properties;

- Dust emitted from farms contributes to odour and potentially to the transport of diseases and respiratory problems;

- Ammonia gas (NH_3) generated from animal waste can cause acidification of soils and water. It has a sharp and pungent odour and in higher concentrations can irritate the eyes, throat and mucous membranes in humans and farm animals. Factors such as the temperature, ventilation rate, humidity, stocking rate, litter quality and feed composition (crude protein) can all affect the ammonia levels;

- High ammonia levels also affect working conditions for the farmer and workplace regulations may set upper limits for the acceptable ammonia concentration in working environments.

Pesticides

Pesticides can be applied to birds and structures to control pests and predators. Pesticides and their degradation products can enter both ground and surface water causing adverse environmental impacts.

Animal Diseases

Animal diseases can spread quickly in intensive livestock operations. They can be transmitted from new animals, equipment and on people. Poultry manure and carcasses contain pathogens that can infect humans, such as Avian Influenza (H5N1) and parasites. Measures to control the spread of disease vary between countries but generally involve the segregation and slaughter of infected birds where this cannot be controlled through medicines or vaccination.

Antibiotic Resistance

Antibiotics are routinely used to prevent and treat bacterial disease within poultry populations. Bacteria gradually develop resistance to antibiotics to which they were previously susceptible, making these antibiotics ineffective in treating bacterial infection in humans. Additionally, direct consumption of antibiotics by humans as residue in poultry meat can lead to anaemia. For these reasons, antibiotics have been prohibited as a growth promoter within EU member states (1831/2003/EC) although they are still permitted for the control of disease.

Permitting

Large poultry facilities in the EU with places for more than 40,000 poultry are subject to national regulations under the Integrated Pollution Prevention and Control Directive (2008/1/EC) Other smaller facilities within the EU and operations outside the EU will still be subject to local regulation but this will generally set less stringent requirements on the techniques to be adopted.

OTHER ENVIRONMENTAL, HEALTH AND SAFETY RISK/LIABILITY ISSUES

Storage Issues

Hazardous materials are used throughout the production cycle, e.g. pesticides cleaning, antibiotics and hormones. These materials must be stored securely and used in a safe manner to prevent spills and releases to ground and water;

Disease

Bioaerosols (microbial and fungal airborne contamination) can spread disease. This is influenced by the type of feed and feeding technique.

Dust

Dust from feed storage, loading and unloading, and waste management activities may cause some nuisance to neighbours during dry or windy weather.

Working at Height and Asphyxiation

There is a risk of employees falling and entering confined spaces such as water supply tanks, grain silos, underground manure storage tanks and poorly ventilated buildings, leading to a risk of asphyxiation mainly from the accumulation of methane.

Inhalation

Dust can affect both the respiration of the animals and the farmer, such as in broiler houses with high litter contents. Some dusts may contain antigens which cause irritation to the respiratory tract.

Hazardous Substances

Exposure to hazardous substances such as pesticides, disinfectants, antibiotics, hormones and minerals may cause harm;

Disease

Employees can be exposed to pathogens such as fungi, bacteria, viruses (e.g. 'bird flu') and mites. These can be transmitted via live birds, excreta, carcasses and parasites.

KEY SOCIAL, LABOUR AND COMMUNITY RISK/LIABILITY ISSUES

- The appropriate humane treatment of animals is the prime consideration in animal husbandry and handling. Animals that are treated well and protected from stress grow in better physical and mental condition and will tend to provide a better quality product;
- In many countries, animal welfare has an important cultural component and these requirements may need to be accommodated during the implementation of welfare standards by balancing with market requirements, social expectations, and beliefs;
- Pesticides may enter water supplies causing chronic or acute health hazards;
- Landspreading of manures may contribute to contaminated run-off causing degradation of ground and surface water quality potentially having implications for the local community and indigenous populations.

FINANCIAL IMPLICATIONS

- The health and well-being of farm animals can have a direct impact on growth, reproduction or meat quality. Adherence to animal welfare guidelines and standards can increase business profitability by improving productivity and efficiency;
- Animal diseases are frequently controlled by killing all infected animals and their cohorts within a specified area. In some countries, the farmers are compensated to some extent for the value of the birds, but this does not normally cover any consequent losses such as lost contracts, reputation etc.;
- Public reaction to the news of animal diseases can temporarily lead to a reduction in the consumption of that food type. This may result in unaffected businesses being unable to sell their poultry products;

- Significant capital expenditure might be required to maintain animal welfare, biosecurity, health, safety and hygiene standards;
- Injuries may lead to increased payroll costs to replaced skilled workers;
- Fines, penalties and third party claims may be incurred for non-compliance with environment, health and safety regulations.

IMPROVEMENTS

Environmental Improvements

- Maintain storage, transport and feeding systems in good condition. Protect feed from rain and wind to prevent contaminated run-off and minimise wastage;
- Maintain records of livestock feed use – to prevent surplus feed entering the waste stream. Match feed content to the life stage requirements of the birds;
- Use quality, uncontaminated feed materials with known concentrations of pesticides, dioxins and heavy minerals;
- Prevent manure contamination of surface water by improving construction of production, waste management and manure storage facilities (e.g. concrete floors, gutters, covered storage);
- Potentially increase manure storage facilities to a capacity of 9-12 months so that the manure can be applied to agricultural land at the correct time of year;
- Relocate manure storage away from water bodies, floodplains, wellheads etc;
- Minimise water use in cleaning so as to keep waste as dry as possible:
  - Implement procedures to ensure solid waste is removed before rinsing and washing, e.g. using scrapers, brooms and vacuum cleaners;
  - Use taps with automatic shutoff valves;
  - Use high pressure hoses and optimised nozzles to minimise water usage;
  - Use hot water or steam as this can reduce water requirements;
- Reduce moisture content of dry poultry excreta. Place dry manure in a covered area;
- Regularly check manure storage tanks for leakage and fit double valves on outlets to prevent accidental release;
- Institute a management programme to ensure that diseased carcasses are properly and quickly managed;
- Reduce water by preventing overflow of animal watering devices and using self-watering devices;
- Install filters to collect sediment;
- Install diversions to direct surface water runoff away from waste areas;
- Control temperature and humidity to reduce odour emissions;
- Install dust collection systems and dust control measures;

- Improve maintenance of structures to ensure pests are excluded from housing and other facilities;

- If pesticides are used, implement an integrated pest management plan to ensure that the pesticide with the least adverse impact is selected.

Occupational Health and Safety Improvements

- Conduct health screening of new staff and regular health monitoring of existing staff

- Install covers, fences and fall prevention methods to prevent falls into tanks and other confined spaces;

- Provide training on correct bird handling techniques to reduce damage to product;

- Provision of personal protective equipment (PPE) that is fit for the task to prevent injury and maintain hygiene standards, e.g. gloves overalls, respirators, aprons. Staff should be trained in the correct selection, use and maintenance of PPE;

- Provide training in pesticide application and storage and also training on the risks associated with exposure to potential viruses, bacteria and pathogens;

- Use dust extraction devices at dust generating equipment such as silos and grinders;

- Ensure that workers with allergic reactions are not working with substances that cause a reaction.

- Implement accident reporting and recording regimes

Community Environment, Health and Safety Improvements

- Ensure good hygiene factors are followed to avoid exposure of other community members to pesticides;

- Implement sound biosecurity protocols such as controlled access, quarantine periods, washing and disinfecting equipment, showering, clothing, footwear, exclusion of animal vectors, tyre and footwear disinfection;

- Prepare a contingency plan for the use of antibiotics or mass cull in the event of a disease outbreak.

- Establish an animal health programme including veterinary and laboratory capability and procedures for the management of sick and dead birds.

GUIDE TO INITIAL DUE DILIGENCE SITE VISITS

During the initial site visit, the issues will vary according to the type of poultry production and on the level of environment, health and safety and hygiene management already introduced. While visiting the site it is important to discuss and review the following:

- Condition and containment arrangements of manure storage facilities;

- Condition of poultry housing; is it secure from pests? Is there adequate ventilation? What is the stocking density (i.e. how many birds are there per square metre) and mortality rates? How do they compare to the average for the industry sector?

- What is the standard of "house-keeping" on site? Do areas look clean and tidy? Look for localised spills, leaking pipes etc;
- Check signage around the site:
  - Does it convey the health and safety risks?
  - Are fire exits clearly marked?
- Is fire fighting and first aid equipment available?
- Check the source of feed materials. Are the levels of pesticides and other contaminants quantified and within guidelines?
- Check storage facilities for feed materials, caustics, chemical solvents, antibiotics etc;
- Check the age and condition of buildings and equipment;
- Check that waste disposal takes place on a regular basis;
- Check that waste storage areas are clear of debris and that skips are covered to prevent waste escaping, for example, check that waste containers have lids or are stored in an area with a roof;
- Is the facility next to any vulnerable water bodies, sited in a floodplain, or close to groundwater sources which may be contaminated by activities?
- Are there management control plans for animal health, feeding, nutrients, pesticides?
- Are workers provided with adequate Personal Protective Equipment? Is it being worn?
- Does the organisation have insurance in place to cover the outbreak of disease? Have there been any recent incidents? Has the company any other insurances and have there been any claims against these policies?
- Have there been any recent (within last three years) incidents on site such as fatalities, fires/explosions, spills?
- Is the facility subject to any audits by customers? What was the outcome of these audits?
- Have the premises been inspected recently (within the past 2 years) by the regulatory authorities for health, hygiene and environment? What were their findings?
- Does the business plan have line items for Environment, Health and Safety, labour and hygiene 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. As a minimum, any business should be required to have the following in place:

- Operational procedures to manage environmental, health, safety and hygiene 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 and hygiene accidents;
- Management review/demonstrated involvement in environment, health and safety and hygiene management.

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