Introduction

This guideline is designed to be used by EBRD Financial Intermediaries (FIs) to understand the nature of environmental and social (E&S) risks associated with existing operations in this sector and suggested actions for businesses to manage these E&S risks. It also provides guidance for FIs on potential due diligence questions to discuss with management to understand how their business is managing these E&S risks. This guideline focuses on material E&S risks; it is not an exhaustive list of E&S risks. In managing E&S risks, all businesses should be compliant with relevant E&S laws and regulations. Where applicable, this includes European Union legislation, which may also be taken as a benchmark for good practice.

This Guideline covers the manufacture of beer (or lager, pilsner, ale, etc.) from malted grain, typically barley, hops, yeast and water.

Reference NACE codes:

- 11 Manufacture of beverages (distilled alcoholic beverages, wines cider and other fruit wines, beer malt, mineral waters and soft drinks)
- Note: Projects involving distilled alcoholic beverages are typically excluded from financing under EBRD funds – check your agreement with EBRD for details

Material risks

Below is an overview of the material risks present in brewery operations:

---

1This guideline outlines some relevant legislation but does not provide an exhaustive list of applicable laws and regulations.
### Sub-sectoral Environmental and Social Guideline: Breweries

#### E&S Risk Category

- **Key E&S Risks**
  - **(In order of materiality)**

<table>
<thead>
<tr>
<th>E&amp;S Risk Category</th>
<th>Environment</th>
<th>Health and Safety</th>
<th>Labour</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Use</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wastewater</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contamination of Soil, Surface Water and Groundwater</td>
<td>√</td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Energy Use</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Emissions</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Odour</td>
<td>√</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Refrigerants</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hazardous Materials</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polychlorinated Biphenyls (PCBs)</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Note:

This table provides an indicative list of the EHS risks associated with the sub-sector; it is not meant to be an exhaustive list and EHS risks will depend on the specific setting and scale of the operation or facility.
## Sub-sectoral Environmental and Social Guideline: Breweries

<table>
<thead>
<tr>
<th>Risk Area</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Exposure</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confined Spaces</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moving Equipment and Machinery</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosion Risk</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slips, Trips and Falls</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual Handling</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Dermatitis</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working at Height</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Asbestos</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation Sources</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Hygiene</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation Risks</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Process description</td>
<td>5</td>
</tr>
<tr>
<td>2. Key E&amp;S Risks</td>
<td>5</td>
</tr>
<tr>
<td>3. Financial implications</td>
<td>16</td>
</tr>
<tr>
<td>4. Suggested due diligence questions</td>
<td>16</td>
</tr>
<tr>
<td>5. References and additional sources</td>
<td>20</td>
</tr>
</tbody>
</table>
1. Process Description

Beer (or lager, pilsner, ale, etc.) is produced from malted grain, typically barley, hops, yeast and water. Additional ingredients may include caramel as colouring and various enzyme preparations. The key stages are shown in the figure below.

- Malting of barley or other grain, allowing controlled germination;
- Drying and wet or dry milling;
- Mashing with the addition of water and additional ingredients;
- Boiling with hops followed by clarification and cooling;
- Aeration;
- Fermentation and maturation, including carbonation by fermentation of residual sugars, removal of excess yeast and clarification;
- A sequence of cask, tank and bottle storage depending on the types of beer being produced;
- Post maturation treatment including filtration and pasteurisation;
- Packaging into barrels, tanks, cans, and glass and plastic bottles.

2. Key E&S Risks

Below are the material E&S risks associated with this sector and key measures to manage them. Where gaps are found in the management of key E&S risks, the E&S risk management measures may form part of a corrective E&S action plan agreed with your customer.

Water Use

Brewing uses large quantities of water throughout the process; while a large proportion of water is used in the product itself, additional large volumes are used in the cleaning and cooling processes.
Water might be abstracted, and in this case, there are likely to be licenses controlling the volumes of water to be abstracted. Water abstraction or use by the brewery should not impact water availability for neighbouring users.

The quality of water used in brewing production is critical. It must be:

- Potable (clean and safe to drink);
- Free from contaminants (chlorine, sulphides, iron, nitrates but also industrial contaminants such as organic solvents, pesticides, herbicides, metals etc.);
- Of an appropriate hardness or softness (mineral content);
- Free of suspended solids (particles result in cloudy beer or wine); and
- Sterilised or disinfected.

Pre-treatment of water is likely to be necessary, including sterilisation, filtration and softening.

Cost, quality and security of water supply are key factors in the production of beer. Large quantities of water are required both for the product and for plant cleaning.

Contamination of water supply or variable water quality may cause disruption to production processes and give rise to product quality problems.

Groundwater from on-site wells is often used to produce beer. The volume and quality of the groundwater used are critical factors, as is the potential for groundwater contamination from both on-site and off-site sources such as pesticides/fertilisers, detergents or objects dropped into the product. Abstracted water may require pre-treatment before it can be used in the production process.

**How can a business manage this risk?**

- Obtain abstraction or water use permits which detail the allowable volumes of water abstraction/use. Where changes take place in product volumes, this should be reflected in the permit;
- Where there is a possibility of brewery water use or abstraction impacting surrounding resources or supplies, engage experts to conduct a study to: identify water resource needs and uses in the area; assess any impacts on these; and develop solutions to reduce impacts on neighbouring water users (e.g. efficiency measures, recycling, alternative water supply options);
- Undertake regular testing of water quality, whether municipal or from groundwater abstraction;
- Monitor water quality on a regular basis;
- Discharges and abstraction from water resources should be considered under the requirements within the EU Water Framework Directive (2000/60/EC) and local environmental regulations and permitting requirements.
Wastewater

Wastewater from brewing presents a pollution risk due to:

- High levels of organic matter, which can pollute water courses;
- High acidity or alkalinity, depending on the type of cleaning detergents used.

Brewing often generates significant volumes of wastewater including waste product and cleaning water. While this effluent is unlikely to contain toxic materials, its high organic content may present a pollution risk if discharged untreated. The brewery may require a permit that sets limits on water quality discharged. Breweries may use an on-site waste water treatment plant (WWTP) prior to discharge, or may discharge effluent directly to a municipal waste water treatment plant.

For breweries that operate a dedicated WWTP, this may be either an aerobic or anaerobic system. Anaerobic WWTPs are typically more efficient. WWTPs often generate odours and may require specific odour controls to be in place.

Brewery WWTPs can be used as a source of biogas for use in co-generation equipment to produce electricity and heat for re-use in the manufacturing process.

How can a business manage this risk?

- Install/improve wastewater/effluent monitoring and treatment facilities;
- Install grids to reduce or avoid introduction of solid materials into the wastewater drainage;
- Reuse wastewater through recycling, thus minimising final wastewater volumes;
- Comply with national regulations on wastewater discharge, and ensure that any necessary discharge permits are obtained.

Waste

Solid wastes include:

- Organic material, including yeast, from filtration and clarification processes;
- Contaminants or non-desirable chemical constituents removed during the pre-treatment of water;
- Sludges from wastewater treatment plants;
- Broken glass if bottles are received for processing and re-use;
- Paper waste from removal of labels from returned bottles;
- Hazardous wastes including waste oil and solvents from maintenance and operation of equipment.
Significant quantities of organic waste may be generated from beer production, including spent yeast, hops and residues from process tanks, pipes and rejected beer.

Within the brewing sector packaging is widely used for protection of the quality of the product, marketing and for transport purposes. Typically this comprises glass, aluminium, plastic, cardboard, PET, shrink wrap and film. In some cases the glass bottles and delivery crates are returnable, however, in many cases the material becomes part of the waste stream.

**How can a business manage this risk?**

- Collect and store organic waste separately from other waste to enable composting and/or use for soil conditioning, animal feed or energy production;
- Recycle/reuse waste in the production process;
- Segregate and store wastes in accordance with best practice;
- Companies operating within the European Union (either as a manufacturer or as a supplier into the European Union) are subject to the European Union Packaging and Packaging Waste Directive (94/62/EC) and its amendments, which aims to reduce the amount of packing that is being introduced into waste streams;
- Check whether any permits for waste disposal are necessary, and ensure these are obtained.

**Contamination of Soil, Surface Water and Groundwater**

While the brewing process is not typically associated with soil, surface water and groundwater contamination, several ancillary processes associated with brewing can be potentially contaminative:

- Fuel storage - brewing is a heat-intensive process and can use hydrocarbon fuels (oil, diesel, coal) for heating processes;
- Underground storage tanks are a common source of groundwater pollution unless contained, managed and tested regularly.

Drain corrosion – brewing processes commonly use caustic/corrosive chemicals for cleaning processes. If discharged to drainage systems, this can lead to corrosion of pipework and creation of new contaminant pathways.

Pollution risks to water courses arise from spillages of sugar syrups; colours; flavourings; other additives; product; cleaning materials; and oils & fuels.

**How can a business manage this risk?**

- Ensure that beverage manufacturing plants operating in the EU hold whatever environmental permit are required under Industrial Emissions Directive (IED) regulations;
- The IPPC Directive (IPPC) (Council Directive 2008/1/EC) was replaced by the...
Industrial Emissions Directive (IED) (2010/75/EU (Integrated Pollution Prevention and Control) and aims to minimise pollution from various industrial activities throughout the EU. Operators of certain industrial installations covered by the Directive are required to obtain an environmental permit. These provide operational measures to control emissions to the environment.

**Energy Use**

Many of the stages in the brewing process involve high energy usage. Where equipment is being used for heating and cooling purposes, it will increase the amount of energy (gas, electric, or diesel) use within the process.

*How can a business manage this risk?*

- Implement energy savings initiatives involving heat recovery, controlling boiling temperatures, optimisation of refrigeration and cooling systems etc.;
- Examine options for heat recovery and insulation to reduce/supplement energy consumption.

**Air Emissions**

Particulates will be generated from raw material loading, unloading and transportation and may build up within the plant in the absence of controls. Other air emissions may also be generated in the brewing process, including emissions from boilers, and gases (especially CO₂) from the fermentation process. Some of these will be greenhouse gases.

Dust presents health and safety hazards in terms of inhalation leading to respiratory problems in personnel who work in dusty atmospheres without appropriate extraction and ventilation.

Occupational lung disease can occur from exposure to grain and malt dust. In addition occupational lung disease and nasal cancer can occur from exposure to hardwood dust in cooperages.

*How can a business manage this risk?*

- Enclose and seal plant and equipment to prevent the escape and accumulation of dust;
- Cover transport equipment, which also reduces product losses;
- Install extraction equipment within the main facility and storage facilities;
- Provide respiratory protective equipment (RPE) as a last resort after other abatement options are considered; regularly check and maintain PPE;
- Use doors/plastic strip curtains on building access points;
- Redesign processes to reduce free-fall distances and speed of movement for dry products;
- Install windbreaks and covers in outside handling areas;
- Install dust extractors e.g. cyclones and fabric filters;
- Improve ventilation within buildings;
- Install dust monitoring equipment at the most sensitive points;
- Redesign processes where practicable to remove dust-generating activities;
Air emissions should be considered under the requirements of EU air quality and emissions directives (e.g. Directive 2008/50/EC on ambient air quality also Industrial Emissions Directive (IED) 2010/75/EU) and local environmental regulations and permitting requirements. Check that all required emissions permits are obtained;

- Many countries are signatories to the Kyoto Protocol and have adopted targets for the reduction of CO₂ emissions. Where Governments have set up carbon emission reduction programmes, industrial processes are required to reduce their CO₂ emissions through the setting of targets. These targets can be reflected in environmental permits.

Odour

Odour from process operations can affect the quality of the working environment. To reduce odour emissions from boiling, a heat recovery system can be used to collect and condense the vapours and the recovered energy used in the process or utility systems.

Brewery operations can be associated with odour which may be a nuisance to the local community and local business.

**How can a business manage this risk?**

- Maintain good housekeeping at all times in all areas;
- Adopt good cleaning and working practices as routine to reduce odour emissions and improve hygiene standards;
- Upgrade exhaust stack heights from cooking processes to minimise air pollution and nuisance to the local community.

Refrigerants

Breweries will usually have facilities to chill the product at various stages in the process. The refrigerants used may be ozone-depleting substances (ODSs), such as Chlorofluorocarbons (CFC’s) Hydrochlorofluorocarbons (HCFC’s) the production of which, are being phased out under the Montreal Protocol. Releases of these types of refrigerant gases should be avoided. Ammonia is also a commonly used alternative refrigerant, which has no such restriction. There are significant health and safety risks associated with the storage (and accidental release) of ammonia.

**How can a business manage this risk?**

- Replacement of refrigerant gas or equipment may be required to meet international standards;
- Change to non-CFC coolants and/or sealing of leakages in the refrigeration system;
- Insulate any refrigeration rooms;
- Implement a preventative inspection and maintenance plan for the refrigeration equipment, to reduce risk of accidental release of gas;
- Implement a plan for dealing with accidental release of ammonia, with appropriate training of personnel. The plan should include: evacuation of affected area; ventilation of potentially explosive atmosphere; removal of sources of heat and ignition from the area; availability and
### Hazardous Materials

Brewing uses caustics, acids and carbon dioxide. Inappropriate storage and use of these materials could result in chemical contact burns, inhalation of harmful/toxic fumes or ingestion of harmful substances. Clean-in-place (CIP) systems which use caustic cleaning agents are commonly used for washing and cleaning of process lines between product batches and changeover.

Contact can lead to burns or inflammation of skin from irritation or allergy. Inhalation of harmful/toxic fumes can lead to respiratory difficulties, and ingestion of harmful substances can also be dangerous.

**How can a business manage this risk?**

- Provide personal protective equipment (PPE) that is fit for the task to prevent injury and maintain hygiene standards;
- Train staff in the correct selection, use and maintenance of PPE. PPE should be inspected regularly and maintained or replaced as necessary;
- Maintain storage areas to ensure that they are organised, secure, clean and dry.

### Polychlorinated Biphenyls (PCBs)

PCBs are a group of substances which are good electrical insulators. Typically PCBs may be present as constituents of hydraulic oils or dielectric fluids in electrical switchgear and transformers. PCBs are hazardous and known carcinogens.

**How can a business manage this risk?**

- Though the presence of PCBs is not likely to be a principal issue of concern in relation to the main brewery process, it may be present in equipment and be an environmental and health and safety hazard;
- Identify any electrical equipment (e.g. transformers, large capacitors, heat transfer and hydraulic systems) which were installed prior to the 1990s. Seek advice on whether PCB fluids are present, and if so, make a plan for their replacement, taking

---

**Storage facilities should be properly designed with appropriate signage, ventilation and secondary containment, and should be properly managed, i.e. locked and accessible only to trained and approved personnel. They should be inspected on a regular basis to ensure that leaks and spillages do not occur;**

- Record all hazardous materials held on site in an inventory with Materials Safety Data Sheets (MSDSs) available in the appropriate language; procedures should be prepared for their handling and treatment in the event of spillage;
- Conduct regular inspection of all bulk containment facilities and effluent holding tanks to ensure integrity of storage.
proper care to dispose of PCB-containing equipment according to the requirements of Directive 96/59/EC.

**Temperature Exposure**

Refrigeration systems will result in very cold temperatures which can result in frost bite and contact burns.

**How can a business manage this risk?**

- Restrict times for people being in very cold or very hot areas;
- Provide adequate PPE to workers exposed to cold and hot areas, including protective clothing.

**Confined Spaces**

Breweries contain vessels such as tanks and vats which may require entry by staff during maintenance and cleaning. Entry to confined spaces without effective management and control can result in engulfment and asphyxiation.

Uncontrolled release of CO₂ (produced during the fermentation process) in confined spaces can accumulate and present an asphyxiation risk if ventilation is poor.

**How can a business manage this risk?**

- Ensure that work is in accordance with best practice guidelines for working in confined spaces³, and that entry to confined spaces is strictly controlled;
- Conduct a risk assessment to identify case by case risks. Ensure personnel are adequately trained, and experienced for the work;
- Ensure that adequate lighting, ventilation and/or breathing equipment is available;
- Ensure that adequate means of rescue (e.g. rescue harness) is provided;
- Ensure that an adequate communications protocol is maintained, including chain of command, warning and alarm procedures, and that a rehearsed emergency procedure is in place.

**Moving Equipment and Machinery**

In a busy manufacturing environment, it is common to have injuries where people interact with machinery or equipment. This can be owing to moving or falling objects such as, crates and boxes, using equipment such as conveyors, bottling machines, packaging machines and palletisers) or operating fork lift trucks and delivery vehicles/trucks, all of which can lead to injury or death.

The injury rate in the food and drink industry has been identified as one of the highest injury rates across manufacturing sectors, and over a quarter of all

³ E.g. [http://www.hse.gov.uk/pubns/indg258.pdf](http://www.hse.gov.uk/pubns/indg258.pdf)
manufacturing injuries occur in the food and drinks industries. How can a business manage this risk?

- Install safeguards on moving parts of conveyor belts and packaging machinery to reduce the risk of entrapment of employees;
- Separate people from moving equipment by ensuring that the process layout reduces opportunities for process activities to cross paths;
- Install walkways to separate people from vehicle movements to reduce risk of collision;
- Train workers in the correct use of machinery and safety devices.

**Explosion Risk**

Brewing includes processes that use grains resulting in dusts that can create explosive atmospheres. In addition, the fermenting vessels and process equipment used in brewing can operate at high pressures. If this pressure is not correctly regulated there is a risk of the vessel or process equipment exploding and causing severe injury or death.

**How can a business manage this risk?**

- Explosion risks are reduced by good maintenance to prevent dust accumulation, and through the installation of dust control systems.

**Slips, Trips and Falls**

Liquid substances form the majority of the brewing process therefore there is a high risk of slips and falls where liquid spills have not been cleaned up or where cleaning is taking place.

**How can a business manage this risk?**

- Keep walking and working surfaces clean and dry;
- Restrict access restriction to areas being cleaned or where spillages have occurred;
- Schedule floor cleaning for a time when work is not in progress or has finished for the day and floors have dried as much as possible.

**Manual Handling**

Lifting, repetitive work and posture injuries occur as a result of lifting and carrying heavy or awkward shaped items (especially crates and barrels).

---

Repetitive tasks can lead to musculoskeletal injuries, for example, manual tasks within a bottling plant.

**How can a business manage this risk?**

- Redesign manual processes to avoid heavy lifting/repetitive activities;
- Install mechanical lifting aids where possible and rotate work tasks to reduce repetitive activities.

### Occupational Dermatitis

Within the brewing industry hygiene is paramount and this results in a requirement for regular hand washing which can lead to occupational dermatitis (skin conditions).

**How can a business manage this risk?**

- Train workers in risks associated with the use of chemicals, and in the selection, maintenance and use of appropriate PPE;
- Provide suitable First Aid equipment and First Aid stations.

### Working at Height

Brewing processes often require access to elevated areas such as gantries and vats, and storage warehouses will entail moving equipment and possibly working at height. Effective design can often eliminate the need to work at height but in the event that it is necessary, such work should be carefully managed and controlled.

**How can a business manage this risk?**

- Restrict access to working at height;
- Install correct fall arrest systems (guarding and harnesses etc.).

### Noise

Noise induced hearing loss can occur from noisy plant, e.g. casking, kegging, de-crating, washing, bottling, canning and packaging machinery.

Operations may cause noise which is a nuisance to neighbours.

**How can a business manage this risk?**

- Isolate noisy equipment to reduce the risk of noise exposure;
- Rotate tasks to minimise worker’s time spent in noisy areas over an eight hour period;
- Provide personal protective equipment where workers and visitors have to enter noisy areas.

### 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, fire retardant gaskets in pipe work and as fire retardant insulation around boilers and furnaces.

**How can a business manage this risk?**

- Particular attention should be paid to facilities constructed prior to the 1990s;
- Conduct/commission an asbestos survey (by qualified personnel);
- If asbestos exists, establish if an asbestos management plan in place.

**Radiation Sources**

Breweries sometimes use contained radiation sources to measure the level of liquids in vessels (process vessels, cans, bottles).

**How can a business manage this risk?**

- While not typically a product risk, the effective management, maintenance and licensing of the radiation source is important.

**Product Hygiene**

Contamination of product could result in health impacts to the general public and may result in product recall.

**How can a business manage this risk?**

- Maintain hygiene standards within process areas to a high level to prevent product contamination;
- Train staff in product safety issues and follow established procedures for hand washing, working attire (clothes, shoes, gloves and hair coverage), and how to handle injuries and diseases;
- Implement product labelling and traceability systems that facilitate tracing of products once released for sale;
- Implement regular, rigorous product quality testing and hygiene monitoring programmes;
- Ensure that appropriate PPE is provided to all facility visitors, and that hygiene requirements are adhered to and external contact with the brewing and bottling process is minimised.

**Transportation Risks**

Transportation of raw materials and finished product to and from the facility could result in an increased risk of road traffic incidents involving the general public.

**How can a business manage this risk?**

- Maintain accident records and ensure that all drivers are licensed, and vehicles regularly inspected and maintained.
3. Financial implications

Outlined below are key financial implications of ineffective management of E&S risks related to breweries.

- The characteristics of the beer production and the complexity of the distribution chain means that it is difficult to withdraw contaminated or below-specification products from the market. Consequently, the cost of rectification is often borne by public funds\(^5\);

- Product recall can have a significant financial impact on the business, e.g. compensation claims, loss of reputation, loss of contracts and market share. Significant upgrades in quality control standards may be required at the production facility in order to reduce the risk of contamination during processing and to satisfy national and international food hygiene standards. A system of product traceability may be required to facilitate product recall;

- Many countries are signatories to the UN Framework Convention on Climate Change, and its various protocol and agreements, and have adopted targets for the reduction of CO\(_2\) emissions. Where Governments have set up carbon emission reduction programmes, industrial processes have been required to reduce their CO\(_2\) emissions through the setting of targets. This can result in a need for substantial investment in new/clean technologies to achieve the emission targets. These targets may be reflected in environmental permits;

- Where large quantities of energy are used then this can result in high operating costs to the business;

- Capital investment in new equipment may be required in order to meet and maintain environmental, hygiene and health and safety standards;

- Injuries may lead to increased payroll costs to replace skilled workers;

  Fines, penalties and third party claims may be incurred for non-compliance with environment, hygiene and health & safety regulations.

4. Suggested due diligence questions

When assessing E&S risks, it is important to engage the customer on how these risks are managed.

- Perform a complete tour of the facility, accompanied by someone knowledgeable about all the activities at the site.

- Confirm organisational responsibilities and systems for environment, health, safety and social matters and that these systems cover both employees employed directly and sub-contractors.

- During the initial site visit, the issues will vary according to the type of brewery and product being produced, and the level of environment, health and safety and hygiene management already introduced.

---

\(^5\) EU, 182/2005/EC paragraph 22.
While visiting the site it is important to discuss and review the following:

**General Housekeeping**

- Check the standard of housekeeping at the facility, e.g. do areas look clean and tidy, is there build up of dust on floors and surfaces, is there evidence of any recent spills or releases of raw materials/product, are the walking and working surfaces are kept clean and dry, etc.;
- Confirm what processes are undertaken and whether any hazardous chemicals are used? How hazardous are the materials and have associated risks been documented and addressed in appropriate systems?
- Check the condition of storage facilities for chemicals;
- Check the age and condition of equipment, look for signs of wear and tear, degradation, leaks and breaks.

**Emissions and Discharges**

- Check the condition and efficiency of any wastewater treatment plant present and location of discharge points. Note whether the plant discharges to a local watercourse or the municipal wastewater treatment works. Note the colour and appearance of adjacent watercourses (if any);
- Review measures of controlling the odour coming out from the plant;

**Inspections, Permitting and Regulations**

- Check what permits are required for the site (air, water, wastewater, noise) and compliance monitoring reports. Check the conditions and duration of validity for all permits.
- Note the extent to which monitoring and testing is undertaken as a requirement of operating licences and the extent of compliance in recent years;
- Explore any environmental requirements which may affect the cost or type of packaging used;
- Has the company undertaken a systematic, documented review of operations against national legal requirements relevant to Environmental, Health, Safety and Social performance and the extent of compliance with that legislation?

**Product Quality**

- Discuss procedures to check the source of raw materials and screening for contamination;
- Check if there is a quality control system and a product traceability system;

**Waste Management**

- Check that solid waste storage and disposal equipment is in a good condition;
- 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.

**Health and Safety**

• Check for automatic safeguards on machinery to prevent accidental injury;

• Note whether Health and Safety risks have been systematically assessed and addressed;

• Note whether staff wearing Personal Protective Equipment. If PPE is required, check that it is being supplied by the employer, is used effectively and maintained/checked regularly;

• Check signage around the site:
  - Does it convey the health and safety risks?
  - Are fire exits clearly marked?
  - Are there demarcated routes for pedestrians and vehicles painted on floor?

• Is fire-fighting and first aid equipment available, and is it checked/maintained regularly?

Have there been any recent (within last three years) incidents on site such as fatalities, fires/explosions, spills? Were these incidents investigated? Are there insurances in place to cover such incidents?

**Labour Management**

• Check that wages and working hours are consistent with the average for the sector and national standards;

• 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, H&S or Environmental 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?

• Does the organisation have insurance in place to cover the recall of contaminated products? Have there been any recent product recall incidents?

• Is the facility subject to any audits by customers? What was the outcome of these audits?
**Investment**

- Does the business plan have budgeted line items for environment, health and safety improvements? Are there any high value improvements noted in the business plan for Environmental, Health & Safety issues in the coming months/years?

**Management Plans**

Review the operational procedures and management plans available for the control of risks.

As a minimum any business should be required to have the following in place:

- Environmental, Health & Safety management systems which include operational procedures that are communicated, implemented and regularly reviewed (i.e. “live” systems that are used in practice, not just kept as an office manual);

- Monitoring and testing programmes (water, air, noise etc.);

- Improvement objectives, targets and project plans;

- A training plan for personnel to include environmental and health and safety issues;

- Regular inspections, checks and audits against records to demonstrate achievement of the required level of performance against legal requirements and improvement actions;

- Emergency plans for environment, health and safety incidents and site security;

- Demonstrable involvement of senior management in environment, health & safety management and leadership.
5. References and additional sources


UKHSC 2005 – Occupational Health and Safety in Food and Drink manufacture – HSG252