

Environmental management in a Food Safety Context

How environmental management and food safety goes hand in hand, supporting the sustainability agenda of modern food manufacturing.

In the autumn of 2015 the new environmental standard ISO 14001 was released as a high level standard. Being a high level standard means the revised ISO14001 standardization scheme aims to foster compatibility among various management system *standards* to facilitate their integration and implementation by certified organizations.



Initially this means implementation with ISO9001 on quality management and the forthcoming ISO 45001 for occupational health and safety, but this should not stop us from implementing the standard in our food safety management system such as ISO2200/FSSC, BRC Food Safety, IFS Food or other food safety standards under the Global Food Safety Initiative (GFSI) scheme.

In this article I will present some examples on how environmental management and food safety management supports each other and how an organisation can benefit from integrating both aspects and manage those by the same system and procedures.

Supply chain approach

In the ISO 14001 standard the term “life cycle” is used describing “*the interlinked stages of a product system from raw material acquisition or generation from natural resources to final disposal (3.3.3)*” which can easily be compared and implemented with the definition of the food chain within the ISO 22000:2005 standard “*a sequence of the stages and operations involved in the production, processing, distribution, storage and handling of a food and its ingredients, from primary production to consumption (3.2)*”.

In both definitions and standards it is now clear that one must look into the entire supply chain or life cycle when identifying and managing risks and opportunities.

Risk assessment

The new standard encourages the organisation to use risk-based thinking to in order to identify risks and opportunities (clause 6.1), using the same risk-based approach in our HACCP based food safety management systems.

When the ISO22000 standard mentions selection and assessment of control measures (clause 7.4.4) including the likelihood of a failure and severity of the consequences, these can also be used when determining the environmental aspects and the criteria used to identify these. An

example of severity can be assessing the impact of a larger milk spill and related consequences; does the spill happen within or outside the effluent consent limit or does the spill go directly to the surface water stripping a local water course of its oxygen and resulting in fish death.

Planning

According to ISO14001 “planning” is defined *“that one must determine the aspects of its activities, products and services that it can control and those that it can influence and their associated impacts considering a life cycle perspective, taking into account changes and abnormal conditions (clause 6).”*

When the food safety standards defines planning the ISO22000 says that *“the organisation shall implement, operate and ensure the effectiveness of the planned activities and any changes to those activities (clause 7.1)”*, and the BRC standard says that *“product design and development procedures shall be in place for new products or processes and any changes to product, packaging or manufacturing processes to ensure that safe and legal products are produced (clause 5.1).”*

The three standards encourages us to address risks and opportunities, looking into all aspects of how we can produce safe products from both an environmental and food safety point of view, not only during normal production but also when making changes to products and processes and in the event of abnormal events.

Competences and awareness

By the end of the day it is often the same operator who has to comply with requirements on environment, food safety and health and safety. Instead of having three sets of instructions to work from why not bring it all together in one cleaning instruction, e.g. referring to both the usage of personal protection equipment and how to deal with environmental spillages in the cleaning procedure and provide the relevant awareness training for the operators focusing on not only what they should do but also why.

Communication and Customer focus

Customer focus and communication are essential parts of both ISO 14001 and the food safety standards.

Where as the internal communication focuses on communication of policies, objectives, procedures and instructions, the external communications relates to communication with customers, authorities, owners and other stakeholders.

Main interest to external stakeholders is that the dairy must be able to supply its products according to agreements, both now and in the future. It is therefore important that we can communicate how we prevent incidents and major accidents that could result in either non-conforming products, late production or delivery stop, but also how supplier relationships as well as plant emissions are managed in order to avoid negative publicity, which may also affect our customers and the overall reputation of our brands.

Borderland between environment and food safety

When looking into the food supply chain there are many areas of overlap between environmental management, food safety and also health and safety management.

If management systems are focused too much on either environmental management or quality and food safety management gaps, may arise in areas not being covered or, just as badly, conflicting instruction may be given, e.g. concerning cleaning programs and water reduction schemes. Examples of such areas of potential overlaps are described below.

- **Cleaning chemicals** Cleaning chemicals must be efficient towards the type of food produced, safe for usage in food manufacturing environment, safe for the operator to use and should not harm the environment. However considerations must be given to e.g. both potential corrosion of manufacturing and wastewater discharge limits of substances such as phosphoric and nitrogen components.
- **Water** - Process and cleaning water must be available in sufficient quality (meet the requirements for drinking water if in direct or indirect with food) and quantity (flow and pressure) to ensure cleaning but it must also comply with restrictions in the water abstraction license / water supply agreement and discharged within the limits of given wastewater discharge permit (such as daily maximum or peak limits per minute or hour).
- **Packaging** - Packaging is necessary to protect the product from contaminants and to provide protection during transport and also to sell the product to the final consumer. Characteristics such as barrier properties, food contact material requirements (pH, fat and salt content, temperature etc.), convenience and recycling all needs addressing, keeping in mind that some countries may have specific requirements for recycling.
- **Pesticides** - Pesticides and similar substances can be a problem both concerning raw materials and production environment. Traceability is a must on all raw materials and must be supported with certificates of analyses, where relevant analyses for pesticides must be included. Usage of pesticide, fungicides and other substances in or outside the production environment may cause cross contamination through ventilation systems and pesticides may cause pollution of the ground water therefore restricted usage is recommended.
- **Energy usage** - Heat treatment is essential to many processes in the food industry in order to ensure the bacteriological reduction but critical combinations of time and temperature must be closely monitored. Too low temperature may result in unsafe food where as to high temperature treatment may have a negative effect of the produce quality. Steam leakages may damage the product and or be a risk to health and safety in the working environment.

It all adds up....

As described above there are many areas in the food manufacturing industry where environmental management, quality and food & safety management goes hand in hand supporting each other and asking for an integrated approach.

Using the same methods for risk assessment and working in a supply chain context will increase the transparency and efficiency of the management systems at all levels.

An integrated approach results in better overview of company activities and their interdependence, reduces the resource for maintenance of two or more systems and last but not least avoid conflicting initiatives when planning new activities.

Furthermore an integrated system can also be used as a structured approach towards the sustainability agenda working with suppliers and partners in securing high quality and reducing the environmental impact within the supply chain.

