FIFA CODES OF PRACTICE FOR PURCHASING, MANUFACTURING, STORAGE, DISTRIBUTION AND BLENDING OF FERTILIZER

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Abstract

FIFA's strategy is to develop an industry self-regulatory framework for key product, environmental and public safety issues that require effective management by the industry. For two years, FIFA working parties have reviewed the Fertilizer industry supply chain, identified risks, reviewed the coverage of existing Codes and Guidelines, and developed three new Codes of Practice to cover the gaps. The draft Codes have been through a series of reviews and are now up to version 3.

This paper introduces the draft FIFA Codes of Practice for Purchasing & Manufacturing, Storage & Distribution, and Blending of Fertilizers. It summarizes the scope and aspects covered by each of the Codes. Whilst covering a range of activities across the supply chain, the Codes address three common aspects – maintaining product quality/specifications, managing environmental and community impacts, and minimizing contamination.

In reviewing the range of management practices put forward in the three Codes of Practice, they can be grouped into three common themes – understand and operate to all regulatory requirements as the minimum standard, operate a quality management system consistent with ISO 9000, and operate an environmental management system consistent with ISO 14001.

Introduction

The member companies of the Fertilizer Industry Federation of Australia (FIFA) are bound, as a condition of membership, by FIFA's Code of Conduct. Cascading from the Code of Conduct, FIFA's strategy is to develop an industry self-regulatory framework for key product, environmental and public safety issues that require effective management by the industry.

In 1999, the FIFA Council established a Standards Review Working Party to address the issue of industry standards as defined in the FIFA Strategy and 5-Year Plan. The goal was to identify the need for common standards in the industry supply chain, establish statements of principle applying to defined common standards, support these where appropriate, with Codes of Practice and communicate the principles and Codes among all stakeholders.

The progressive translation of the FIFA Code of Conduct through the Strategic Plan, into Codes of Practice and subsequently into the site-specific procedures and practices of individual member companies is depicted in figure 1.

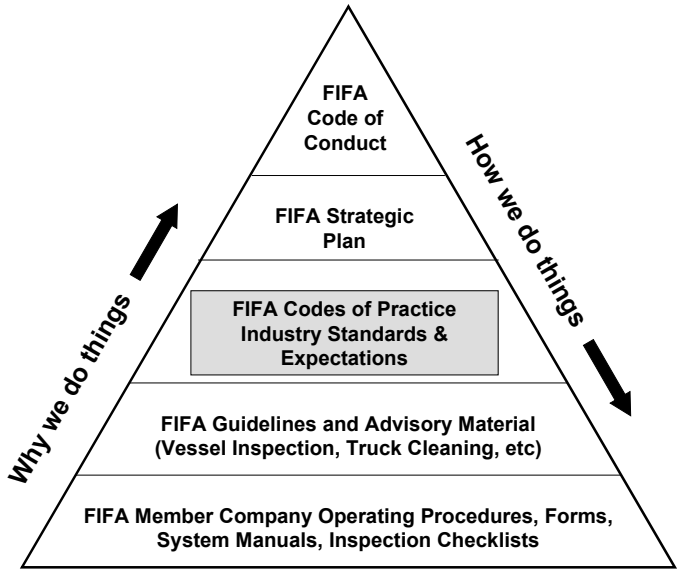

Figure 1. Strategic fit of Codes of Practice

By the end of 1999, the Working Party had identified an agreed representation of a supply chain model for the Fertilizer industry. It was noted that "fertilizers" may be mineral or organic in nature and in liquid (including anhydrous ammonia) and solid form. This is depicted in figure 2.

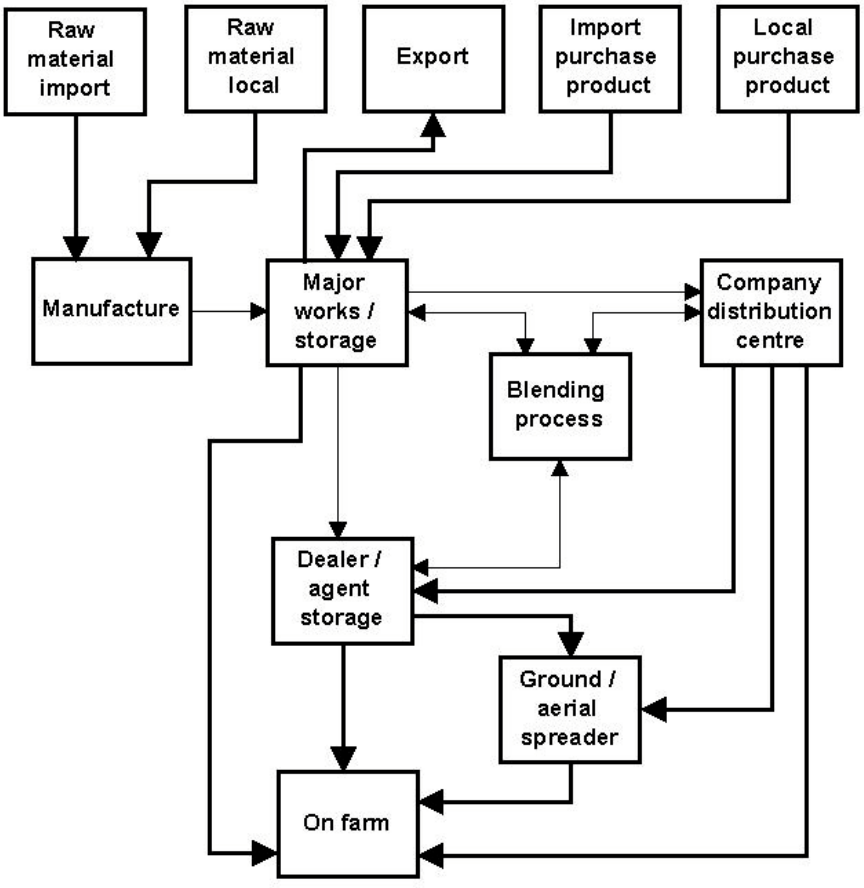

Figure 2. Fertilizer industry supply chain model

By March 2000, the Working Party had identified key risk factors for each element in the supply chain model and had prioritized and classified the risks. The Working Party also reviewed the existing Codes of Practice, industry guidelines and procedures for completeness and relevance to the risks. Arising from this analysis, the development of three new Codes of Practice was recommended, to cover the remaining gaps in the supply chain up to the Farm gate. These three recommended Codes of Practice were accepted by the FIFA Council and are-

- Code of Practice for Purchasing and Manufacturing Fertilizer,
- Code of Practice for Storage and Distribution of Fertilizer,
- Code of Practice for Blending Fertilizer.

It was also recommended that Codes of Practice for Contract Spreading and On-Farm use are best prepared by the relevant Associations and Organizations within those respective sectors, with appropriate support and information from FIFA.

The development of these three codes was undertaken in the second half of 2000, with the aid of a consultant, using the following five-stage process –

- Stage 1 - Develop a suitable template for the Codes
- Stage 2 - Facilitate industry workshop sessions
- Stage 3 - Collation of industry input into a first draft
- Stage 4 – Finalization of Codes
- Stage 5 – Authorization of Codes

This process is currently up to Stage 4, with version 3 of the draft Codes of Practice having been published in February 2001 and circulated to member companies for comment and finalization.

Overview of the three Codes

FIFA member companies are committed to securing community confidence in the fertilizer industry through the implementation of effective and transparent management systems for the purchasing, manufacturing, storage, distribution, blending and transport of fertilizers.

Objective of the Codes

The objectives of the three Codes of Practice are as follows:

- To provide a self-regulatory framework for FIFA member companies, thereby securing public and community confidence in the purchasing and manufacturing, storage and distribution, and blending activities of the fertilizer industry;
- To identify and manage key environment and public safety risks associated with purchasing and manufacturing, storage and distribution, and blending of fertilizers; and
- To satisfy our customers that appropriate processes are in place to assure the quality of fertilizers.

FIFA expects its members to conform to the management practices detailed in these Codes.

Audience

The audience of the Codes of Practice is as follows:

- FIFA member companies;
- Regulatory authorities;
- Customers of the fertilizer industry, especially dealers and farmers,
- Distributors and agents of the fertilizer industry,

- Suppliers of fertilizer and raw materials to the fertilizer industry; and
- The community and other third parties with an interest in the operation of the fertilizer industry.

Management Practices

In all three Codes, the specified Management practices are expressed in the form of high level expectations. FIFA does not prescribe how these expectations should be complied with, as there are likely to be a number of effective methods that could be adopted. Member companies, in their endeavours to comply with the recommended management practices, may also adopt FIFA, regulatory and other industry guidelines. FIFA expects that member companies shall periodically conduct an independent, third party audit to verify compliance with the provisions of this code.

Code of Practice for Purchasing and Manufacturing Fertilizer

This code of practice addresses three key aspects of purchasing and manufacturing fertilizers –

- Maintaining product specification,
- Managing environmental & community impacts,
- Minimizing contaminants.

Maintaining product specification

Customers of the fertilizer industry need to have confidence in industry processes for maintaining correct specifications for fertilizer products. All products need to be agronomically effective for the intended application and labelled, packaged and weighed (or measured), in accordance with legal obligations and industry guidance on good practice.

Heavy metals occur naturally in most soils and fertilizers. However, excessively high levels of heavy metals may contaminate land and/or agricultural products, thus jeopardizing the environment, agricultural sustainability, trade and the health of the users and people in the community. For this reason, particular emphasis is placed on ensuring low contaminant levels during the specification of fertilizers for purchase.

It is also important that fertilizer products supplied by the industry conform to the standards guaranteed in the product specification.

Managing Environmental and Community Impacts

Good management practices are essential to ensure fertilizer operations have no or minimal impact on the environment and on local communities in the vicinity of fertilizer manufacturing facilities and activities associated with the shipping and transport of fertilizers. The potentially significant environmental impacts during shipping activities are usually related to loss of containment of fertilizers and raw materials during the unloading and transport activities. This is also the case during the manufacturing process, but there are additional environmental risks associated with release of pollutants to air, water and land. Other risks include noise and odour.

Thus, the requirements in this section are based around member companies firstly identifying the potentially significant environmental aspects and impacts that require management control. Following risk identification, member companies need to develop and implement appropriate environmental management plans or systems to manage the risks to acceptable levels. The plans also need to ensure that activities comply with legal obligations as a minimum.

The adoption of good environmental management practices ensures ongoing community consent and support for industrial activities. This assists the industry in securing its license to operate.

Minimizing Contamination

From the point of manufacture (and including the process of manufacture) of fertilizers, until their eventual use by a consumer, there exists an opportunity for contamination of the fertilizer. This is

especially so during the process of transfer and storage of fertilizer from manufacture to consumer. Prevention of contamination of fertilizers (usually in transit) is important for the following reasons:

- Contamination with organic matter may result in:
- Spreading of weeds/seeds;
- Plant disease/fungus/virus;
- Bio-hazardous materials;
- Unwanted volunteer plants within cropping systems; and
- Unsuitable fertilizers used in animal feeds.
- Contamination with inorganic matter may result in:
- Injury to persons handling the fertilizer;
- Damage to bags carrying the fertilizer (bags failure);
- Damage to application equipment or problems with application;
- Unsuitable fertilizer used in animal feeds.
- Contamination with other fertilizers may result in:
- Possible wrong nutrient supply (chloride sensitive plants);
- Inappropriate nutrient supply – potential crop damage;
- Unsuitable fertilizers used in animal feeds;
- Soil degradation – eventual contamination of soil.

Code of Practice for Storage and Distribution of Fertilizer

This code of practice addresses three key aspects of storage and distribution of fertilizers –

- Sustaining product quality,
- Managing environmental & Community Impacts,
- Minimizing contaminants.

Sustaining product quality

Customers of the fertilizer industry need to have confidence in industry processes for sustaining the quality of fertilizer products. This includes ensuring that supplied products are agronomically "fit for purpose" and correctly labelled and packaged. It is also necessary for member companies to adopt suitable storage, transfer and handling practices during storage and distribution activities that minimize the potential for product degradation and impact on product quality.

Managing environmental & Community Impacts

Good management practices are essential to ensure fertilizer operations have no or minimal impact on the environment and on local communities in the vicinity of fertilizer storage and distribution facilities. The potentially significant environmental impacts during storage and distribution are usually related to loss of containment of fertilizers and risks associated with release of pollutants to air, water and land. Other risks may include noise and odour, depending on the siting of the facility.

Thus, the requirements in this section are based around member companies firstly identifying the potentially significant environmental aspects and impacts that require management control. Following risk identification, member companies need to develop and implement appropriate environmental management plans or systems to manage the risks to acceptable levels. The plans also need to ensure that activities comply with legal obligations as a minimum.

The adoption of good environmental management practices ensures ongoing community consent and support for industrial activities. This assists the industry in securing its license to operate.

Minimizing contaminants

Adverse agronomic impacts can occur if fertilizers are contaminated with other fertilizers and/or other materials, particularly grains. Of particular concern are:

- Chloride fertilizers in non chloride formulations
- Insoluble fertilizers in formulations for fertigation and water run application
- Downgrading of the crop if weed seeds and other grains seeds are present.
- Uneven application due to blockage of fertilizer application equipment due to foreign materials e.g. pallet boards, lumps of concrete.

Consequently, appropriate site layouts, procedures and training are required to minimize contamination.

Code of Practice for Blending Fertilizer

This code of practice specifically addresses the key aspect of sustaining the product quality and integrity of blended fertilizer products. (However, it also calls up the management practices from the first two codes – *Purchasing & Manufacture* and *Storage & Distribution*.)

Sustaining Product Quality and Integrity

The quality of a blended, solid fertilizer depends on the quality of the raw material ingredients, uniformity of particle size, nutrient content, free-flowing characteristics and minimum material segregation. It is expected that member companies producing fertilizer blends in accordance with this Code will deliver a product with consistent quality providing reliable, anticipated results.

Correct composition of blend ingredients is important to minimize errors in the final chemical analysis, while mismatched particle size of blended products can lead to ingredient separation during handling and transportation activities. Both may cause unpredictable fertilizer performance. Note that both visual and qualitative identification techniques can be used to validate primary blend ingredients.

Some materials are not amenable to blending due to undesirable side effects. For example blending ammonium nitrate with urea will result in a wet material verging on a slurry, while combining urea with single and triple superphosphate in a blend may become sticky and cake.

Implications of Compliance with the three Codes & the Management Practices

Whilst each of the three codes applies to a different component of the Fertilizer Industry supply chain model, there are three underlying aspects effectively repeated in each document's Management Practices –

- Management of product quality and/or specifications,
- Management of environmental and community impacts, and
- Minimization of product contamination.

In reviewing the details of the management practices put forward in each of the Codes under these headings, a number of the requirements are repeated and these can be simplified down into a number of common themes –

Understand and Operate to all regulatory & industry requirements as a minimum standard:

This should go without saying, and is certainly not restricted to only the members of FIFA. A company should have good processes to identify all relevant statutory requirements and industry standards, ensure that systems and procedures are in place for compliance, train employees and contractors in their obligations, and measure conformance.

Some of the relevant extracts from the Management Practices are –

..consider the legal requirements for fertilizer specifications to be the minimum standard.

..products are properly identified and labelled correctly, in accordance with legal requirements….

..establish an appropriate specification for their fertilizer products that is agronomically effective for the intended use..

…ensure that dispatched product is "fit for purpose"……

...companies shall comply with relevant International Maritime Organisation AMSA codes for shipping…

..selection of ships in accordance with accepted best practice and AQIS requirements……

..shall comply with environmental licensing and permitting……

.....and other regulatory requirements (including workplace health and safety)….

...shall design and construct facilities in accordance with relevant Australian Standards…

…companies shall provide ..MSDS.. to contractors, customers and others…….

...FIFA members complying with AQIS requirements….

Operate a quality management system which is consistent with the requirements of ISO 9000:

There is a very good fit between the scope and intent of a quality management system as outlined in ISO 9000, and the scope and intent of these three Codes of Practice covering the core supply chain activities of purchasing, manufacturing, blending, storing and dispatching fertilizer products for sale to a legally binding specification. Whilst the Codes of Practice do not dictate how individual member companies will achieve the FIFA standards and management practices; adoption of a quality management system consistent with ISO 9000 would seem to satisfy all requirements.

In all three Codes there is also the statement that "FIFA expects that member companies shall periodically conduct an independent, third party audit to verify compliance with the provisions of this code". If a company is operating a management system up to the standard of ISO 9000, then a simple extension, to satisfy the FIFA audit verification, is to gain ISO certification and submit the business to periodic, external, third party audits for ongoing certification.

Some of the relevant extracts from the Management Practices are –

..companies shall implement suitable quality assurance systems……

..shall establish specifications for purchase of raw materials and fertilizer products that are consistent with the company's product specification….

…..ensure compatibility of fertilizers in storage….

…minimize product degradation…..

..establish criteria for the selection of suppliers…

..implementing a documented process of quality assurance, including a regime of sampling and analysis and appropriate record keeping…

..this may involve internal or external auditing…..

..companies shall utilize contractor selection and management processes…..

..implement rigorous inspection and maintenance regimes……

Operate an Environmental Management System which is consistent with ISO 14001:

The above comments on ISO 9000 equally apply to the ISO 14001 standard for environmental management. All three FIFA Codes of Practice are strongly focussed on the management of environmental and community impacts and the minimization of contamination. There is a strong fit between the FIFA requirements and the deliverables of an environmental management system consistent with ISO 14001. Equally the FIFA requirement for independent, third party auditing is satisfied by certification to this international standard.

Some of the relevant extracts from the Management Practices are –

..shall comply with the environmental licensing and permitting requirements…

..shall identify all significant environmental aspects and impacts associated with ..fertilizers.. and implement appropriate plans or systems to effectively manage environment risks…

..shall implement procedures to deal with ..waste.. in an environmentally responsible manner….

…hierarchy of waste management practices.. elimination.. reduction.. recycling.. recovery.. reuse.. disposal..

..companies shall ensure their environment management plans or systems address the requirements of this section…..

…inspection and maintenance of environmental control equipment…

..documented operational procedures for potentially significant environmental risks..

..emergency response plans……

…monitoring and assessment of effluent and emissions..

..packaging and labelling of hazardous material……

..product stewardship…..

..a process to deal with community complaints…..

…environmental management plans shall adopt the hierarchy of risk control measures…elimination.. engineering controls…administrative controls……

..member companies commit to a zero tolerance level for contaminants….

..adopting appropriate plant hygiene procedures…….

…spillage control and clean-up……..

..shall select a site that minimizes the exposure of the community and environmentally sensitive areas..

…consider the same standards for a leased facility as the company facility…

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