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From Granulock™ to Five Brothers™, Environmentally ... The emergence of EMS in the agribusiness supply chain

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1. Introduction:

Environmental management assurance is becoming increasingly important to the way agribusiness operates. From raw-material-input manufacturers, farmers, through to food-processing companies, the identification and proactive management of environmental and food safety risks has never before been more important to their pathway to market. Two example case studies provide insight into new thinking and approaches to implementing Environmental Management Systems (EMS) across the agribusiness supply chain; in both case examples, ISO 14001 provides a central link to the design and implementation of their environmental systems.

The first case study involves Incitec Fertilizers and the development of an EMS to manage their logistics supply chain from receipt of manufactured products to dealer customer storage, handling and then sale to farm customers.

The second case study involves Unilever Australasia and describes an EMS project currently underway in Australia and 13 other countries worldwide that aim to evaluate current agricultural practices and establish improved on-farm environmental management systems.

This paper takes a brief look at two EMS systems recently developed by Incitec Fertilizers¹ and Unilever Australasia². Both companies have made significant investments of time and resources to develop and implement EMS systems.

Note: Both ¹ and ² are Outsourced Environmental clients. The environmental management and sustainability systems described in this paper have been developed & facilitated in conjunction with staff from Outsourced Environmental. Outsourced Environmental today externally manages both systems.



2. EMS & the Agribusiness Supply Chain

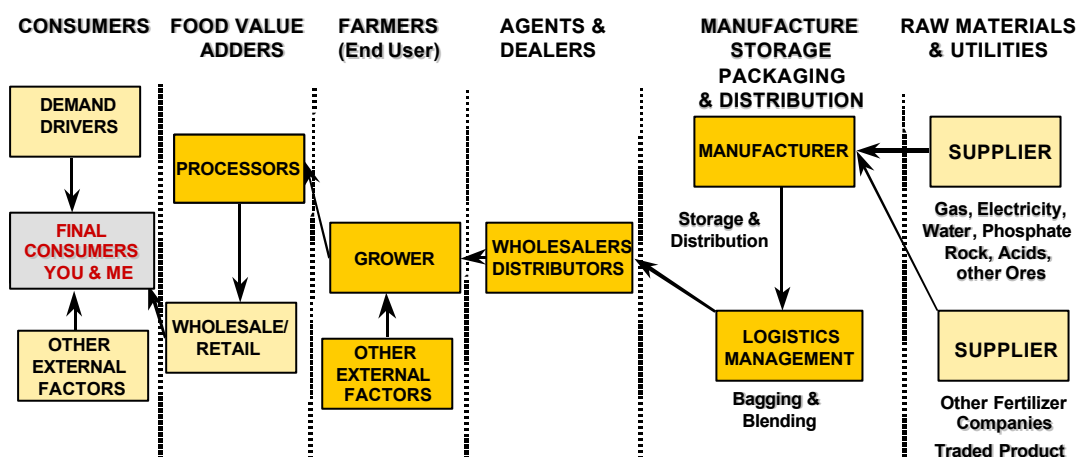
Safety, health and environmental management play a significant role in the way many agribusiness stakeholders are conducting business today. The environment has over the past 10 years or so come to the forefront in terms of media perception, community awareness and the Australian legal system. As a consequence, environmental aspect and impact management is becoming a priority for agribusiness stakeholders.

Environmental management systems (EMS) and the approach outlined in ISO 14001 are being adopted in a range of industry sectors. In recent years several stakeholders in the Australian agribusiness supply chain have taken on the challenge of EMS development and integration into their business systems, workplace culture and supply/sourcing strategies.

Fuel, fertilizer and chemical manufacturers, farmers and food processing companies present a significant and environmentally important element of the agribusiness supply chain.

Figure 1 provides an example of the stakeholders in the agribusiness supply chain. Whilst the environmental issues facing each stakeholder are different and varied, a process for managing these issues consistent with ISO14001 can be applied.

Figure 1: An example of the Agribusiness Supply Chain showing Stakeholder Groups



The process adopted by both Incitec Fertilizers and Unilever in the two case studies presented in this paper identifies the environmental risks and impacts associated with the key activity steps associated with their core business activities.

For Incitec Fertilizers this process involved identifying the key activities associated with the movement, storage, handling and transport of fertilizer (and other products) and then developing an EMS, training systems, and a work place culture to appropriately control these risks.

For Unilever, their EMS is focussing on identifying the risks and sustainability issues associated with on-farm environmental management as related to the production of key sourcing crops important to Unilever's food processing operations (and other rotation crops). The on-farm EMS under development will link in with existing environmental management and quality assured systems at their processing plants, thereby providing a quality assurance system from farm gate to factory and beyond.

A study of the agribusiness supply chain from fertilizer manufacturer to food processor identifies several areas of environmental risk requiring proactive management. Potential impacts to the environment can occur at each "Activity Step";

hence each stakeholder in the agribusiness supply chain needs to adopt an EMS approach to managing risks and demonstrating environmental stewardship.

Both point source and non point source impacts need to be identified and where possible quantified throughout the supply chain.

A major challenge for the Australian agribusiness supply chain relates to the;

- ❑ Provision of a consistent approach to identify and manage risk-assessment, aspect and impact identification
- ❑ Need for all key stakeholders in the supply chain to engage in the risk-assessment, aspect and impact identification process
- ❑ Consistent development of monitoring and audit assessment, to enable performance benchmarking and evaluation.

3. Case study 1: Incitec Fertilizers applies EMS to Logistics Supply Chain;

Overview:

Incitec Fertilizers, one of Australia's leading fertilizer companies, manufactures fertilizers at Brisbane and Newcastle, and imports into major centres in eastern and southern Australia. Beyond the major works, environmental stewardship needed to become an integral component to the organisational working culture for Incitec Fertilizers. There are 160 such sites either owned or operated by the company in eastern Australia.

Hence a project was initiated in 1996 to develop a simple yet comprehensive EMS to facilitate a program to identify;

❑ Potential impacts & risks arising from these operations and,

❑ A pro-active process to drive continual and net environmental improvement.

This project has particular significance given that Incitec fertilizers does not operate all the sites itself, Dealer Customers lease and operate from around 100 of these facilities and perform a range of rural merchandise, fertilizer & crop protection activities as well as having workshops, industrial wash-down & fuel storage facilities.

Today, this project is delivering tangible benefits to the company such as;

- ❑ Through improved environmental performance,
- ❑ Safer and cleaner operations,
- ❑ Management of historical environmental issues,
- ❑ More pro-active work place culture,
- ❑ Greater employee environmental awareness and
- ❑ Closer relationships with valued dealer customers.

Initial Planning Phase

The first step was a formal scoping study. This step provided all key stakeholders in the organisation and associated with the supply chain with an opportunity to buy into the process of EMS development. Key stakeholders were interviewed, benchmarking partners were identified and their respective EMS systems evaluated, milestone and project timelines were established and a roadmap was developed and subsequently communicated to Incitec Fertilizers logistical staff and the Dealer team.

Plate 1: 1 Tonne Bags of Fertilizer Stacked in a Product Distribution Centre, Moree, NSW.



The following were some of the EMS design hurdles identified in this scoping phase and later overcome in the development and facilitation of the project;

- ❑ Multiple sites (160 plus) located from Adelaide to Cairns,
- ❑ Site personnel required to learn about and implement EMS, ranged from 1 to 20 people per site,
- ❑ Corporate procedural and reporting requirements had to be facilitated by EMS
- ❑ The EMS needed to integrate with an existing quality system for the Incitec operated sites,
- ❑ The target users of the EMS were not necessarily tertiary trained, some site managers had secondary training to years 10 and 11 only,
- ❑ A number of sites were often located in rural towns, with fertilizer products transported via a combination of sea, road and rail,
- ❑ Site core operational activities included combinations of;
 - a) bulk & bagged fertilizer (plus anhydrous ammonia) storage, handling and transport,
 - b) packaged and/or bulk crop protection product, storage, handling and transport,
 - c) above and/or below ground fuel storage,
 - d) workshop activities,
 - e) industrial wash down activities,
 - f) industrial chemical storage, handling and transport
- ❑ A kit approach was required as sites had a range of core operational activities

Environmental Risk Assessment:

The above issues, prompted the Incitec Fertilizers' Logistics Group to investigate and develop an environmental management system to cover the 161 field sites, operated by either Incitec Fertilizers or Dealers, in eastern Australia.

An audit process and risk analysis methods were developed to allow environmental risks to be ranked and prioritised at a given site and also between sites. A quality approach (i.e. plan, do, measure, improve) to environmental planning, risk analysis, and impact identification was implemented. Continuous improvement processes provided an essential quality check on development and implementation of the risk review process.

Concepts were developed including "Source / Pathway & Target" risk-assessment and incorporated into methods for comparing risks around a given fertilizer distribution site and between sites.

The risk review process aimed;

- ❑ at quantifying and ranking the products or wastes that may have an environmental impact on or off site,
- ❑ to then evaluate the site infrastructure in place to contain and appropriately control these, and
- ❑ to evaluate the training needs of the people involved in managing these facilities,
- ❑ thereby identifying the critical environmental management system (EMS) requirements, to protect the environment and the wider community.

Development of the EMS:

In addition to quantifying the risks and issues on each site the initial environmental review provided an assessment of the gaps in current performance, legislative compliance and best practice.

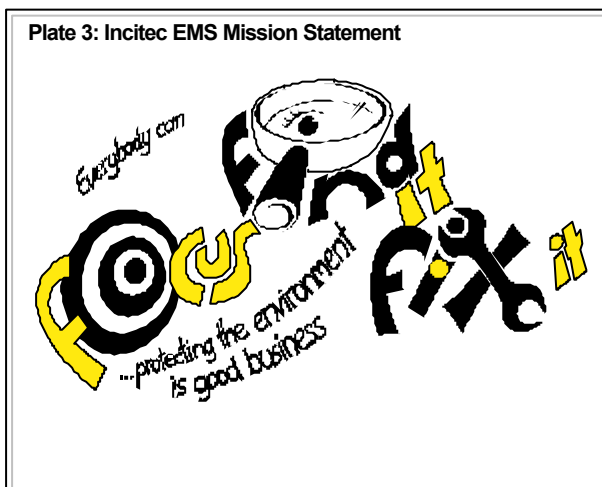
The EMS was implemented using procedure and technical information contained on a version controlled CD-rom (updated annually). A folder was developed to house site-specific information such as site plans, aspects and impacts, licences, environmental monitoring details etc.

An environmental compliance system was developed for each state and presented on the CD-rom. The system was designed so that a site manager or EMS manager could identify principal legislation, legal obligations, offences and penalties, licence requirements and contact information based on site core operational activities. This meant that site managers could drill through the masses of legal information efficiently.

Creatively Connecting with the Stakeholders & Workforce

Several communication tools were developed to help Incitec Fertilizers break down cultural barriers, demystify the jargon and engage all site employees in the process of facilitating the “EMS” rollout.

A mascot, Platypus Bill, was developed to drive home the importance of managing the health of surface water. The risk of contaminating surface or storm water was a significant impact category of concern to Incitec, hence the significance of Bills statement.



The concepts of Aspect, Impact and Control can at the best of times be very challenging concepts to have busy people understand and apply. So the Incitec Fertilizer Logistics team developed a new mission statement for EMS that encompassed the principle concepts of aspect, impact and control.

This mission statement was called; **Focus, Find It, Fix It.** **Focus**ing on what we do, (i.e. the environmental aspects), **Find** where we impact (i.e. the environmental impacts) and **Fix It** which relates to putting controls in place to manage and improve significant

environmental aspects.

The Worlds First “Two-in-One” EMS was created and incorporated into an interactive EMS CD-rom to;

1. Provide a technical summary of the EMS process, company commitment, required steps etc,
2. A jargon free version of the EMS was then creatively woven into the documentation to enable all site and dealer employees to engage in the process, understand what had to be done etc.

An Environmental Awareness program was created and launched via the “Incitec Inciclopaedia”, a booklet distributed to launch the EMS rollout program.

A further interactive training program was then developed on the CD-rom to enable general site personnel and contractor induction training.

A two-day specialist EMS course was developed for site managers and/or nominated site representatives. This program has to date facilitated training for over 120 + site managers.

Incitec Fertilizers today ...

EMS implementation has been progressing over the 160 plus sites since October 1998. All primary and regional distribution centres operated by Incitec Fertilizers have now implemented the EMS. The implementation at a Dealer level is also well progressed.

Major distribution centres in Cairns, Townsville, Mackay, Dalby, Moree, Wardell and Bundaberg have all received ISO 14001 certification. A number of other sites are also progressing towards certification.

So what's really different about Incitec Fertilizers today? Having an ISO certified process doesn't necessarily mean improvement in actual environmental performance.

Recent site audits and inspections have shown that, since implementation of the EMS, sites have significantly improved their environmental performance, particularly with respect to site housekeeping.

However, the big change around Incitec Fertilizer logistical activities today relates to the cultural change, and here we are talking about "people" and what they see as important, environmentally. With the risk assessment process involving all employees, photographs taken of areas and activities requiring improvement and key issues clearly documented, all stakeholders have become more personally accountable for site environmental performance.

Implementation of monitoring systems, enhanced community awareness programs and employee training are also assisting in locking in continual environmental performance improvement.

4. Case study 2: Unilever Australasia takes EMS from Farm Gate to Five Brothers

Overview:

Unilever is one of the largest consumer goods businesses in the world. Their food and home and personal care brands are on sale in over 150 countries, and include Flora/Becel spread, Dove soap, Knorr, Lipton, Magnum, Lux, Omo and Cif.



Plate 5: Five Brothers Pasta Sauce produced from Tomatoes grown in Central Victoria

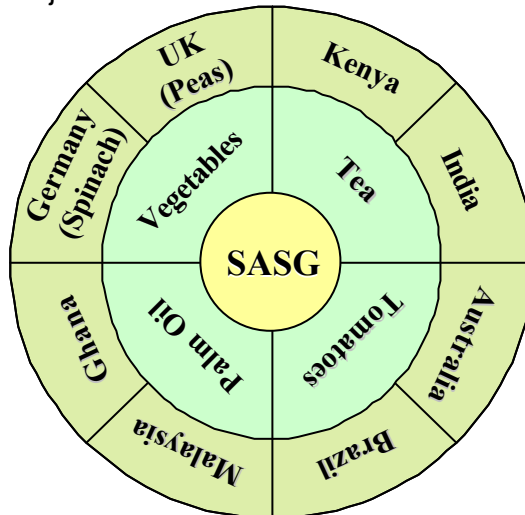


Plate 4: Harvesting Unilever Tomatoes for Sustainable Agriculture Initiative, January 2001

Agriculture provides more than three-quarters of the raw materials for Unilever's branded products. Supply chains are therefore challenged by the environmental, social and economic constraints on agriculture, and Unilever's markets are continually changing in response to growing consumer concerns about food safety and environmental concerns.

Commencing in 1995, Unilever has embarked on a major project 'the Sustainable Agriculture Initiative' to develop guidelines for sustainable farming practices that will ensure continued access to their key raw materials.

Figure 2: Unilever Pilot Sustainable Agriculture Projects



- Sustainable Agriculture Steering Group
- Consultative Groups
- Pilot Project Teams

Figure 2 provides an example of the countries and key sourcing crops involved in the initiative.

In January 2000, Unilever Australasia in partnership with Horticulture Australia commenced a unique research initiative to identify the environmental impacts of growing processing tomatoes in Australia, a commodity of strategic importance to the food processing plant at Tatura Victoria. Further, this initiative was launched in a quest for answers to improved land management practices and sustainable agricultural production.

The Australian pilot research project is one of fourteen Unilever are running globally to resolve a monitoring system and best management practices for production of its food produce.

Principles of Sustainable Agriculture for Unilever:

For a farming system to be sustainable it must maintain or enhance:

- ❑ The economic viability of agricultural production;
- ❑ The natural resource base; and
- ❑ Other ecosystems, which are influenced by agricultural activities.

Unilever's research focus involves taking the first step toward resolving a Sustainable Agricultural System for processing tomatoes which:

- ❑ Produces crops with high yields and nutritional quality to meet existing and future needs while keeping resource inputs as low as possible
- ❑ Ensures that any adverse effects on soil fertility, water and air quality and biodiversity from agricultural activities are minimised and positive contributions are made where possible
- ❑ Optimises the use of renewable resources while minimising the use of non-renewable resources
- ❑ Enables neighbouring communities to protect and improve their well-being and environments

Unilever thereby considers sustainable agriculture to be productive, competitive and efficient while at the same time protective and improving the natural environment and conditions of local communities.

On the local front, a number of the current practices associated with processing tomato production are believed to fall short of the requirements for sustainability. Environmental problems are of increasing concern both from the point of view of preserving the natural resource base used for production and, with the broader issues of biodiversity, community health and pollution.

Broad approach for the Australian pilot

The aim of the sustainable agriculture initiative is to find a way to identify sustainability issues that are involved in the growing of processing tomatoes and so lay the foundation to develop a more sustainable production system for the future.

To do this 5 properties have been selected which represent the environments in which processing tomatoes are grown in Australia; a set of variables which are believed to span the issues involved in the tomato production process are currently being monitored over 2 growing seasons (no treatments applied) and this information will be assessed to identify those variables helpful to understanding the challenge growers face in achieving a sustainable production system.

This initiative is the first of 2 phases in the quest for a sustainable tomato processing system, the second being where the findings from this first phase (field monitoring) are applied to bring about a positive change (more sustainable outcomes) in the processing tomato production environment. Further, it is Unilever's intention to link the Australian and Brazil tomato processing pilots.

The benefits generated by the Unilever project are anticipated to be both tangible and non-tangible in nature; some of the more obvious outcomes include:

- ❑ Screening & selecting of a range of field-measurable variables associated with sustainable processing tomato production for their sensitivity to management practices in the selected growing environments
- ❑ Drafting a grower audit system of indices for the sustainable production of tomatoes directed to improve, manage and maintain the soil, water, air, flora and fauna, whilst seeking to minimize inputs.
- ❑ Drafting/refining guidelines for Best Agricultural Practice to grow processing tomatoes
- ❑ Refining data processing techniques for identifying linkages between variable sets associated with the sustainable production of tomatoes

- ❑ Preliminary quantification of the impact of growing processing tomatoes upon the natural resource base and the environment.
- ❑ Assisting tomato industry & community representatives to develop their understanding and awareness of the challenges associated with sustainable land use for horticulture and to impart skills to that end.
- ❑ Stimulating innovation to help resolve an integrated, environmentally sustainable management system for processing tomatoes
- ❑ Estimating some aspects of the “Economics & Value” of environment management

Sustainable Indicator Framework:

An important element of Unilever’s Australian pilot project involves the selection and subsequent evaluation of sustainability indicators, assessment of selected indicators on the five pilot farms (also benchmarking with sister tomato pilots in Brazil), indicator review and then development of an Environmental Management System (EMS) based on the International Standard “ISO14001”.

This initiative has a strong focus on environmental assessment and on farm sustainability indicator development to ensure that the EMS developed is practical and that the environmental performance and improvements to the Unilever supply chain are measurable and transparent.

Environment indicator clusters believed to relate to agricultural sustainability include;

- a) Soil fertility/health
- b) Soil loss
- c) Nutrients
- d) Pest management
- e) Biodiversity
- f) Product value
- g) Energy
- h) Water
- i) Social/human capital
- j) Local economy

Given the challenges of quantifying sustainability in practical terms, Unilever have elected to consider and where possible measure environmental impacts associated with each indicator cluster.

The Australian pilot project is essentially looking at current practices and field testing a range of sustainability indicators.

A total of 133 indicator parameters are being monitored within the Australian program during this initial phase.

Developing an EMS;

The management system currently under development will combine the net learning of Unilever 14 global projects researching into crop specific standards and will be presented in a format compliant with ISO 14001.

The EMS development phase will commence in July 2002.

Next steps for the Sustainable Agriculture Initiative;

Recent workshop activities have been fruitful in developing a “Roadmap” for the implementation of the Unilever initiative. One of the keys to successful adoption of sustainability principles and EMS at the farm gate level as identified by Unilever growers, relates to market recognition and preference for sustainably produced goods. Understanding the market drivers and factors influencing sustainably produced food produce is an area currently under review.

5. Concluding Remarks

In this paper the development of an EMS for two parts of the agribusiness supply chain have been described.

There are several important components of the supply chain contributing to the production and supply of food requiring EMS, these include chemical, irrigation, seed/transplant, machinery suppliers, growers/primary producers, transport companies, food processing factories, warehouse and retail outlets etc.

Environmental management systems are required to control the risks and environmental impacts associated with each step in the supply chain. In time demonstration of environmental management assurance via an EMS may become a mandatory requirement to enable contribution of services to the agribusiness supply chain.