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*Published in:*

Global Value Chains and Sustainable Development

*Publication date:*

2011

[Link back to DTU Orbit](#)

*Citation (APA):*

Jørgensen, M. S., Milanez, B., & Porto, M. F. (2011). Environmental management in transnational product chains: The case of a Danish pesticide company in Brazil. In Global Value Chains and Sustainable Development

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For Global Value Chain conference, DTU, 24 – 25 May 2011

## **Environmental management in transnational product chains: the case of a Danish pesticide company in Brazil**

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*May 2011*

### **1. Introduction**

Transnational product chains involving industrialized countries and developing countries or countries under transition is part of the background for new systems of international regulation and corporate self regulation based on management systems within CSR and/or environmental standards. Such regulation and management systems are reactions to critique of the practice of transnational / multinational companies from industrialized countries in developing countries or countries under transition of not taking the same environmental and health precaution as in the country of the headquarter (the origin) of the company. This difference is often referred to as ‘double standard’. At the same time developing and newly industrialised countries might be vulnerable social contexts, defined as contexts with a reduced capacity of populations to survive, resist, or recover from risk situations and events such as industrial risks or diseases.

Standards and schemes like ISO14001 and Responsible Care, which are the base of the management systems of some companies, are, at the same time criticized for being weak in the demands to and the control of the companies and thereby indirect allowing business practices based on double standards (Jørgensen et al, 2010). This implies that it is important not only to assess the practice of companies, including multinational companies, based on what management systems they refer to and maybe are certified within. It is necessary to focus on and analyse the actual practice. The practice will be shaped by the type of products and the countries or the regions, which are involved, which shows the need for detailed case studies with different product and geographical focus in order to develop the knowledge about the social and environmental practice of multinational companies.

This paper offers a case study about the shaping of the environmental management of a Danish transnational company within production and sales of pesticides, Cheminova, with a special focus on the shaping of the practice in Brazil. Thereby the paper offers an insight into transnational environmental management involving different types of countries and rather complex products: Denmark, an industrialised country, which often is said to have a strong environmental strategy (at least up till around 2001, when the government and the environmental strategy changed) and a newly industrialised country, Brazil, which is seen as one of the strong BRIC economies but at the same time a vulnerable society from an environmental and health perspective.

## **2. Methodology**

The paper analyses the shaping of the environmental strategy, environmental aspects and environmental impacts connected to the practice of Cheminova in Brazil in interaction with the overall Cheminova strategy and with the Brazilian society.

The paper is based on an iterative methodology, which originally was intended as desk research about the past and present practice of Cheminova as a transnational pesticide producing company in Denmark and in a number of other countries. As part of the data collection for the paper we interviewed governmental officials in Brazil and found out that Cheminova was involved in attempts to stop a governmental initiative for improving the regulation of pesticides in Brazil in the direction of the rules in the European Union. This led to a dialogue with a Danish journalist, who had researched the practice of Cheminova and further literature search about the practice of Cheminova practice. An article written by the journalist about Cheminova's involvement in attempts to improve the Brazilian regulation to the level of the European Union provoked a public debate in Denmark about the issue. A column written by one of the authors of this paper about the deterioration of the reputation of companies with environmental management systems initiated a contact from Cheminova and afterwards two interviews with managers of communication and environmental management in Cheminova. The pressure on Cheminova made the company promise that it would redraw from the attempts to stop a better regulation, which would imply scrutinising of two of the pesticides, which Cheminova sells in Brazil. The final part of the data collection was a dialogue with Brazilian governmental stakeholder about possible changes in the Cheminova practice in Brazil.

The paper is based on the following research questions:

- What environmental and health issues are addressed in relation to the practice of Cheminova in general and specifically in Brazil and by who?
- How are the understandings of the problems shaped?
- What changes are taking place in the practice of Cheminova in Brazil and how are these changes shaped in interaction between Cheminova and the national and international contexts Cheminova are part of?

- How are these changes influencing the environmental and health impacts related to the practice of Cheminova and its products in Brazil?
- Is Cheminova practicing 'double standard' in relation to Brazil? Are there difference between the practice in Denmark and the practice in Brazil?

### 3. Theoretical approaches

The paper is based on theoretical concepts concerning

- Business ethics for characterising the type of responsibility taken by companies
- Environmental management in product chains and in transnational companies for characterising the type of practice and the type of relations between customers and suppliers and between headquarter and affiliates in transnational corporations
- Corporate translation of external pressures through the historically developed structures, incentives etc. in a company
- Vulnerable contexts and their ability to handle local risk situations
- Actor Network Theory and the concept of script for characterising the complexity of practice in relation to chemical products, including the difference between the envisioned practice and the actual practice

Business ethics as theoretical perspective is focusing on the relations between company and society, analysed as forms of responsibility which companies are showing in their practice. Crane & Matten (2004) refer to Carrols pyramid of responsibilities, which include the following four types of responsibilities:

- economic (what is required to ensure economic survival as part of society) ,
- legal (what is required by society),
- ethical (issues not covered by governmental regulation: what is expected by society),
- philanthropic (what is desired by society)

Especially ethical responsibility is in focus in relation to transnational companies, whose practice abroad often is not covered by the legislation of the home country and the vulnerable societies, where production is located and/or products are sold, may not have legislation within this field or the legislation is not enforced. This leaves it up to the multinational company to decide how ethically responsible it will behave. Due to the increased globalisation and the decreasing role of the nation state new modes of environmental governance have been developed based on new types of

relationships among business, government and civil society. Relevant examples in relation to chemical products are Responsible Care and ISO14001, OHSAS18001.

At the product level, 'product chains', often called 'supply chains' is, a relevant theoretical perspective for analysis of the relations between a company and its suppliers and customers (Jørgensen and Forman, 2009). One important aspect is the supplier – customer relationship in relation to intensity and stability. Cox (2004) has developed a typology describing a range of possible relations - from main focus on cheapest possible price in the search for suppliers and therefore frequent change of a supplier within an area – so-called shopping - to strategic partnership where customer and supplier obtain mutual advantages from adaptation to each others' conditions, but at the same time develop mutual dependence. Stranddorf et al (2000) find that the more focus companies has on quality and environment as part of their business strategy, the more there seems to be a tendency to develop fewer, more long-term and more strategic supplier- customer relations, among others because it takes time and demands a lot of resources to develop mutual confidence and co-ordination between a company and its suppliers. Jørgensen and Forman (2009) point to two types of relations shaping the environmental aspects in a product chain. The direct environmental relations carried by the chemicals, materials, products etc. and the indirect relations where demands for quality, price etc. shape other actors' practice in the product chain and thereby their choice of chemicals, materials, products etc.

It is important in the analysis of corporate practice to distinguish between the intentions expressed in policies, the actual efforts done and the outcome of these efforts in relation to those areas of concern in focus (Jørgensen and Forman, 2009). At the same time it is also important to be aware about how previous experience has shaped internal structures, incentives etc. and thereby influence the shaping of the present practice. Howard-Grenville et al (2008) draw up from organizational theory internal factors that can be expected to contribute to corporate environmental practices. Such factors shape whether and how members of a firm or facility interpret external regulatory, social, and economic conditions as problems and, how these members choose to solve the selected problems. The first effect, known as "problem setting" occurs when organizational structures, cultures, and subcultures channel and direct the attention of members to particular issues and orient them to specific goals. Individuals can be active participants in the formulation of problems from nascent issues, and their positions in formal and informal structures of power contribute to whose interpretations have influence within a given company. This means that similar environmental pressures may be translated quite differently by different companies. Once problems are set, internal factors also shape how the company chooses to address a pressure: Organizational structures, cultures, and systems of managerial incentives favour certain strategies for action within a firm.

According to Hansen (1999) it is reasonable to expect some of or all the following elements in transnational environmental management:

- General principles for the environmental activities of the entire company

- More specific policies and programmes applicable throughout the company
- A cross-border environmental management system with procedures for monitoring and controlling the practice of the foreign affiliates
- Training, education and information exchange programmes and activities
- A formal organization where responsibilities and functions are delineated and allocated between different entities and persons – for example, between headquarters, affiliates and suppliers.

Hansen (1999) argues that corporate environmental management practice in transnational product chains falls within the range from adaptation to the local regulation and practice in developing countries to global integration where a company is practising the same level of concern and responsibility as in the home country. Hansen (1999) refers to two types of product chains: management of controlled affiliates and management of non-controlled foreign entities (organized through franchising, licensing, subcontracting or strategic alliances).

According to Hansen (1999) four types of forces shape the environmental management in transnational product chains: regulatory forces, market forces, sector specific forces and company sector forces.

The concept of vulnerability, which has been developed in the field of disasters, may be used in analyses of the shaping of environmental and health risks. Vulnerability can be understood as the reduced capacity of some populations to survive, resist, or recover from risk situations and events such as industrial risks or diseases (Porto and Fernandes, 2006). Vulnerability is linked to social, economic, and cultural processes that influence how specific populations and regions handle different types of risk problems. This means that vulnerability analysis investigates not only the qualities or states that certain social groups or systems possess in responding to disturbances in their integrity (e.g. health and safety needs), but also the processes and dynamics that generate such qualities. Vulnerability varies according to space and time scales, depending on historical preconditioning of ecosystems or socio-technical systems.

A vulnerable context in different countries and regions expresses existing social vulnerabilities. In socio-technical systems influenced by vulnerable contexts, risk situations and events can occur more frequently and with greater severity due to the lack of prevention and increasing uncertainties and consequences, especially for more vulnerable groups, territories, or economic sectors.

Global development dynamics produce historical configurations that influence the local level where risk situations and events occur through the social (re)production of vulnerable populations, as well as the role of institutions. Changes at the local level, i.e., the development of new social movements, labour relations, and safety management models can impact global levels by transforming patterns of risk regulation and public policies. A socio-technical approach to risk analysis and prevention must observe how vulnerabilities, which are historically shaped, influence the occurrence of risks at the local level.

Two types of social vulnerabilities are important to focus on in the shaping of local practice of transnational companies and their processes and products (Porto & Fernandes, 2006):

- Population vulnerability relates to specific social groups that are more vulnerable on the basis of such characteristics as class, gender, age, and race.
- Institutional vulnerability relates to the inefficiency of a society and its institutions to deal with natural or technological hazards, depending on political influences, juridical-institutional frameworks, and economic, technical, and human resources.

When analysing the shaping of chemical products and their use it is important, in order to understand why a product is ‘working’ or not, not only to focus on the product itself as a technical artefact, but focus on all those elements that together influences the practice with the product, like the user, the prescriptions for use, equipment for use, safety equipment, safety information etc. ANT – Actor-Network Theory (for example ((Callon, 1986), (Law (ed.), 1986), (Latour, 1987)) - enables analyses of the network relations among all these elements. By the concept of ‘script’ (for example (Akrich, 1992)) it is possible to compare the plans for the practice as envisioned by for example the manufacturer and the role the manufacturer allocates, consciously or unconsciously, to different parts of an *imagined* practice – for example the user and the safety information, and then the *actual* practice, the so-called ‘de-scription – taking place.

#### **4. Short presentation of case company**

Cheminova is a public limited company owned by Auriga Industries A/S. Auriga is quoted on the Copenhagen Stock Exchange with the Aarhus University Research Foundation as the largest shareholder. The foundation owns all class A shares, approximately 40 per cent of the share capital and holds approximately 84 per cent of the voting rights (Cheminova, 2007, p.8).

Cheminova has production facilities in Denmark and India and has sales offices in 20 countries. Cheminova has approx. 1,600 employees – a number that has been approximately the same the last five years (Cheminova, 2008, p.10). Of the 1600 employees, 800 are employed in Denmark and 800 in subsidiaries and representative offices outside Denmark (Cheminova, 2008, p.9).

Cheminova’s main activity is development, production and marketing of pesticides. The company sees itself as ‘a leading supplier of insecticides and an important supplier of herbicides and fungicides’ (Auriga, 2008, p.18). Cheminova describe its objective as ‘to be the leading innovative global supplier of generic products within the agrochemical industry’ (Cheminova, 2008, p.9). By the term “generic products” are meant active ingredient which are no longer protected by patents. The creation of value is expected to be achieved through optimisation and development of the company’s five key competences: “To identify, develop, register, manufacture and market known plant protection products better than any other company in the industry” (Cheminova, 2007, p.8).

Cheminova describes its recent development as a strong internationalisation with increasing focus on sales via own subsidiaries operating at the different markets. In 1996, the company had subsidiaries in seven countries, representing 47 per cent of plant protection product sales, whereas 84 per cent of sales were handled by 16 subsidiaries in 2006” (Cheminova, 2007, p.9-10).

Cheminova practices increasing co-operation in relation to product and process development (Cheminova, 2008, p. 20). The sales of pesticides is mainly to high income countries (around 50%) and upper middle income countries (around 25%) (Cheminova, 2008, p.11).

Cheminova seeks to justify its business strategy by making references to global problems with starvation and transmitted diseases, when writing: “In Denmark, we do not suffer from starvation or diseases such as malaria - and this makes it difficult for people to understand that, elsewhere, it may be necessary to resort to extreme measures in order to ensure food on the table” (Cheminova, 2007, p.3).

## **5. Cheminova’s CSR practice**

### 5.1 Elements in Cheminova’s CSR system

This section introduces those systems, tools and strategies, which Cheminova’s CSR practice, including their environmental management practice, builds upon.

#### Environmental management systems

Only the Danish and not the Indian production facility are certified in relation to ISO14001 and OHSAS18001 approved. Plan for implementation of these standards at the Indian facility is described as a target for 2011 (Cheminova, 2010). Neither the practice of suppliers and customers of Cheminova is not covered by the two management systems, because Cheminova was advised by a consultant not to do so, because of the difficulties of influencing suppliers and customers and because it would be very easy for Cheminova to get the current practice at the Danish production facility improved.

#### CSR Reporting

Cheminova made its first CSR report in 2007 – covering the year 2006. In the first report the background of start reporting is described as providing information about the current practice in order to make it more legitimate – for example in order to attract potential employees (Cheminova, 2007, p.9) (Cheminova, 2008, p.3). The direct background seems to be the critique of Cheminova in 2006 for producing and selling methyl parathion to Brazil:

“Based on a public debate in 2006 over a number of environmental issues relating to Cheminova’s business activities, it was decided to start CSR reporting” (Cheminova, 2007, p.9). Cheminova finds that “opinion leaders and citizens lack information about how responsible Cheminova is” and sees the strategy to be to provide more information (Cheminova, 2007, p.9). However, Cheminova is at the same time claiming that the reporting is “a natural next step” following what the company “has



previously implemented” (Cheminova, 2007, p.9). The CSR report is also described as a management tool (Cheminova, 2008, p.3).

The CSR report is audited. The auditing company writes about the assurance, which can be obtained from their auditing:

“The obtained assurance is limited as we have not performed a comprehensive review. Our work has - based on assessment of materiality and risk - included inquiries concerning goal attainment, including obtaining documented confirmations regarding goal attainment from the local management of the Group’s sales companies, interviews with selected key managerial employees responsible for the goal attainment and review of selected documentation. We have made inspection visits to the production companies in India and Denmark as well as to the sales company in Brazil” (Cheminova, 2008, p.5). This statement shows that the control included visits to two affiliates outside Denmark.

### Business principles

Cheminova has developed a code of business principles, which have been signed by the different directors, which is seen as an integration of these concerns into the management. The need for such principles is seen as a consequence of the increasing internationalisation of Cheminova:

“Such internationalisation naturally poses a broad range of challenges for Cheminova in relation to mission, objectives and values. Cheminova wants to ensure that the way in which the company is operated is in full compliance with international conventions, local legislation and the management philosophy and values which are promoted in the entire group” (Cheminova, 2007, p.10). The business principles are a summary of existing policies and are not expressing a more ambitious practice than previous.

### Responsibility

The increased role in customer sales through the direct sale at more and more markets is said to imply that “Cheminova feels increasingly responsible for contributing to reducing the risk involved in using the products” (Cheminova, 2007, p.13).

Two of the business principles focus on legal compliance and on environmental protection (Cheminova, 2007, p.10):

- Legal compliance: “to comply with the laws and regulations of the countries” in which Cheminova operates
- Environmental protection: “Environmental impacts are an important factor in connection with the manufacture and sale of chemicals. Responsible behaviour in this area is highly important to Cheminova, which entails that the company strives for continuous improvements in the area”

### Risk reduction

Cheminova believes that it is not only Cheminova who can secure a reasonable risk level in connection to its products: “...task of reaching an acceptable risk level for the users is the responsibility of the local authorities, the individual farmers and the product suppliers and can therefore, for obvious reasons, not be solved by any one company” (Cheminova, 2007, p.18).

Cheminova characterises its activities around the use of products as “product stewardship” based on “risk reduction” (Cheminova, 2008, p.13) and describes its strategy as “to focus in particular on stewardship activities with the most toxic products that, according to WHO’s classification system, belong to class Ia and Ib” (Cheminova 2007, p. 19). Among the areas within which Cheminova has chosen to focus its efforts are:

- Communication of information on the correct use and handling of the products,
- Precise and informative labelling,
- Development and marketing of less toxic formulations,
- Phase-out of class I products in a number of countries.

The development of less hazardous products focuses on microcapsulation of the active ingredient – and not as a phasing out of the active ingredients (Cheminova, 2007, p.17). The principles behind a reduced toxicity are not explained in the CSR report. However the patent for microencapsulation, which is more than 30 years old, explains that microcapsulation implies that microcapsules of the active ingredient are contained within an encapsulating wall or skin of cross-linked polyamide-polyurea by a component which is water soluble, whereby the formulation is said to become less toxic (Microencapsulated methyl and ethyl parathion...,1976).

Cheminova explains that it has chosen to limit its sales of methyl parathion in its most toxic form (class I) to eight countries whereas the product is registered in more than thirty countries (Cheminova, 2007, p.14). Cheminova presents plans for the phasing out of the class I product in Mexico, Brazil, Columbia, Taiwan and Cuba. It will still be sold in countries like USA and Australia. The reason for the choice is not explained but it seems that it mainly is newly industrialised countries with a more poor tradition for environmental and workers’ protection where this type of products are phased out. This kind of efforts may be what Cheminova refers to as “targeted efforts to reduce the risk involved in connection with the use of the company’s products” (Cheminova, 2007, p.18).

### Supplier management

Cheminova has a rather complex product chain structure where it is not easy to get an overview of the chain of actors from production to sale. This was seen in the public debate about the use of methyl parathion which the Danish newspaper Politiken described in articles in 2006 (Thomsen, 2006). Although Cheminova claimed not to sell Class I products, they sold in 2006 a Class I product of another company (Thomsen, 2006). In the same articles it was described how Cheminova claimed only to produce Class I ingredients, which they sold for other companies. However, it turned out that this other company had already stopped selling methyl parathion (Thomsen, 2006).

In the CSR report covering 2006 Cheminova describes that it is aiming at restricting the sales of the active ingredient methyl parathion to companies that manufacture and sell methyl parathion-based class II products such as low-concentrate powder formulations (Cheminova, 2007, p.21).

In 2006, Cheminova had around 900 suppliers of production materials (raw materials, fine chemicals, plant protection products and packaging materials) (Cheminova, 2007, p.32). Cheminova claims that its environmental and social responsibility also extends to its suppliers (Cheminova, 2007, p.32). The elements in the supply chain management are described as (Cheminova, 2008, p.33):

- Supplier code which the suppliers need to accept and confirm compliance with
- A number of audits at suppliers
- Training of purchase responsible

## 5.2 Characterisation of Cheminova's CSR practice

This section characterises the CSR practice of Cheminova, including the environmental management practice, in relation to the principles of legal compliance and risk reduction expressed by Cheminova.

### Transparency

The combination of a big number of suppliers, a supply chain management concept based on communication of Cheminova's supplier code and the supplier's accept of the need for compliance, and a limited number of audits and screenings of suppliers may give a rather limited insight into the actual practice of the most of Cheminova's suppliers.

### Approach to risks

Based on the descriptions in the two reports the script (the understanding) for use of pesticides, which Cheminova bases its business strategy on, can be characterised by the assumption that the following elements all play a role in a safe use of pesticides:

- the active ingredient
- treatment of active ingredient
- the formulation
- the packaging
- the labelling
- the equipment used for mixing, spraying etc.
- the safety gear used by the user
- the knowledge of the user
- the water quality in the area where a product is mixed
- the local climate

However, it is not explained whether the combination of these elements is necessary and, in case so, how this combination is ensured. Cheminova mentions some of the areas as those the company addresses: treatment of active ingredient, information about use of the products, labelling and packaging materials.

Cheminova mentions the small amounts in terms of the weight of the necessary active ingredients (Cheminova, 2008, p.23). However, this understanding of risk is not ensuring low impact, if the active ingredient for example is very persistent.

#### Transnational aspects of environmental management

Cheminova describes the principle of its transnational environmental strategy as “to comply with the laws and regulations of the countries” in which Cheminova operates (Cheminova, 2007, p.10). This kind of strategy is in the literature characterised as “international compliance” (Hansen, 1999).

### **6. Discussion: The shaping of Cheminova practice in Brazil**

Cheminova’s CSR report describes some of the company’s initiatives in trying to implement a responsible practice in Brazil. However, a deeper analysis of such activities suggests a lack of understanding of the Brazilian reality and a reasonable ineffectiveness of the company’s policy. Additionally, other information not presented in the report also indicates the company has attempted to disrupt initiatives of the Brazilian government to improve its pesticide legislation.

Cheminova has organised information activities based on meetings and “field days” in order to support the development of safer use of its products. During these meeting, apart from a video about pesticide handling, Cheminova distributes brochures containing instructions and illustrations (pictograms) explaining the proper use of Individual Protective Equipment (IPE) (Cheminova, 2008, p. 16).

Although the video might have some impact on farmers, the brochures are unlikely to produce important results. Rural workers in Brazil are, in general, low educated and many are illiterate; for this reason, legislation has defined that pesticide labels should present pictograms explaining the risks related to the use of the product and describing how it should be handled. However, a research carried out in the north of Brazil with rural workers showed that more than 75% of the interviewees do not read the pesticide instructions, and all of them were unable to understand the meaning of at least five of the fourteen pictograms used in the labels (for example, to wear gloves, to wear masks, or to keep the product away from children) (Waichman, Eve, & Nina, 2007). Considering this level of vulnerability, written brochures explaining the meaning of each pictogram should not be considered a proper strategy to try to reduce misuse of pesticides.

It could be argued that an intense educational programme could improve the way farmers use pesticides. Although this assumption is partially true, this seems to be a simplistic way to face the problem. Zilberman & Castillo (1994) alert that this problem is complex and only misinformation

should not be blamed for worker's inadequate practice. The authors comment that the level of inconvenience created by the IPE, for example, is a relevant barrier to their use as they are not adequate for tropical climate. The authors reinforce their argument saying that, highly educated people often do not wear seat bells, although well informed about their risks. Therefore, if a company sincerely intends to face the pesticide problem, it must go beyond simple educational campaigns.

In other attempt to minimise the misuse of Class I pesticide in Brazil, Cheminova adopted the strategy to sell such products preferably to so-called professional farmers, as the company mentions in the CSR report: "Class I products based on methyl parathion and methamidophos will not be sold in small containers, and the sale will be limited to professional farmers" (Cheminova, 2007, p.21). However, in this case the company also seems to misunderstand the complexity of pesticide market in Brazil. For example, pesticide aerial application is broadly adopted by "professional" large scale farmers in Brazil because of the size of their properties. However, due to lenient control, farmers not necessarily respect legislation and it is not uncommon to notice pesticide aerial spraying close to houses or water bodies, or the use of more hazardous pesticides as a strategy to reduce the number of applications (Pignati, Machado, & Cabral, 2007). In 2002, a research by the Brazilian Institute of Geography and Statistics indicated that pesticides had contaminated water bodies in 901 municipalities and soil in 1.152 (IBGE, 2002).

Besides these initiatives, which suggest that Cheminova environmental system has not fully apprehended the complexity of Brazilian reality, there are also signs that the company is not taking full responsibility for the intoxication cases that result from the misuse of its products. Cheminova has created an "educative" motto for the field days, which says : "Cheminova is warning: Protective equipment or hospital – you decide" (Cheminova, 2008, p. 16), which is promoted by cartoons such as the one presented in Figure 1. The selected approach suggests that pesticide contamination only results from IPE misuse and that not wearing protective gear is a matter of personal choice. Again, this approach ignores the various realities of rural work in Brazil, such as badly designed IPE, low-educated workers, employers who do not give proper gear to their employees etc. Additionally, Cheminova transfers the full responsibility for the contamination to the workers, instead of taking the responsibility for selling hazardous products in a vulnerable context.

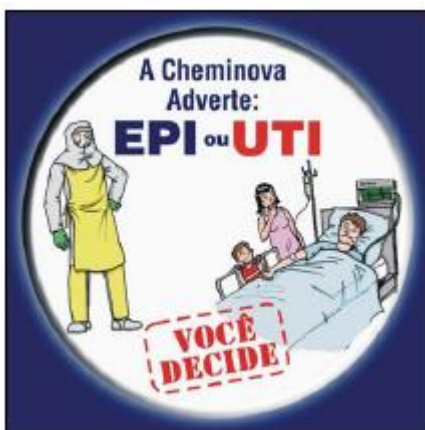


Figure 1: Cheminova's cartoon used during field days

The examples mentioned so far, which are mainly based on Cheminova's CSR reports, suggest that the company's perspective on pesticides can be characterised as a simplistic (or naïve) understanding of the rural reality in Brazil. However, looking at some of the company's behaviour which are not described in the CSR Report, there are other signs which allude to a more aggressive face of Cheminova against the Brazilian process of pesticide reevaluation and contradict the "corporate responsibility" the company claims to follow.

Pesticide reevaluation is a legal process which makes it possible to ban a pesticide whenever research indicates new risks to health or to the environment, less toxic products are developed to replace old ones, or the pesticide effectiveness decreases (for example, when pests develop resistance to its active principle). In Europe, Directive 91/414/EEC created a programme to reevaluate all active substances used in plant protection products. According to the directive, a product cannot be approved for periods exceeding 10 years, and the registration may be reviewed at any time. In the USA, the Environmental Protection Agency is performing a large re-registration programme to ensure that pesticides meet current scientific and regulatory standards. This programme encompasses 1,150 pesticide active ingredients, organized into 613 cases. In the last years, 229 of these cases were cancelled (US EPA, 2008)

In Brazil, the pesticide legislation defines that the Ministries of Agriculture, Health and Environment, within the scope of their respective areas of competency, are responsible for promoting the reevaluation of pesticide registration as the result of any evidence of risks that justify the discontinuation of the use of registered products. This is a crucial process because in Brazil, differently from Europe, pesticide registration does not expire. Consequently, reevaluation is the only instrument to ban pesticides that are obsolete or have less toxic substitutes. ANVISA, on the behalf of the Ministry of Health, has been reevaluating the health risks of pesticides since 2000, and the programme prioritises products with highly acute toxicity, or that are likely to be carcinogenic or mutagenic. When a pesticide is reevaluated, depending on the information gathered, its use might be maintained, restricted or, in extreme cases, banned. The process is performed by agencies of the three ministries and is preceded by a public consultation. ANVISA planned to reevaluate 14 active ingredients in 2008, as a result of new restrictions in the international arena, as well as evidences available in scientific literature.

However, transnational pesticide producers went to the courts to interrupt the reevaluation process. The Japanese Arysta obtained a court decision prohibiting ANVISA to change the registration of pesticides that used acephate as active ingredient (prohibited in Europe in 2003, by Decision of the Commission 2003/219/EC). The Italian Sipcam Isagro went to the courts to try to invalidate the reevaluation of cihexatin (prohibited in Europe in April 2008, by Decision of the Commission 2008/296/EC) and restrained ANVISA to increase restrictions on this pesticide; however the courts did not accept the company's argument and ANVISA was allowed to continue the reevaluation process. In a more aggressive initiative the National Union of Pesticide Producers (SINDAG), took ANVISA to the courts in an attempt to block the reevaluation of nine pesticides (carbofuran, endosulfan, methamidophos, methyl parathion, paraquat, phorate, phosmet, thiram and trichlorfon) but, again, the courts decided that ANVISA should carry forward the reevaluation (Anvisa, 2009).

Cheminova is a member of SINDAG and, in a first moment, did not oppose the initiative against ANVISA's attempt to create safer regulation for Brazil. Additionally, Cheminova, together with four other companies, sent a letter to ANVISA requiring the agency to halt the reevaluation of methyl parathion pressuring the agency not to ban the product. In Brazil, methyl parathion is used in cotton, garlic, rice, potato, onions, beans, corn, soy and wheat. The pesticide was banned in Europe in 2002 by the Commission Decision 2003/166/EC, because the Health & Consumer Protection Directorate-General considered the information provided by companies (Cheminova and Bayer CropScience AG) insufficient to ensure the products did not create considerable risks to operators exposed to the pesticide and non-target insects, birds and mammals (European Commission, 2002). Additionally, methyl parathion has been included in the Annex III of the Rotterdam Convention and is subject to the Prior Informed Consent (PIC) procedure, which means that countries have to make public the legal status of the pesticide in their jurisdiction and decide whether they will allow import of the chemical.

These cases mentioned above suggest that Cheminova is adopting practices that are not adequate for the vulnerable context of the Brazilian reality. Additionally, the company has directly and indirectly (through SINDAG) pressured Brazilian governmental agencies against a reevaluation of a product that has already been banned in Denmark, which implies that Cheminova has tried to hinder an improvement within the protection of health and environment in Brazil. Therefore, it could be argued that Cheminova practices in Brazil do not fulfil the principle of international compliance described by Hansen (1999), despite Cheminova claims they are following the national legislation in the countries where they are operating.

## 7. Conclusion

It is necessary to apply a complex understanding of the shaping of corporate practice in transnational companies. The shaping of corporate practice in a specific context cannot be understood without an understanding of the interaction among the different contexts the company is involved in: pressure can come from home country (Denmark in this case), from market country (Brazil in this case) and from international co-operation (the co-operation between Brazilian and Danish researchers in this case). No context can be seen as a uniform context. There may be conflicts among stakeholders, which the company may face or may try to take advantage of.

The analysis has identified some aspects, which need to be included in an analysis of the shaping of the environmental management practice and CSR practice in a transnational company:

- Intra-organizational aspects of a transnational company
- The role of voluntary management systems like ISO14001 and Responsible Care
- The extent of the implementation of corporate initiatives; e.g. the geographic coverage of an ISO14001 system
- The extent of dialogue with social actors

- The level of transparency: e.g. did Cheminova actually redraw from the legal cases?
- The relation between claimed practice and actual practice. E.g. what should it imply when a company says that it ‘follows the local legislation’? Should the company be expected also to be open to dialogue about future regulation?

The paper has described an analytical model, which not only focuses on the policy and the systems which are in place in a company, but also include measures, output and outcome. Furthermore the analytical model includes analyses of the shaping of the practice as a multi-arena co-shaping process involving local, national and international structures and stakeholders.

## References

Anvisa: Programa de análise de resíduos de agrotóxicos em alimentos. Nota técnica para divulgação dos resultados do PARA de 2008. Accessed Aug 12, 2009, from [http://www.anvisa.gov.br/toxicologia/residuos/resultados\\_PARA\\_2008.pdf](http://www.anvisa.gov.br/toxicologia/residuos/resultados_PARA_2008.pdf).

Akrich M. The De-scription of Technical Objects. In: Bijker, W.E. and Law, J, editors. *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge, MA: MIT Press, 1992, 205-224

Callon M.: Some elements in a sociology of translation: Domestication of the scallops and fishermen of St Briec Bay. In: Law J, editor: *Power, action and belief: A new sociology of knowledge?* Routledge & Kegan, Paul, London, 1986, 196-233

Cheminova: CSR Report Cheminova 2006, Cheminova 2007

Cheminova: CSR Report Cheminova 2007, Cheminova 2008

Cheminova: CSR Report Cheminova 2009, Cheminova 2010

Cox, A.: The art of the possible: relationship management in power regimes and supply chains’, *Supply Chain Management - An International Journal*, 2004, 9, 346-356

Crane, A. & Matten, D.: *Business Ethics. A European Perspective. Managing Corporate Citizenship and Sustainability in the Age of Globalization*, 2004

European Commission. (2002). Review report for the active substance parathion-methyl - SANCO/2665/01-final. European Commission Health & Consumer Protection Directorate-General.

Hansen, M.W.: Cross border environmental management in transnational corporations: An analytical framework, Occasional paper no. 5, 1999, Copenhagen Business School, Department of Intercultural Communication and Management.



IBGE: Pesquisa de informações básicas municipais - meio ambiente. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 2002.

Howard-Grenville, J., Nash, J. & Coglianese, C.: Constructing the License to Operate: Internal Factors and Their Influence on Corporate Environmental Decisions. *Law & Policy*, vol. 30, No.1, January 2008, pp. 73 - 107

Jørgensen, M.S.; Forman, M.: Environmental Management in Product Chains In A. Dwivedi, A.; Butcher, T. (eds.): *Supply Chain Management and Knowledge Management - Integrating Critical Perspectives in Theory and Practice*, Palgrave Macmillan, 2009, p. 288 – 306

Jørgensen, M.S.; Jørgensen, U.; Hendriksen, K.; Hirsbak, S.; Thomsen, H.H.; Thorsen, N.: Environmental management in Danish transnational textile product chains, *Management Research Review*, Vol. 33, No. 4, 2010, pp. 357-379

Latour B. Where are the missing masses? The sociology of a few mundane artifacts. In: Bijker WE, Law J, editors: *Shaping technology, building society*. MIT Press, Cambridge, MA, 1987:225-258

Law J. (ed). *A Sociology of Monsters: Essays on Power, Technology and Domination*. London, Routledge, 1991

Peres, F., Rozemberg, B., Alves, S. R., Moreira, J. C., & Oliveira-Silva, J. J.: Pesticide use reporting in a rural area of Rio de Janeiro state, Brazil. *Revista de Saúde Pública*, 2001, 35, 564-570.

Pignati, W. A., Machado, J. M. H., & Cabral, J. F.: Major rural accident: the pesticide "rain" case in Lucas do Rio Verde city - MT. *Ciência & Saúde Coletiva*, 2007, 12(1), 105-114.

Porto, M.F.S. & Fernandes, L.: Understanding risks in socially vulnerable contexts: The case of waste burning in cement kilns in Brazil, *Safety Science* 44 (2006) 241–257

Sinitox: Casos, óbitos e letalidade de intoxicação humana por agente e por região. Brasil, 2007. Accessed in Aug 12, 2009, from [http://www.fiocruz.br/sinitox\\_novo/](http://www.fiocruz.br/sinitox_novo/).

Soares, W. L., & Porto, M. F.: Estimating the social cost of pesticide use: An assessment from acute poisoning in Brazil. *Ecological Economics*, 2009, 68(10), 2721-2728. doi: 10.1016/j.ecolecon.2009.05.008.

Stranddorf, H., Forman, M., Nielsen, A. and Søgaaard, M.: Miljø-, etik og arbejdsmiljøkrav i tekstilproduktkæden: En udredning om erfaringer, strategier og handlemuligheder (in Danish) (Environmental, Ethical and Work Environmental Demands in the Textile Product Chain: A Survey of Experience, Strategies and Possibilities for Action), 2002, Danish Environmental Protection Agency, Environmental Project no. 681

Thomsen, C.B.: Newspaper articles about the practice of Cheminova in Brazil, 2006, Politiken

US EPA. (2008). Pesticide reregistration facts. Accessed in Aug 13, 2009, from [http://www.epa.gov/pesticides/reregistration/reregistration\\_facts.htm](http://www.epa.gov/pesticides/reregistration/reregistration_facts.htm).

Waichman, A. V., Eve, E., & Nina, N. D. S.: Do farmers understand the information displayed on pesticide product labels? A key question to reduce pesticides exposure and risk of poisoning in the Brazilian Amazon. *Crop Protection*, 2007, 26(4), 576-583. doi: 10.1016/j.cropro.2006.05.011.

Zilberman, D., & Castillo, F.: Economic and health consequences of pesticide use in developing country agriculture: discussion. *American Journal of Agricultural Economics*, 1994, 76(3), 603-604. doi: 10.2307/1243672.