



Executive Summary

Introduction

The textile industry is an important industrial sector in the EU economy, which predominantly consists of SMEs and which currently faces a serious challenge due to the phasing out of import quotas, resulting in accelerating textile imports from China at all stages of textile production (fibres, yarns, intermediates, articles). It is a highly chemicals-intensive downstream user, and chemical substances provide an important source for its innovation capabilities and international competitive advantage. Therefore, the industry could be highly sensitive to potential substance withdrawal and substantial cost increases.

The European Commission service DG Enterprise & Industry, following a recommendation of the High-level Group on the Textiles and Clothing, has therefore agreed to undertake a study of the potential impacts on the textile industry of REACH (Registration, Evaluation and Authorisation of Chemicals), the proposed new European chemicals regulation. The approach and methodology of this study are similar to two REACH impact assessment studies carried out under the umbrella of the Memorandum of Understanding between the Commission and industry following a stakeholders' conference on the Commission's impact assessment of the new chemicals proposal in November 2003.

The Memorandum of Understanding (MoU) between the Commission and UNICE/CEFIC of 3 March 2004 defined the scope of the additional work as covering inter alia an investigation of the impact on the supply chain of substances of critical importance in the context of specific downstream industries and producers. To carry out the work under the Memorandum of Understanding, an Impact Assessment Working Group, containing representatives of industry, trade unions, and non-governmental organisations, has regularly met since April 2004 and discussed the progress of the two studies undertaken falling under the MoU, namely by KPMG for EU15 (inorganics, automotive industry, flexible packaging and electronics sectors) and by IPTS for the new Member States (specialty chemicals). The progress of this specific study on the textile sector has therefore also been presented and discussed in the above-mentioned Working Group.

The objective of the study has been to provide a business case study-based analysis of the likely impact of the proposed REACH chemicals legislation on actual supply chains within the textiles sector. This means that the study has collected factual evidence through in-depth interviews with chemicals suppliers and textile producers on how the introduction of REACH may affect textiles production. The analysis with the obtained business data, very often of a sensitive and confidential nature, has been targeted at identifying the mechanisms by which REACH affects the availability of chemicals of critical importance to a number of the textiles industry's supply chains, notably those of textile finishing. An important aspect of the study has been to identify those REACH mechanisms that potentially affect SMEs. The likely impacts on the profitability and competitiveness of the textiles companies involved in the

case studies have also been evaluated, as well as any workability problems they see themselves confronted with.

Methodology

Although the methodology of the study has been similar to the studies falling under the remit of the MoU, it was necessary to make a few adaptations to reflect particular characteristics of the EU textile supply chains. The methodology document for the IPTS study has served as the basis of the work and as point of reference (IPTS / ESTO study “Guide to the assessment and interpretation of company interviews”, 30 November 2004, discussed in the Working Group).

The set-up of the study has basically been three-fold: first, a desk research which serves as the basis and background of the next two parts of the study; secondly, business case studies focussing on a limited number of textile and chemicals companies (textile chemicals suppliers and textile finishers), linked together through real-life supply chains; thirdly, an economic analysis on the basis of the data and responses of the companies. Below, the consecutive steps of the study are discussed in more detail

(1) Desk research

The desk research has focussed on the use of chemicals in the European textile production, with the help of data provided by the industry associations Tegewa and Euratex, later on supplemented with data from the interviewed chemicals manufacturers. This survey has revealed the complexity of textile supply chains, which includes imports at all stages of production, the wide-spread use in textile production of a large gamma of chemicals, many of them of a specialized nature, and the pivotal role of textile finishing in the European textile sector.

Three remarkable facts have emerged from the survey. Firstly, the consolidated European textile supply chain uses about 1500 basic chemical substances and about the same number of speciality chemical substances, which combine to yield about 15000 preparations (textile auxiliaries and dyestuffs) marketed by chemical suppliers and used in textile production. For the textile chemicals, there is only a limited number of suppliers (around 50), nearly all of them based in Europe. Secondly, the interview data demonstrate that up to 90 % of the specialty chemical substances are produced in low volumes, i.e. below 100 tonne a year. Thirdly, most of the environmental impact of the textile finishing processes is coming from chemical substances contained in the input “grey textile”, most of which is imported from outside the EU, and not from the used textile auxiliaries. For instance, for the environmentally very relevant pre-treatment step within textile finishing a mere 10% is attributable to textile auxiliaries, the other 90% or so to substances from “grey textile”.

(2) The identification of substance groups and the selection of companies

The survey of the textile chemicals has served as the basis to identify six representative groups of substances of critical importance (to the process and/or the effect) for the European textile finishing industry. This selection has been discussed with national textile associations, members of Euratex as well as textile chemicals suppliers, members of Tegewa. Four of these groups have been used to map out actual supply chains and to select specific critical substances for a detailed analysis (for both points, see further below). The other two groups have been held in reserve.

The groups can be characterised by their critical component type or by the catch phrase of the “package” preparation in which the critical component is sold by the chemicals manufacturer. These are:

	<u>“Package” type</u>	<u>Critical component type</u>
1.	Softeners	Fatty acid condensation product
2.	Easy care products	Melamine resins, DMDHEU derivatives
3.	Dyeing carriers	Benzylbenzoate
4.	Cotton dyestuffs	Reactive dyes
5.	Synthetic fibres	Fatty acid esters
6.	General formulation solvents	Glycol(ether)s

The selection of the companies has taken place simultaneously with the selection of the substance groups. The selection has followed the criteria following from the terms of references and the methodology. The industry associations have assisted in finding candidate firms for the case study.

Finally, 13 companies have participated in the study:

- 4 textile chemicals suppliers,
among which 1 SME;
2 firms are located in Germany, 1 in a New Member State and one outside the EU
- 9 textile finishers,
among which 7 SMEs and 2 also importers of Asian textile intermediates;
they are located in the BeNeLux countries, France, Germany, Italy, Portugal, Spain
and one New Member State.

The selection therefore demonstrates variety in location and company size (as required by the terms of reference). All firms have been checked beforehand whether they have a sufficiently wide product and process portfolio, and whether they have the capacity to participate on short notice.

(3) The track down of real-life supply chains and the selection of six critical substances

The next step has been the mapping out of real-life supply chains with the selected substance groups and companies as basis. Due to a number of specific features of the European textile sector, it was possible to identify the actual supply chains through a “short cut” as compared to the methodology of the two studies carried out under the MoU. As the number of textile chemical suppliers is limited as well as the critical components they produce themselves, it sufficed to ask the textile finishers for a list of the textile chemicals they use in their most important production processes or most critical “recipes” (self-made mixtures of textile chemical “packages” of different specialty chemical substances) and about which they can provide the required technical and business data. The consultants could then simply proceed to check with the selected textile chemical firms whether they produce the chemical in question and sell it to the indicated textile finisher.

In this way, it has been possible to fully trace 5 real-life supply chains, involving 6 specific critical substances out of the first 4 of the 6 pre-selected substance groups, tabled under point (2) above. After establishing the supply chain, the handed over technical and business data of the companies have been cross-checked with their business partner in the supply chain.

The selected six critical substances figuring in the five real-life supply chains are:

<u>Substance</u>	<u>Substance group</u>	<u>Tonnage band</u>
1. Fatty acid condensation product A	Softeners	10 - 100 t/y
2. Fatty acid condensation product B	Softeners	10 - 100 t/y
3. Melamine resin	Easy care products	100 -1000 t/y
4. Benzylbenzoate	Dyeing carriers	100 -1000 t/y
5. Reactive Dyestuff “Brown”	Cotton dyestuffs	10 - 100 t/y
6. Reactive Dyestuff “Black”	Cotton dyestuffs	>1000 t/y

Due to reasons of confidentiality, the full (brand) names of the critical substances cannot be revealed.

Important factors in the choice of the six critical substances have been the spread over the already identified critical substance groups, the coverage of the various volume bands and the significance of the substances for their manufacturer and the textile finishers.

(4) The interviews with companies

Subsequently, the participating companies have been visited and interviewed. Beforehand, the questionnaires (derived from those used in the IPTS study) had been forwarded to them. An important part of questions concerned their current situation: their product portfolio and production process (with the opportunity for the consultants to double and cross check the

data already handed over); their market position and economic outlook; their main competitive assets and innovation strategies; the communication within the supply chain and the nature of their business secrets; their competence and capacity to cope with the current environmental legislation.

The interviews continued with questions on the companies' knowledge of and preparedness for REACH; the technical workability of the REACH requirements (registration for the textile chemical suppliers and downstream user obligations for the textile finishers); their direct or indirect reactions to the costs related to the REACH registration, including consortium forming, cost absorption, cost pass-through, cooperation in the supply chain, portfolio rationalisations, decisions to whether or not continue specific production processes and/or market critical products; the impact of REACH on innovation; and the (business) benefits of REACH.

(5) The economic analysis

The economic analysis has been based on the interview results and the business data provided by the interviewed firms on the 6 individual critical substances, such as sales volumes and prices, gross profit margins and pay-back periods. These data are by nature very confidential.

Firstly, the vulnerability of the 6 substances to withdrawal for commercial reasons has been assessed through the so-called Net Present Value (NPV) analysis. This NPV method basically checks whether the discounted flow of gross profit margins can absorb the additional REACH registration costs. The method has been adopted from the IPTS study. The REACH costs are according to the cost scenarios of the ECB called "maximum testing needs" and "average testing needs", also used in the Commission's impact assessment of October 2003 and in the further impact assessment work carried out under the umbrella of the MoU.

Subsequently, the NPV calculations have been subjected to a sensitivity analysis in order to assess the robustness of the results. Key input parameters have been varied to see whether that would lead to different outcomes.

The inputs to the NPV calculations and the outcomes have been discussed with the firms. Specifically, the textile chemicals suppliers have been asked to indicate how they would react to the cost incidence and the indicated vulnerability of the substances; the textile finishers on how they could respond to the various possible actions of their suppliers. One of them was a calculated price increase in case of a full cost pass through. More detailed quantitative market analysis of cost pass through and market responses was not possible on account of flaws in the adopted IPTS methodology and lack of data. Instead, the firms have been queried on their current ability to absorb costs and raise prices.

(6) Reporting activities and feed back collection

The work in progress and the (preliminary) results have been reported on several occasions, firstly to the Working Group, the main task of which has been to guide the studies carried out under the MoU. A Draft Summary Report has been submitted to the Luxemburg Presidency Workshop on REACH on 10 May; the results have been discussed on the basis of a presentation. On a Validation Workshop on 31 May, the results have been presented to and discussed with representatives of textile and textile chemicals companies, with industry association representatives and other stakeholders. The remarks and additional information and suggestions coming from these audiences have been taken into account in the final report.

Impact on REACH on the textile chemical suppliers

1. A high proportion of critical low volume specialty chemical substances are vulnerable to withdrawal from the market. From the sample of 6 substances, only the high volume substance was found to be not vulnerable under all alternative assumptions scenarios. 3 substances were vulnerable under all scenarios and the other 2 were under some scenarios vulnerable. These last 5 critical substances include at least one environmental and consumer friendly substance (benzylbenzoate) that has replaced over the recent years substances with a more negative toxicological and ecotoxicological profile. It is important to recall that up to 90% of the 1500 textile specialty chemicals are produced in volumes below 100 tonne a year, and by a merely 50 suppliers, located in Europe.

The table below gives an overview of the results:

<u>Substance</u>	<u>Tonnage band</u>	<u>Indication of withdrawal risk</u>
1. Fatty acid condensation product A	10 - 100 t/y	Vulnerable
2. Fatty acid condensation product B	10 - 100 t/y	Vulnerable
3. Melamine resin	100 -1000 t/y	Vulnerable
4. Benzylbenzoate	100 -1000 t/y	Vulnerable in some scenarios
5. Reactive Dyestuff "Brown"	10 - 100 t/y	Vulnerable in some scenarios
6. Reactive Dyestuff "Black"	>1000 t/y	Not-vulnerable

2. Vulnerability can often not be mitigated by recourse to consortia building and the use of alternative text methods because many specialty substances are complex due to varying technical grades and (eco)toxicological properties that render ineffectual the grouping of substances or the consideration of these different grades as same substances.

3. Textile chemical suppliers indicated that they wish to keep the functionality of the product portfolio intact. However, as they have indicated to dispose of limited possibilities to absorb REACH costs or to pass them on, some rationalisation of their portfolio will inevitably take place, in particular when entire packages need to be substituted due to the falling out of one or more critical components. The choice between substitution and de-selection will also depend on the expected future sales volumes of the substance concerned. Given the steady decline in European sales volumes of most textile chemicals, there is a particular incentive for manufacturers to accelerate the downsizing of their production through de-selection of clients and specific uses in order to arrive at a lower volume band.

4. Successful substitution of withdrawn substances and the subsequent reformulation efforts of packages of substances and preparations will take them between 1 to 9 months and cost 5 000 to 100 000 Euro per package.

5. These companies also pointed to a number of concerns on communication in the supply chain that will complicate registration of substances such as the current lack of information on imported formulations used in their production process; their rather low expectations on the quantity and quality of the information from their clients on their identified uses; the chemical interactions in the textile finishing process of their products with other chemicals, already contained in the input grey fabric or from other finishing “packages”, which is a problem they feel they cannot assume responsibility for, as it is out of their scope of observation.

Moreover, given the large number of clients and applications which the exposure scenarios of the textile chemicals company are supposed to cover, they perceive a great need for workable exposure categories and practicable IT tools.

6. In the interviews, the companies pointed to the business benefits of REACH which are related to their increase in about the real application conditions of the downstream users. This could have a positive impact on product liability and quality issues which often have to do with incomplete or asymmetric information on downstream user process details.

Furthermore, more knowledge on the specific uses of textile chemicals within textile finishing could trigger new product development on the chemical suppliers' level. However, this benefit may be in conflict with the direct commercial interest of specific textile finishers who need to keep their special application confidential.

Impact of REACH on textile finishers

1. Most textile finishers are SMEs. They are concerned about the availability of critical substances and preparations because their competitiveness depends on innovative uses of many of these specialty chemicals. They have limited financial and human resource capacity to cope with the costs, administrative requirements and required adaptations induced by REACH, either directly or indirectly through the responses of their textile chemical suppliers.

2. As some degree of withdrawal of these critical substances and preparations will inevitably occur, textile finishers will face significant reformulation and process adaptation costs, which they cannot absorb nor pass on their customers because of fierce competition in all textile markets. The indications of the interviewed companies are in line with the sectoral data. Since the year 2000, both the volumes and prices of most textile chemicals and textile products have been decreasing.

3. Reformulation and adaptation efforts will take textile finishers between 3 to 18 months depending on whether they are able or not to keep the functionality intact of the “recipe” they use in their production processes. These time-to-market problems will clash with fashion cycles of consumer textiles and product cycles of the customers of industrial textiles. It should be noted that time-to-market is an important competitive asset for the European textile finishers. The costs per reformulation can run up to 300 000 Euro.

Moreover, the textile finisher fear that the REACH induced rate of required adaptations may pose insurmountable problems. Firstly, they are concerned that there will be a culmination of these efforts and adaptations as the textile chemicals withdrawals are likely to be concentrated at REACH registration deadlines. Secondly, they foresee a permanent strain coming from the REACH-induced changes at earlier stages of textile production which likely will have different lead times.

4. The textile finishers face workability problems with the downstream obligations of REACH, as all the alternatives available to them are potentially costly and/or may affect their competitiveness.

The identification of use to their suppliers will involve substantial costs and human resources, as they make use of a large number of textile chemicals in an even large number of applications. An additional complication is the incidence of a large number of unintended impurities and by-products which are not necessarily known to the textile finisher. However, due to earlier cost rationalisations in textile finishing and the relatively small company size, the textile finishers only have a limited capacity and experience to carry out the required tasks.

A close cooperation with the chemical suppliers to perform these tasks has two serious drawbacks. Firstly, the textile finishers are not guaranteed that the exposure scenarios of their suppliers will cover their idiosyncratic and often innovative use of their textile chemicals. Secondly, the identification of use carries the considerable risk for the textile finishers that they are left with no choice than to convey sensitive information on the use of chemicals to their suppliers. This could seriously affect their market position.

However, textile finishers don't see the notification of use to the Agency as an attractive alternative either to keep their specific use confidential. The reasons are basically the same as before: their own limited capacity and experience, and the shortage of suitable and reliable external experts with the corresponding costs.

5. Firms expect to incur a competitive disadvantage vis-à-vis non-EU competitors through the arrangements in REACH for substances in articles. As this arrangement starts to apply after the registration obligations for textile chemicals made and used in the EU, and has serious workability issues, some of which are specific for textiles, they fear that a level playing field will not be achieved without achieving the intended level of environmental protection. In the first place, article 6 starts to apply after 11 years and 3 months after the start of REACH. That is later than the required registration date of the EU textile chemical substances. Moreover, the threshold of 1 tonne per year is crossed more easily for a EU textile chemical substance than for the corresponding substance contained in an imported article or article type. This problem is aggravated by definition, information and monitoring problems for chemicals contained in imported goods.

6. In the interviews, the textile finishers pointed to the business benefits of REACH which are related to their increase in knowledge about the actual composition of the textile auxiliaries and dyestuffs. This could have a positive impact on product liability and quality issues which often have to do with incomplete or asymmetric information on the chemicals inputs. Furthermore, more knowledge on the composition of specific textile chemicals could make them better comparable and the market for textile chemicals more transparent. This would make the simplification of and the substitution in recipes easier, as well as the negotiations on price and service condition with their suppliers. However, this may conflict with the direct commercial interests of specific textile chemicals suppliers.

Augsburg / Milan, June 9th, 2005

Dr. Dieter Sedlak
EnviroTex GmbH

Francesco Pellizari
CAST Consulting