

The 3rd Meeting of the 2nd Phase of CCICED

**Impacts of Environmental Standards and Requirements
in EU Countries
on China's Textile Industry**

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TABLE OF CONTENTS

<i>Executive Summary</i>	<i>I</i>
<i>1. Background</i>	<i>1</i>
<i>2. Environmental standards and requirements in EU and its members</i>	<i>5</i>
<i>3. Environmental Problems in China’s Textile Industry</i>	<i>15</i>
<i>4. Impacts of EU’s Environmental Standards AND Requirements on China’s Textile INDUSTRY</i>	<i>17</i>
<i>5. Comprehensive Analysis</i>	<i>29</i>
<i>6. Recommendations for enhancing environmental standards and requirements and promoting trade development of China’s textile industry</i>	<i>35</i>

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EXECUTIVE SUMMARY

China has a close trade relationship with the EU. In 1995, the EU became China's third largest trade partner following Japan and USA. Sixty percent of China's exports to the EU consist of textiles, clothing, toys, electrical appliance and leather.

The textile sector is China's principal exporter. In 1997, China's textile exports totaled US\$43.199 billion. China has indeed become one of the leading textile and garment producers and traders in the world.

Since the 1990s, many countries have adopted environmental standards and requirements restricting the use of harmful chemicals in the production of textiles and clothing. Some of these standards and requirements are imposed by laws and regulations. The best known is the *Second Amendments to the Consumer Protection Act* enacted by the German government in 1994 prohibiting the use of azo dyes. The *Fifth Amendments* to the Act came into force in April 1997. Since then, many other European countries have followed suit. In 1996, the Netherlands also enacted a law prohibiting the use of certain azo dyes. The contents of this legislation are similar to the list of banned substances in the German law. Other countries in Europe, such as Sweden, France, Denmark and EU are also in the process of formulating legislation concerning azo dyes.

In addition to mandatory environmental standards and requirements for textiles, there are some ecolabelling schemes imposing environmental requirements for textile products on a voluntary basis. The most well known programs include Milieukeur and Eko of the Netherlands, and Oeko-Tex Standard 100 and Toxproof of Germany.

Generally speaking, the German Act of 1994 forbidding azo dyes and some ecolabelling standards for textiles such as Oeko-Tex Standards 100 are the ones that have the most trade implications. They have had both positive and negative impacts on the world textile trade, imposing a great challenge for textile exports of China as well as other developing countries.

This study focused on the analysis of the impacts of the German legislation prohibiting azo dyes. The original intent of the German law is to protect consumer health rather than protecting trade (so-called green protectionism). From a positive perspective, the German law has to some degree also promoted environmental protection in the textile industry in China. But it has also brought about some obstacles to China's textile trade. Before the law was enacted and during its implementation, Germany did not fully consider providing necessary and relevant information, technical assistance as well as any special treatment to developing countries. To a large extent, these are the factors that have brought about some obstacles to textile exports from developing countries including China.

The study shows that during 1995-1996, the German ban resulted in hardship for to many Chinese textile, dye and dyeing enterprises and trading companies. Their products and exports were impeded because of this ban. Due to many uncertainties and lack of understanding and knowledge of this ban itself, some Chinese producers and exporters had to stop exporting those textile products suspected to contain azo dyes. Their production costs increased greatly because these enterprises have to import dyes from Germany and to pay high testing fees to German designated testing agencies.

After suffering from some losses and high costs, the Chinese textile sector has gradually overcome the difficulties of the trade obstacles created by the German ban through necessary adjustment and adaptation.

With the promulgation of the *Fifth Amendments*, Germany finally announced the required testing standards and methods. A number of testing institutions accredited by the relevant German authorities has been established. This substantially reduces the testing costs and makes Chinese exporters more certain about the product quality required. In addition, progress made in developing environmentally friendly dyes has also helped reduce their production costs. Many companies do not feel the pressure any more, because they no longer use the banned substances.

Nevertheless, this does not mean that all the obstacles have been completely overcome. The domestic production of dye substitutes is far from meeting the domestic demands; many producers still have to pay higher costs to meet the higher environmental requirements. Meanwhile, the list of the banned substances is still growing and many other developed countries are following suit. Therefore, the textile, dye and dyeing sectors in China should pay close attention to the international development in this area, and make great efforts to strengthen environmental management of these sectors in order to gain a better position in the future international competition.

To increase the environmental standards and requirements and promote trade in the textile sector in China, the following recommendations are put forward:

(1) Strengthening environmental standards and requirements and establishing environmental indicators for textile products

Environmental standards and requirements for textile products in China are generally lower than those in the developed countries. To address this issue, China needs to gradually upgrade its environmental standards and requirements for textile and clothing products. In formulating its own standards, China should fully consider internationally accepted standards and specifications, and try to bring its standards in line with those international standards. This will level the playing field for Chinese products entering the international market.

Meanwhile, in revising and improving its product quality standards for textiles, environmental indicators should also be established.

(2) Strengthening environmental management of textile and dye manufacturers to ensure their environmental competitive advantages

The fundamental for the textile and dye industries in China is to improve their environmental performance and strengthen environmental management. Efforts should be made to promote the implementation of ISO14000 environmental management systems and ecolabelling in these sectors, and make ISO 14000 and ecolabelling certification consistent with that of other countries.

(3) Undertaking technology innovation, expending foreign direct investment and actively developing domestic environmentally friendly dye substitutes

Developing domestic environmentally friendly dye substitutes is the key to expand Chinese textile products. This must be done according to the plan, placing emphasis on major difficult technical problems. The government should increase investment to research and development of substitutes and strengthen cooperation with relevant foreign agencies, encourage foreign direct investment and technology transfer in order to promote the domestic production of dye substitutes.

(4) Establishing a mechanism to monitor and publish information and strengthening international exchange and cooperation

China should establish a mechanism to track and to release information on environmental standards and requirements in foreign countries to Chinese exporters. Relevant departments should be designated to closely monitor and collect information on various environmental standards including those for textile and clothing products; and provide such information to relevant exporters in a timely fashion.

China should actively participate in the various activities organized by international organizations so that it will be well aware of the latest development and trend in the environment and trade area. China should be of vigilance about the threat of green protectionism that could impose potential barriers to China's trade and boycott any environmental requirements that violate the WTO principles. Meanwhile, China should participate in international coordination and consultations aimed at harmonizing environmental standards, and seek to obtain mutual recognition of environmental standards and requirements and ecolabelling standards for textile products from as many countries as possible. China should also actively contact foreign standard-setting organizations in order to obtain necessary information and technical assistance.

1. BACKGROUND

1.1 Trade between EU and China

EU has had diplomatic relations with China for 20 years and signed the agreement on trade and cooperation with China for more than 10 years. Since 1994, cooperation between China and EU has developed remarkably. The rapid economic growth of China in recent years has had a huge impact on EU's trade with China. The bilateral trade in 1993 was more than 30 billion ECU; in 1994, 35 billion ECU; and in 1995, up to 40 billion ECU. Since China's reform and its opening-up, EU's trade has grown 13 fold. Meanwhile, China's import from EU has grown from 11% to 15%. The market share of EU in China is much higher than in other Asian countries and regions. In 1995, EU became China's third largest trade partner following Japan and USA. Sixty percent of China's exports to EU are textile, garment, toy, electrical appliances and leather products.

Table 1: Trade between EU members and China in 1996 (million ECU)

<i>Member State</i>	<i>Imports from China</i>	<i>Exports to China</i>
Belgium/Luxembourg	1,755	685
Denmark	635	236
Germany	8,844	5,694
Greece	370	37
Spain	1,565	431
Finland	293	459
France	3,705	1,978
Ireland	221	40
Italy	3,175	2,209
Netherlands	2,233	578
Austria	487	219
Portuguese	183	26
Sweden	847	1,096
UK	5,593	904
Total	29,926	14,592

Source: EU Web site.

1.2 China's trade in textiles

The textile industry is China's traditional pillar industry and a principal exporter. It has contributed a great deal to China's economic development. Since its reform and open-door policy, China's textile industry has been growing at an average rate of 13.7% per year. Between 1978 and 1995, the textile industry generated a total tax revenue of 380 billion yuan,

a total foreign exchange revenue of US\$233.45 billion, or a net foreign exchange revenue of US\$11.05 billion (1996 statistics). In 1995, the textile industry had a total output value of 703.5 billion yuan, or 14.55% of total industrial output value in China, and 5.27% of total industrial tax revenue.

From 1978 to 1994, textiles has remained China's largest foreign exchange generator, making up about a third of China's total exports. During this period, China's textile and clothing exports have grown rapidly. The textile export value jumped from US\$2.43 billion in 1978 to US\$37.97 billion in 1995 with an annual growth rate of 17.6%. The Eighth Five-Year Plan period (1991-1995) was the golden years for Chinese textile exports. In 1992, China's textile exports reached US\$ 20.147 billion; by 1994, the figure was US\$35.55 billion; and in 1995, export of Chinese textile products and clothing reached US\$37.97 billion, bringing in 25.5% of China's foreign exchange income. China's share in world textile trade was also raised from 3% in 1978 to 13% in 1995, and its ranking from 11th to first. In 1997, China's textile exports totaled US\$43.199 billion¹. China has indeed become one of the leading producers and traders of textile and clothing products in the world, and stands a prominent position in world textile trading.

The textile industry in China faces many problems and challenges in the process of transition from the planned economy to the socialist market economy due to the problems of its system, mechanisms and structure. A survey on the economic benefits of the textile sector in 1996 shows that 65% of 3215 state-owned textile enterprises in the first quarter of 1996 suffered losses, with the net loss as high as 7.7 billion yuan. The difficulties that China's textile industry is facing have also constrained its export trade. Because of the recent Asian financial turmoil, China's textile trade has been affected. The statistics of China Customs show that from January to August 1998, the total value of textile and clothing trade was US\$29.065 billion, 2.89% more than that of the same period of the previous year, but the export of textile and clothing products dropped 4.41%.

1.3 Foreign markets for Chinese textile products

China's textile industry is a typical exporting industry - its exports make up one-third of its total production. Since the Eighth Five-Year Plan (1991-1995), China's exports of clothing have surpassed its exports of textile products. By 1995, China's clothing exports reached US\$24.049 billion, making up 63.33% of the total textile and clothing exports. Statistics show that in 1992, the shares of the international markets of four Chinese products ranked number one in the world. They are cotton clothes (11.48%), non-knitted men's coats (11.22%), non-knitted ladies' coats (10.89), and textiles (14.77%). Of these four, textiles still takes the largest international market share among Chinese products.

¹ *China Statistical Yearbook*, China Statistical Publishing House, 1998.

China's textile and clothing products are exported to over 100 countries and regions, 20 of which with an import value of over US\$100 million (1995 statistics). Major importers of Chinese textile and clothing products are USA, Japan, and EU (See table 2 & 3). Hong Kong and Macao are the largest regions to which Chinese textiles and clothing are exported. A considerable portion of these products is further exported to Europe and USA from there.

In recent years, there has been a tendency that China's textile and clothing export markets have shifted from Europe and North America to Asia. However, the export of China's textiles and clothing to Asian countries and regions has overall decreased since the Asian financial crisis. From January to August in 1998, the export value of Chinese textiles and clothing to Hong Kong was only US\$3.19 billion, 10.34% lower than that of the same period in the previous year. Exports to Japan were US\$884 million, decreasing 16.42%; to Korea, US\$499 million, dropping 28.07%; and to the main members of Association of Southeast Asian Nations was US\$507 million, declining 8.65%. Meanwhile, exports of Chinese textile and clothing products to the United States and the EU countries showed a growing tendency. The export to EU was US\$739 million, increasing 14.36% compared with the same time in the previous year.

Table 2: Chinese Textile and Clothing Exports (US\$100 million)

<i>Country (region)</i>	<i>1994</i>	<i>1995</i>
Hong Kong, Macao	127.36	121.49
Japan	73.82	88.61
EU	33.45	31.00
USA	31.61	31.72
Korea	12.22	15.99
Russia	4.91	3.40

Source: China's Foreign Trade Statistics Yearbook, 1996.

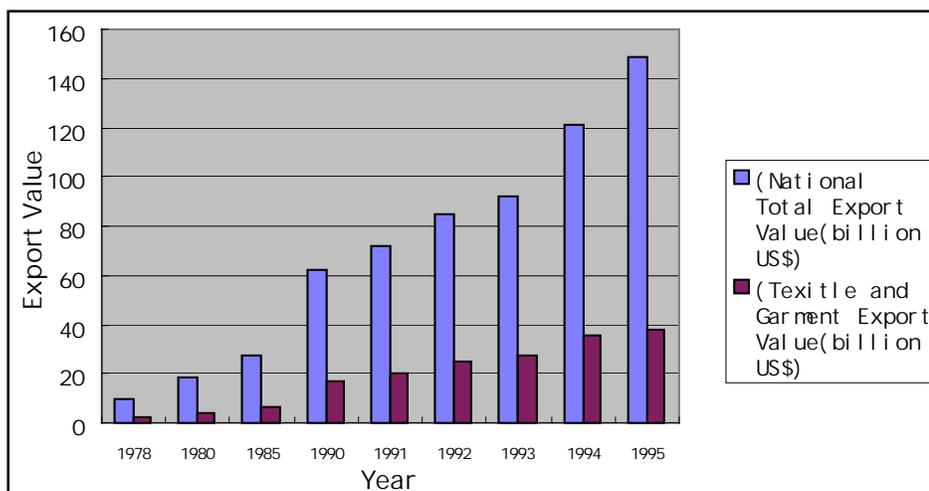


Figure 1: China's textile and clothing exports as compared with total commodity exports (1978 - 1995) (billion USD)

Source: China's Foreign Trade Statistics Yearbook, 1996.

Table 3: Top Ten Exporters of Textiles and Clothing in the World

Textiles			Clothing		
Country (region)	Export	Percentage in total	Country	Export	Percentage in total
Hong Kong	125.7	9.8	China	237.3	17.0
Germany	125.6	9.8	Hong Kong	214.0	15.3
China	118.2	9.1	Italy	125.3	8.9
Italy	108.6	8.4	Germany	66.4	4.7
Korea	106.9	8.3	Korea	56.5	4.1
Taiwan	102.0	7.9	USA	56.2	4.0
Luxemburg/Belgium	68.0	5.3	France	49.7	3.6
Japan	67.8	5.3	Thailand	46.6	3.3
USA	65.9	5.1	Turkey	45.8	3.3
France	62.2	4.8	UK	39.2	2.8
Total	950.9	73.8	Total	937.0	67.1

Source: China Textile Industry Year Book, China Textile Press, 1996.

2. ENVIRONMENTAL STANDARDS AND REQUIREMENTS IN EU AND ITS MEMBERS

China formally became a member of *The Arrangement Regarding International Trade in Textiles*, or the *Multi-Fiber Arrangement (MFA)* on 18 January 1984. As one of the largest exporters of textiles and clothing in the world, MFA has influenced China's textile exports greatly. Although the quota based on bilateral negotiations guarantee a certain amount of exports under the MFA, China's textile exports are seriously restricted by the international textile trading regime, which imposed quotas on more varieties of products. Moreover, these quotas are mainly on those sectors where China has a strong exporting potential. Quota becomes a major impediment to China's textile and clothing exports. In addition, other factors such as problems with China's present foreign trade system, the structure of exporting products and product quality also affect China's trade in textiles and clothing.

In recent years, the increasingly stringent environmental regulations including those for textile products have begun to cause impacts on international trade, in particular trade in textiles. As a highly polluting sector, pollution problems during the textile production (in particular in the processes of dyeing, printing and rectifying) and harmful residues in the finished products have aroused great public concerns. To deal with these problems, some countries have established various environmental standards and requirements for textile products. These standards have caused certain impacts on textile trade.

2.1 Major pollution sources in the textile sectors and their environmental requirements

As early as the 1970s, it was reported that workers responsible for clothing quality control often experienced problems of tearfulness, coughs and other skin allergic reactions. People wearing clothes that did not need ironing incurred skin infection. At that time, however, incidents like these were largely ignored. Since the 1980s, particularly in the late 1980s, along with progress in science and technology and the increased environmental awareness of the public, reports on the potential harm of certain textile products have received a great deal of attention. Now there are more publications expressing criticism and doubts on the harm of textile products to human health.

In modern textile production, processes such as dyeing and rectifying are typical chemical processes, and pollution problems caused in these processes can hardly be gotten rid of. People become increasingly concerned about the pollutant residues in textile products and their harm to human health.

Generally speaking, harmful substances in textiles and clothing products include the following categories:

- Formaldehyde, fluorescent bleacher, and softener (may cause allergies)
- Residues of pesticides, antiseptics, and mold inhibitors in cotton and in wool fiber, such as pentachlorophenol (e.g. PCP)
- Residues of heavy metals
- Residues of azo monomers, formaldehyde, and halide carrier in chemical fiber
- Residues of pesticide and fertilizer used in cotton farming

Since the 1990s, many countries have adopted environmental standards and requirements restricting the use of harmful chemicals in the production of textile and clothing. Some of these standards and requirements are mandatory and imposed by laws and regulations. The best known is the *Second Amendments to the Consumer Protection Act* issued by the German government in 1994 prohibiting the use of azo dyes. In addition, there are a number of ecolabelling standards, the goal of which is to reduce pollution on a voluntary basis. The best known ones are Milieukeur and Eko of the Netherlands and Oeko-Tex 100 and Toxproof of Germany.

2.2 Legislation concerning azo dyes

Until April 1998, only Germany and the Netherlands have enacted laws prohibiting the use of azo dyes in textile products. Other countries in Europe, such as Sweden, France and Denmark are also in the process of formulating legislation concerning azo dyes. The European Union, as a whole, is assessing the need to adopt an EU-wide ban on azo dyes.

2.2.1 The azo ban in the Amendments to the Consumer Protection Act in Germany

On 28 July 1994, the German government issued the *Second Amendments to the Consumer Protection Act*. The law prohibits the use of azo dyes in textile products that have direct skin contact for prolonged periods, such as textile garments (even outerwear) and bath towels (page 1670 - 1671 in the *Act*). These banned substances can be any of the 20 specific cancer-causing aromatic amines that are formed from the azo group decomposition process. The law took effect as on 1 July 1995. Sales of textile products using such banned substances in the dyeing or printing process are prohibited in Germany.

On 23 December 1994, the Federal Congress of Germany passed the *Third Amendments*, which extended the sale and import of azo-related products to 1 April 1996.

On 27 July 1995, the *Fourth Amendments to the Consumer Protection Act* was adopted, adding to the blacklist two more aromatic amines which are suspected by the Health Committee of EU to have cancer-causing effects. This makes the number of banned substances increase to 22. The law is also applicable to pigments based on the banned

amines. The import of textile garments containing the banned pigments is permitted until 31 March 1998. There are a number of defects in the *Fourth Amendments*; it did not provide for standard testing methods, nor the threshold value for the final products.

The *Fifth Amendments to the German Consumer Protection Act* took effect in April 1997. The Amendments contain many specific provisions, including a list of products, which are affected by the azo ban. The German law applies to the following products:

Clothing	masks	rucksacks
Clothing materials	hairpieces	diapers
Bedding*	wigs	panty shields
Towels	false eyelashes	tampons
Beach mats	bracelets**	bandages
Air mattresses	pouches	
Blankets and textiles in close contact with babies and children		
*including pillows and sleeping bags.		
**including other jewellery worn on the skin.		

Source: Environmental Quick Scan Textiles, Sida, CBI, 1998.

Other provisions in the *Fifth Amendments* include:

- Products containing banned azo dyes manufactured or imported by 31 March 1996 can be sold in Germany until 31 December 1998.
- The import of work uniforms, working protection products is prohibited, but can be sold inside Germany after 31 December 1998.
- Products made from recycled fibres can be imported or manufactured until 31 December 1999.
- Products, which contain pigments that may release banned amines, can be manufactured or imported until 31 March 1998, and sold inside Germany until 30 September 1998. Pigments do not fall under the legislation if an azo test proves that they do not split off any of the banned amines.

The German Ministry of Health has now finalized the testing methods for azo dyes in natural and artificial fibers (cotton, wool, silk, viscose). The testing methods for synthetic fibers have yet to be finalized; until then the testing methods for natural fibers can be used as an alternative. A product that contains less than 30 ppm of the banned amine is regarded as a non-azo product.

The German law also stipulated that violating this Act will constitute a criminal offence and will be severely punished. Should a product be found containing the blacklisted substances in sample, the product concerned will be burnt and the importer or producer will be fined.

2.2.2 Legislation concerning azo dyes in other European countries

Since the enactment of the German Act and its implementation on 1 April 1996, it has aroused great attention in many countries, particularly in some European countries and many developing countries.

- Netherlands

The Dutch legislation prohibiting the use of certain azo dyes came into effect in August 1996, containing the same list of 20 cancer-causing aromatic amines in the Germany law. As of 1 August 1996, the Dutch law prohibits the import of clothes, footwear and bedlinen that contain azo dyes in the list. The law allows the sale of textiles containing the banned substances until 1 September 1997. As from 31 December 1999, sales of worker protection wears such as gloves that contain the banned substances and consumer products that are made of regenerated fiber or second-hand clothes will not be allowed to be sold or used. However, the latest research shows that pigments do not release cancer-causing amines under normal conditions. Therefore the final version of legislation concerning pigments did not prohibit use of azo pigments.

- Sweden

Although the draft of Swedish legislation on azo dyes has not been made public, it has been reported that its contents and standards will be similar to that of the German law.

- France

Following Germany and Netherlands, France is also working on the legislation concerning azo dyes in clothes fibers. Pentachlorophenol, formaldehyde and dyes that contain some metal compounds will also be restricted.

- Denmark

Laws prohibiting the use of azo dyes will be adopted soon. The standards will be similar to that of the German law.

- EU

According to the latest information, EU is very cautious in formulating regulations to restrict the use of azo dyes. At present, EU has assessed the risk of some azo dyes in textiles and the potential effects on suppliers in developing countries as the result of such a ban. The result of the assessment will help determine whether a regulation will be promulgated. It is expected that the European Union will adopt legislation concerning azo dyes by amending its Directive 83/189/EEC. The implementation will probably take several years.

2.3 Legislation concerning major harmful substances in textiles

- Pentachlorophenol and its compounds

EU, Germany, Netherlands and Sweden have all passed laws and orders specifying the standards concerning pentachlorophenol residues in textiles. See Table 4.

Table 4: Standards for Residues of Pentachlorophenol and its Compounds in Textiles

	<i>EU</i>	<i>Germany</i>	<i>Netherlands</i>	<i>Sweden</i>
Standard	Maximum 0.1% (by weight), equivalent to 1000 ppm	Maximum 5 mg/kg, or 5 ppm	Maximum 5 mg/kg, or 5 ppm	Maximum 0.1% (by weight), equivalent to 1000 ppm
Source of legislation	Directive 76/769/EEC restricting the sale and the use of certain dangerous substances and their products. Last amended as Directive 91/173/EEC published in the Official Journal of the EC on 5 April 1991.	Chemical Act of 14 October 1993 Part 1, page 1720-1733.	Act of Pentachlorophenol issued on 18 February 1994	Chemical Product Act of 1985. Last amended as KIFS 1992:7 on 1 December 1992
Notes	Applicable to pentachlorophenol and its products	Any imports or traded goods containing pentachlorophenol or salt and any other chemicals containing pentachlorophenol higher than this standard are prohibited.	Any imported and traded goods containing pentachlorophenol or its compounds higher than this standard are prohibited	This is the Swedish legislation implementing the EU Directive.

Source: Environment Quick Scan Textiles, Sida, CBI, 1996

- PCB and PCT

PCB and PCT are not directly related to the textile industry, but sometimes they are used as a textile softener. As PCB is hypertoxic and extremely harmful to the environment, it is listed as the first controlled substance in the EU legislation. It is also strictly controlled by law in Germany, the Netherlands and Sweden.

Table 5: Legislation and Standards concerning PCB and PCT in EU Countries

<i>Country</i>	<i>Source of legislation</i>	<i>Standard</i>
EU	Directive 76/769/EEC of 27 July 1976 on restrictions of the sale and the use of certain dangerous substances and preparations	Any products containing PCB and PCTs, or their compounds higher than 0.005% (by weight) or 50 ppm are prohibited.
Germany	Chemical Act of 14 October 1993, Part 1, Page 1720-1733. Last amended on 6 July 1994.	Any products that contain PCB and PCTs or their compounds higher than 0.005% (by weight) or 50 ppm are prohibited. Sales of any products suspected to contain PCB and PCTs are also prohibited.
Netherlands	Dangerous Substance Act, PCB-, PCT- and Chloroethene Decree of 18 April 1991; Last amended on 16 November 1993, Stb.606	The law prohibits the production, use and import of any forms of PCB and PCT.
Sweden	Chemical Products Act 1985: 835. Amended by the Act on PCB 1985; Last Amended in 1995	PCB and PCT are completely banned

Source: Environmental Quick Scan Textiles, Sida, CBI, 1996

Table 6: Legislation and Standards on Cadmium and its Compounds

<i>Country</i>	<i>Source of legislation</i>	<i>Standard</i>
EU	Directive 76/769/EEC of 27 July 1976 concerning restrictions of sale and use of certain dangerous substances and their products. Last amended as Directive 91/338/EC, Official Journal of the European Communities, 12 July 1991.	Maximum 0.01% (by weight) or 100 ppm
Germany	Chemical Act of 14 October 1993, Part 1, Page 1720-1733. Revised on 6 July 1994. Last amended on 6 July 1994.	Maximum of 0.01% (by weight) or 100 ppm when cadmium is used as stabilizer in textile products of polyvinylchloride.
Netherlands	Dangerous Substance Act issued on 12 December 1990; last amended on 6 July 1993	Applicable to imported and manufactured products. Maximum of 50 mg/kg (by weight) or 50ppm when cadmium is used for surface treatment as pigment or stabilizer.
Sweden	Chemical Product Act of 1985: 835. Last amended 1995	Any products in which cadmium is used for surface treatment as a colouring agent or stabilizer are prohibited.

Source: Environmental Quick Scan Textiles, Sida, CBI, 1996

- Harmful heavy metals

Cadmium is a carcinogenic substance and can be retained in the dyes as a fixing agent. Most regulations concerning cadmium and its compounds focus on the plastic and oil paint products. But the Swedish legislation contains items on cadmium in textiles. In other countries, such as Germany, there is no regulation concerning cadmium in textiles. However, regulations in EU and Netherlands do not specify to which products they applied. Technically speaking, this may mean they are also applicable to textile products (See Table 6).

Nickel may exist in garment accessories, such as buttons and zippers. EU and Germany have regulations concerning the content of cadmium and its chemical compounds in clothes

accessories (See Table 7). In the next few years, the EU regulations will be implemented in all its member countries.

Table 7: Legislation and Standards concerning Nickel in the EU Countries

<i>Country</i>	<i>Source of legislation</i>	<i>Standard</i>
EU	Directive 94/27/EC (the Twelfth Amendments to Directive 76/769/EC on restrictions on sale and use of certain dangerous substances and preparations)	Maximum skin contact: 0.5 $\mu\text{g}/\text{cm}^2/\text{week}$ Nickel and its compounds should not be used in contact with skin. If contact time and frequency is more than 0.5 $\mu\text{g}/\text{cm}^2/\text{week}$, nickel may be released. This standard is applicable to buttons, zippers and other clothes accessories
Germany	German Consumer Protection Act, Part I. 10 April 1992, Appendix 9	Products with skin contact more than 0.5 $\mu\text{g}/\text{cm}^2/\text{week}$ must bear the label stating "This Products Contains Nickel"
Netherlands	Will probably implement the EU regulation	Maximum skin contact: 0.5 $\mu\text{g}/\text{cm}^2/\text{week}$ to skin
Sweden	KIFS 1996:2 issued on 9 April 1996, the Amendments to the Chemical Products Act 1985: 835 and KIFS 1992:7	Implements the EU regulation - maximum skin contact: 0.5 $\mu\text{g}/\text{cm}^2/\text{week}$

Source: Environmental quick scan Textile, Sida, CBI, 1996

- Formaldehyde

The Dangerous Substance Act issued on 26 October 1993 in Germany stipulates that products with formaldehyde content of more than 0.15% (1500 ppm) must bear labels. The latest revision of this Act was passed on 19 September 1994. According to this Act, textiles which may have skin contact and contain formaldehyde of more than 1500 ppm must bear labels stating "This product contains formaldehyde, and users are advised to wash the product before wearing so that skin can adjust to it."

The Netherlands is in a process of formulating the regulation on formaldehyde in bed sheets and other related products. The law will specify the maximum allowable formaldehyde in textiles and may restrict sales of textile products, which contain formaldehyde higher than the maximum allowable content.

The Ministry of Industry and Trade of Finland adopted a regulation on formaldehyde in 1987. Table 8 shows its main contents.

Table 8: Finland Standards concerning Formaldehyde in Textiles

<i>Types of clothes</i>	<i>Maximum allowable content</i>
Products for babies under 2 years old	30 ppm
Textiles with direct skin contact	100 ppm
Textiles with no direct skin contact	300 ppm

Source: Quality and Examination of Clothes for Export, China Textile Press, 1998

2.4. Ecolabelling standards and requirements for textile products

In addition to the aforementioned mandatory laws and regulations, there are several ecolabelling standards concerning textile and clothing products in many European countries. Although voluntary in nature, ecolabelling has potential impacts on international trade, particularly in the textile sector. EU and its member states have a number of ecolabelling programs that have the most rigid standards for textile products. EU has had a region-wide ecolabelling program (Eco Label) since 1992. In April 1996, the Commission of the European Communities established its ecological criteria for the award of the Eco Label to T-shirts and bedlinen. Other ecolabelling programs are either national (such as the Sweden Good Environmental Choice), or private. The private programs are managed by some textile certification institutions with a worldwide application, such as Oeko-Tex Standard 100 and Texproof in Germany.

Table 9: Ecolabelling Standards and Requirements for Textiles in EU and Its Member States

<i>Ecolabel</i>	<i>Certain azo dyes</i>	<i>Formaldehyde</i>	<i>Pentachloro phenol</i>	<i>Pesticide</i>
EU – adult clothes	Forbidden	75 ppm	Forbidden	25 types forbidden
EU – baby clothes	Forbidden	30 ppm	Forbidden	25 types forbidden
Toxproof - non-skin contact clothes	Forbidden	300 mg/l	0.5 mg/l	strictly controlled
Toxproof - skin-contact clothes	Forbidden	75 mg/l	0.5 mg/l	strictly controlled
Toxproff - baby clothes	Forbidden	20 mg/l	0.05 mg/l	strictly controlled
Oeko - Tex 103 - non-skin contact clothes	Forbidden	300 ppm	0.5 ppm	1 ppm in total
Oeko-Tex 103 - skin contact clothes	Forbidden	75 ppm	0.05 ppm	1 ppm in total
Oeko-Tex 106 - baby clothes	Forbidden	20 ppm	0.05 ppm	0.5 ppm in total

Table 9 continued ...

<i>Ecological label</i>	<i>As</i>	<i>At</i>	<i>Pb</i>	<i>Cd</i>	<i>Hg</i>	<i>Ni</i>	<i>Cu</i>	<i>Co</i>	<i>Zn</i>
EU – adult clothes	No use of metals in pesticides, dyes and pigments								
EU – baby clothes	No use of metals in pesticides, dyes and pigments								
Toxproof - non-skin contact clothes (mg/kg)	0.2	0.2	0.8	0.1	0.02	1	20	1	20
Toxproof – skin-contact clothes	0.2	0.2	0.8	0.1	0.02	1	20	1	20
Toxproof – baby clothes	0.2	0.2	0.8	0.1	0.02	1	20	1	20
Oeko-Tex 103 - non-skin contact (ppm)	1.0	-	1.0	1.0	0.02	4	50	4	-
Oeko-Tex 103 - skin-contact (ppm)	1.0	-	1.0	1.0	0.02	4	50	4	-
Oeko-Tex 106 - baby clothes (ppm)	0.2	-	0.2	0.1	0.02	1	25	1	-

Source: Environmental Quick Scan Textiles, Sida, CBI

Table 10: Ecolabelling Standards and Requirements for Household and Furnishing Textiles in EU and Its Member Countries

<i>Ecolabels</i>	<i>Certain azo dyes</i>	<i>Formaldehyde</i>	<i>Pentachlorophenol</i>	<i>Pesticide</i>
EU – bed sheets and pillow covers	Forbidden	75 ppm	forbidden	25 types forbidden
Toxproof - non - skin contact	Forbidden	300 mg/l	0.5 mg/l	strictly controlled
Toxproof - skin contact	Forbidden	75 mg/l	0.5 mg/l	strictly controlled
Oeko-Tex 109,110	Forbidden	300 ppm	0.5 ppm	1 ppm in total
Oeko-Tex 111,112	Forbidden	75/120 ppm	0.5/0.05 ppm	1.0/0.5 ppm in total
Oeko-Tex 114	Forbidden	300/75/20 ppm	0.5/0.05 pp	1.0/0.5 ppm in total

Table 10 continued ...

Ecolabel	As	Sb	Pb	Cd	Hg	Ni	Cu	Co	Zn
EU – bed sheets and pillow covers	no use of metals in pesticides, dyes and pigments								
Toxproof - non –skin contact	0.2	0.2	0.8	0.1	0.02	1	20	1	20
Toxproof - skin contact	0.2	0.2	0.8	0.1	0.02	1	20	1	20
Oeki-TEX 109,110	1.0	-	1.0	0.1	0.02	4	50	4	-
Oeko-TEX 111,112	1.0/0.2	-	1.0/0.2	0.1	0.02	4/1	50/25	4/1	-
Oeko-TEX 114	1.0/0.2	-	1.0/0.2	0.1	0.02	4/1	50/25	4/1	-

Source: Environmental Quick Scan Textiles, Sida, CBI, 1996

3. ENVIRONMENTAL PROBLEMS IN CHINA’S TEXTILE INDUSTRY

3.1 Major pollution problems in the textile industry

The textile industry is a heavy polluter; its major pollution problems include wastewater, waste gas, solid wastes and noise. In terms of total pollution discharge and its impact to the environment, wastewater causes the most serious pollution to the environment, in particular, wastewater from dyeing, which is the fourth largest pollution source among all kinds of industrial wastewater discharge in China.

Wastewater from the textile industry mainly includes wastewater from dyeing, chemical fiber production, wool-washing, linen de-gemming and chemical fiber pulp production. According to 1995 statistics, wastewater from the textile industry totaled 920 million m³, of which 75% is from dyeing. In recent years with environmental management enhanced, pollution has been controlled to some degree. In state-owned dyeing enterprises, 90% of wastewater is treated, with 70% reaching national discharge standard. For village-and-township enterprises, about 50% of wastewater from dyeing is treated, only a small proportion of it reaching national discharge standards because of inadequate management.

Statistics show that in 1995, 1.164 billion tons of wastewater in the textile industry needed treatment, 87.74% higher than the 629 million tons in 1985. There is still a long way to go to control pollution in the textile industry.

3.2 Pollution problems in natural fiber farming and processing

To prevent disease pests and raise productivity, a certain amount of chemicals and fertilizers are needed in cotton farming. However, overuse of chemicals and fertilizers will cause harm to the environment, including polluting water bodies, causing eutrophication of lakes and soil degradation. Moreover, their residues may retain in cotton fiber. Some toxic chemicals and their derivatives are very slow in natural degradation, and may accumulate in the human body through skin contact and harm health. At present, many countries have established standards for the use of chemicals and fertilizers in cotton farming; and some ecolabelling programs have environmental requirements for cotton farming.

China uses a large amount of chemicals and fertilizers in farming (See Table 11). In some regions where crop yield is high, pesticides are applied more than ten times a year and up to 15 kilogram per hectare each time. From 1978 to 1996, China's fertilizer consumption grew three fold.

Table 11: Use of Fertilizer in China over the Past Two Decades (ten thousand tons)

Year	Amount	Year	Amount
1978	884.0	1989	2357.1
1980	1269.4	1990	2590.3
1983	1659.8	1991	2805.1
1984	1739.8	1992	2930.2
1985	1775.8	1993	3151.9
1986	1930.6	1994	3317.9
1987	1999.3	1995	3593.7
1988	2141.5	1996	3827.9

Source: China Statistics Year Book, China Textile Press, 1997.

The processes of making fiber into textiles and clothing, including spinning, weaving, dyeing, printing and rectifying, not only cause problems to the environment, but also retain some residues in the final products. Some residues of dyeing auxiliaries and dye intermediaries on textiles and clothes will cause harm to the human body under certain conditions; for instance, some azo dyes may produce carcinogenic aromatic amines. At present, about 70% of synthetic dyes on the Chinese market are of azo compounds. All widely used dyes such as direct, active, dispersed, positive ion and metal complex dyes contain azo structures. It implies that the azo ban in Germany and other European countries will have tremendous impacts on Chinese dye sectors. In the production of textiles and clothing in China, there also exist pollution problems caused by formaldehyde, pentachlorophenol and some hazardous heavy metals.

4. IMPACTS OF EU'S ENVIRONMENTAL STANDARDS AND REQUIREMENTS ON CHINA'S TEXTILE INDUSTRY

Various environmental regulations and standards concerning textile and clothing have aroused tremendous concern worldwide. Some countries have begun to amend and upgrade their own legislation and regulations, while others are actively doing research in the field. Generally speaking, the most influential ones are the German Act of 1994 forbidding azo dyes and the ecolabelling standards concerning textiles such as Oeko-Tex. These environmental standards and requirements have had both positive and negative impacts on international trade in textiles. They have imposed a great challenge for China and other developing countries.

4.1 Negative impacts

Although the study shows some positive impacts of the European textile environmental standards on China's trade, they have brought about some negative impacts. They include the following:

(1) *Affecting market access of some Chinese textile products in foreign markets*

There are a number of practical examples indicating the effects of the German Act banning azo dyes on Chinese textile exports:

★ *China Xiamen Silk Import and Export Company is a company engaged in import and export of silk products. Its products are mainly sold to EU. In 1992, its export of silk products to EU was US\$5.77 million, of which 880,000 metres are pure silk; In 1993 and 1994, the figures were US\$4.76 million (with 760,00 metres of pure silk) and US\$4.2 million (with 570,000 metres of pure silk) respectively. However, its export in the first four months of 1995 was only US\$530,000. The Company was of the view that the decline was related to the German ban.*

When the Act came into effect in 1995, two orders of the Xiamen Silk Export and Import Company worth of US\$200,000 from Germany (50,000 metres of dye silk worth of US\$100,000 and 40,000 metres of dyed and sand-washed silk worth of US\$100,000) were first delayed and finally cancelled because the products might contain the banned azo dyes.²

★ *In 1995, more than 10 tons of cotton yarn from China Textile Import and Export Company to be exported to Europe were detected to contain azo and was thus prohibited*

² Interview with Yin Xiaolong, President of the company.

from exporting, resulting in a loss of 440,000 yuan.³

★ *Some children's clothes to be exported to an European country by a textile import and export company in Shanghai were found to contain the banned azo dyes and formaldehyde above the maximum allowable amount, and were thus stopped from being exported. The clothes were worth of US\$5 million.*⁴

★ *In 1995, two orders of finished products worth of US\$250,000 to be exported to Europe by Zhejiang Silk Import and Export Company, were dropped because these products did not conform with the environmental requirements in the importing country (mainly those concerning the banned azo substances).*⁵

Formaldehyde is strictly controlled in Japan. The Japanese regulations require that as of 1 January 1995, testing must be conducted on the formaldehyde content in all imported textiles and clothes; in particular, baby clothes must be formaldehyde-free. But formaldehyde is widely used in textiles and clothes in China. Due to lack of information, some Chinese exporting enterprises have suffered tremendous losses, as products exported to Japan were rejected due to the formaldehyde content.

(2) *Increasing production costs of some textile products*

At the early stages when the German Act was issued, the testing methods for the banned substances were not made public. Many Chinese manufacturers were at a loss. Being afraid of severe fines if the banned substances were found, many of them had to use the imported dyes.

When the German Act banning azo dyes was enacted in 1994, it did not specify testing methods and technical indicators required. Instead, Germany authorized an organization (Shanghai Rhine Technology Trading Company) to test products exported from China. Although the Act did not come into effect right after its promulgation, some importers, including those in Germany and other European countries, nevertheless required certificates that confirm the exported products were azo-free. Test fees charged by the Germany-designated Company were very high. For an order of 15,000 metres of silk with approximately 20 to 24 dyes used, the charge was US\$190 per dye. This means that the costs for the order would be as high as US\$4000, or over 30,000 yuan. Xiamen Silk Export and Import Company exported about 800,000 metres of dyed silks to Europe each year; the testing fees for the export would cost them more than 1.8 million yuan.

³ Information from the Division of Cotton Yarn, China Textile Import and Export Company.

⁴ *China Environment News*, July 9, 1998.

⁵ Information from the Department of Finished Products, Zhejiang Silk Import and Export Company.

In addition, after the promulgation of the German Act, The Xiamen Company was concerned that the Chinese dyes might still contain the banned substances. They had to use dyes imported from German, which were about 3 to 5 times higher than the price of domestic dyes. This greatly increased product costs. To their frustration, the Company found that although the German dyes might meet environmental requirements, their colour properties were not satisfactory. In the end of 1995, because of inadequate durability (dry rubbing) of the silk colours dyed with the German azo-free dyes, the transactions of two orders from Italy and Cyprus of US\$620,000 were reduced to US\$320,000⁶.

In order to cope with the German Act and prevent further losses of China's textile exports, in 1995, the Dyeing Division of China Silk Industry Association required all textile-dyeing factories to check their commonly used dyes. At that time the Chinese dyes were not up to foreign standards and there were no unified and authoritative test organizations in China or any other countries. Many Chinese dyeing factories did not know what substitutes and what testing methods to use. Faced with this situation, the Dyeing Division of China Silk Industry Association proposed that all major textile factories, including Suzhou Silk Dyeing Factory, Suzhou No.2 Silk Dyeing Factory, Shanghai No.7 Textile Dyeing Factory, Shaoxing Silk Dyeing Factory and Huzhou Silk Dyeing Factory, use imported dyes manufactured by Bayer of Germany and Ciba and Sanders of Sweden, as they may provide the certificate indicating that the banned azo substances are not used. Products could only be manufactured after the sample was approved by importers. The price of the imported dyes was about 3 - 5 times higher than that of the domestic dyes.

Although this contingent measure was taken to prevent losses such as return of goods, fines or even on-site destruction, the use of expensive imported dyes greatly increased product cost and affected the price and the overall competitiveness of the Chinese products.

(3) *Affecting the Chinese textile dye market*

Among various kinds of environmental standards and requirements, the ban on azo dyes used in dyeing has the most impacts. The ban has not only affected textile and clothing manufacturers and trading companies, but also the dyeing industry, which is an inseparable partner of the textile industry.

● The dyeing industry in China

During the Eighth Five-Year Plan period (1991-1995), China's dyeing industry was growing at an average annual rate of 5%. By 1995, China's total production of dyes was more than

⁶ See Note 3.

200,000 tons, with 1100 factories in Jiangsu, Zhejiang, Shanghai, Tianjin, Hebei and Liaoning. Technology and equipment for dye production has reached a certain level of development. Some advanced technology and high-performance equipment are used in dye production. At present China can produce over 600 types of dyes in 11 categories. Its output is not only sold in the domestic market, but also exported (over 50% of its total output) to over 100 countries and regions.

Statistics from the Ministry of Chemical Industry and National Customs Administration showed that China's production of dyes is growing annually (See Figure 2), from 157,000 tons in 1992 to 242,000 tons in 1995. The dye output in 1996 was 223,000 tons, a bit lower than in 1995. The export of dyes has increased year by year, from 58,000 tons in 1992 to 95,000 tons in 1995. While the production and export of dyes increased, the import of dyes also increased substantially in recent years, from 19,900 tons in 1993 to 28,700 tons in 1996 (Figure 3). The import and export of dyes indicate that the production and sales of dyes in China are moving towards a positive direction, but there exist a number of problems in the structure of products and the compatibility between supply and demand. Domestic dyes in terms of variety, level, and quality cannot meet the requirements. The development and production of environmentally friendly dyes are far from meeting the needs of domestic users.

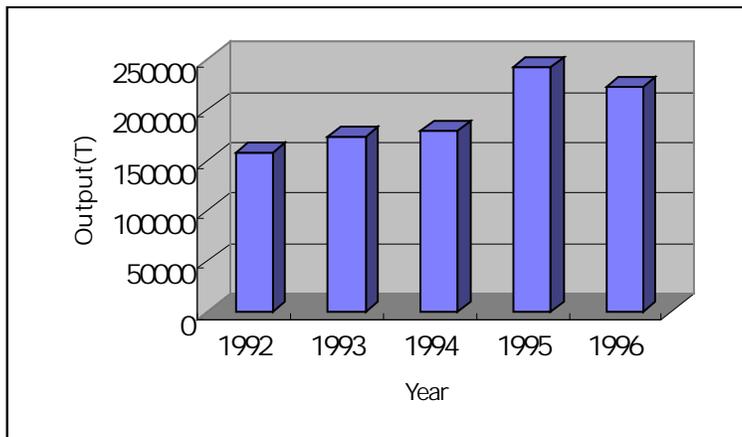


Figure 2: Output of 11 categories of dyes from 1992 to 1996

Source: China Chemical Industry Yearbook, 1992-1997, China Chemical Press

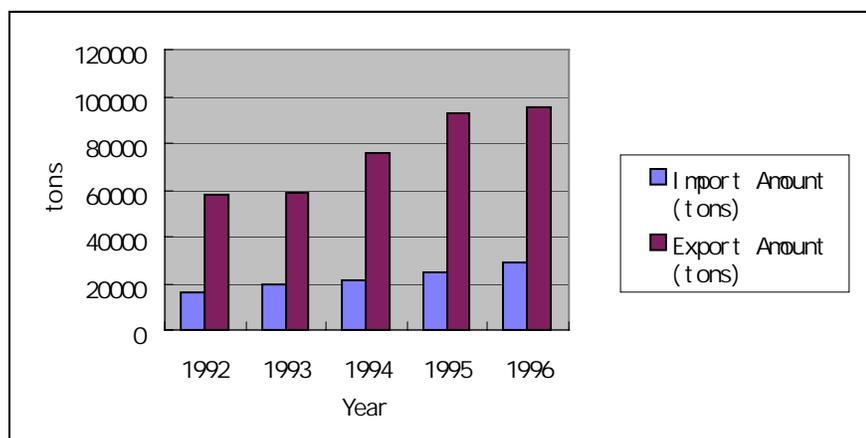


Figure 3: Import and Export of Dyes from 1992 to 1996 in China

Source: China Chemical Industry Yearbook, 1992-1997, China Chemical Press

- Import growth in dyes due to product environmental requirements

The import of dyes in 1989 was about 13,000 tons, amounting to a US\$ 55 million foreign currency expenditure. The import of dyes was increased to nearly 30,000 tons in 1996 with a foreign currency expenditure of US\$134 million. The increased import was caused by many reasons. Except for the fact that industrial policies and market operations are not compatible with modern industry development and thus lead to product varieties, production and sales that are incompatible with market needs, another major problem is that products are mostly at the intermediate and low levels and can hardly meet various needs of users. The emerging environmental requirements including the German azo ban have led to the increase in demand for environmentally friendly dyes by many export-oriented enterprises, which became the most important factor that caused the increase of imported dyes in recent years.

After Germany imposed the ban in 1994 and relevant authorities checked all the domestic dyes against the list of the banned substances, it was found that 104 kinds of dyes being manufactured and used in China fall into the ban. Their output was a fairly larger number. For example, RGFL yellow disperse dye alone had an annual output of more than 6000 tons throughout the country

As Germany did not specify the methods for testing at that time, some producers could not make sure whether domestic substitutes would meet the requirements. In order to avoid potential losses, relevant departments required that all the products exported to Europe use imported dyes. The investigation to textile and dyeing enterprises in Jiangsu and Zhejiang provinces finds that during 1995-1996, the use of imported dyestuff increased from 10% to 40%-50%. According to statistics, the foreign currency used to import dyes in 1996 amounted to US\$134 million, about a US\$1.5 million increase over that of 1994, with a growth rate of 12.5%.

Direct dyes have a wide array of colours including yellow, orange, red, purple, blue, gray and black, the complete colour spectrum. They can be used for dyeing knit, silk, cotton, threads, towels and quilts as well as other textile products. They are widely used due to their convenient application, simple synthesis and low price. Twenty percent of dyes used in the knitwear sector and 15% in the silk sector are direct dyes. So consumption of direct dyes is very big, the second highest after sulfur dyes, and sales of such dyes are also large in China. National statistics showed that 77 out of 118 Germany-banned substances are direct dyes. For two successive years in 1995 and 1996, the import of these direct dyes in China exceeded the export. Thirty-seven categories of direct dyes being produced and used in China have been banned by foreign countries, in particular European countries, accounting for 62.7% of the direct dyes in China in terms of variety, or 30% in terms of total output. The import volume of direct dyes in 1995 and 1996 was about 11,500 tons, costing US\$25,371,100 in total.

4.2 Positive influences

Despite some negative impacts created by environmental standards and requirements in Germany and other European countries on China's textile trade, it should be noted that these standards and requirements have also brought about some positive influences. These include the following:

(1) *Promoting environmental standards for textile and clothing products*

Through twenty years of efforts, China has established a system of environmental regulation and management suitable for its own situation. After having adopted environmental protection as one of its basic national policies, China adopted three major environmental policies, namely the precaution principle combined with prevention and control; the polluter pays principle; and reinforcement of environmental management. China has promulgated 6 environmental laws, 28 environmental regulations, more than 70 environmental administrative rules and 375 environmental standards at the national level, and over 900 pieces of local regulations. However, as a developing country, the environmental infrastructure in China is still weak and the measures for environmental management are inadequate. Environmental standards are very low for some products. For a considerable number of products, there are no environmental standards or requirements at all.

Environmental requirements for textile and clothing products are considerably low. For several decades, there have been no environmental requirements for most of textile products with two exceptions: a maximum amount of 300 ppm formaldehyde is allowed in silk and pure cotton slim cloth exported to foreign markets; and a maximum 500 ppm of formaldehyde is permitted for the award of a ministerial-level "National Excellent Product."

With the increased international environmental agreements and public environmental awareness, particularly emerging environmental standards and requirements for various textile products in foreign countries in recent years, many enterprises in China, in particular many trading companies or enterprises that have trading rights, find it difficult to grapple with this new situation. Since there are no domestic standards and testing methods, Chinese products are in a disadvantaged position.

In 1995, facing the azo ban imposed by Germany and some other European countries for textiles and the restrictions on heavy metal in these products while no domestic standards and testing methods were available, China Association of Textile Industry (now the State Administration of Textile Industry, SATI) formed a task force to research and formulate national standards and testing methods for azo dyes and heavy metal concentration for textile products.

In formulating the testing standards for free ions of heavy metals in textile products, China has drawn upon environmental standards of different countries, in particular the maximum value standard for heavy metals in textile products of Oeko-Tex Standard 100. A testing method of atomic absorption spectrophotometry has been defined. This method is currently under review.

In establishing the Chinese testing method for carcinogenic substances in the dyes, a great number of foreign literature and documents have been considered. Mainly based on the *Provisional Testing Method for Azo Dyes in Textiles* formulated in February 1996 by the German Federal Institute for Consumer Health Protection and the Institute of Veterinary Pharmaceuticals after the German azo ban, as well as the testing conditions in China, China has formulated a testing method by using gas chromatography and gas-mass chromatography. This method is now being reviewed.

Up to now SATI and Tianjin Institute of Clothing Testing have jointly formulated the national standards for formaldehyde in shirts. According to the standards, the content of formaldehyde in finished shirts must be less than or equal to 100 ppm, lower than the EU and Japanese standards (75 ppm) and the same as the Finnish standards. This national standard is being under review, and expected to be adopted in 1999.

(2) *Promoting environmental labelling in the textile industry*

Since the establishment of the Chinese environmental label in 1995, the environmental standards for three categories of textile products have been formulated, namely nature plant fiber textiles, anti-boring textiles and pure silk products.

The technical standards for the natural plant fiber textiles were formulated by considering the

Oeko-Tex Standard 100. According to this standard, the products must be made of natural plant fiber without being dyed. There are also a number of very stringent restrictions on the amount of chemicals allowed in the production process. The products in this category must not be dyed or bleached with chlorine, nor contain chlorophenasic acid and chlorophenolic acid 2,3,5 &6. The standards also limit the use of formaldehyde, content of derivable heavy metals and pH value of overflows (Table 12).

The technical parameters in this standard are the same as those used in the Oeko-Tex standard and in other well-known ecolabels. The difference is that this standard is currently only applied to natural plant fiber textile products. Since such textile products do not go through the dyeing and printing processes, hazardous substances in these products are fewer than those in other textile products. This may mean that such products are easier to comply with the standards. In contrast, standards in other countries are applicable to various textile products and environmental standards for them are undoubtedly higher than those in China. The Chinese standards for natural plant fiber were adopted in August 3, 1998. These and other environmental standards adopted in China show that public environmental awareness is increasing and the public demand for green products are also increasing. Therefore, the environmental standards for textile products are gradually moving close to international standards.

Table 12: Environmental Labelling Standards for Natural Plant Fiber Textiles in China

	<i>Baby products</i>	<i>Products with skin contact</i>	<i>Product with indirect skin contact</i>	<i>Decorative products</i>
Formaldehyde	20	75	300	300
pH	4-7.5	4-7.5	4-9	4-9
As	0.2	1.0	1.0	1.0
Pb	0.2	1.0	1.0	1.0
Cd	0.1	0.1	0.1	0.1
Cr	1.0	2.0	2.0	2.0
Co	1.0	4.0	4.0	4.0
Cu	25.0	50	50	50
Ni	1.0	4.0	4.0	4.0
Hg	0.02	0.02	0.02	0.02

Source: “Technical Requirements for Environmentally-labeled Products”, 1998, published by China Committee for Accreditation of Environmentally-labeled Products

A cotton knitting company that makes bedroom products under Guangdong Provincial Company of Import and Export of Textiles has applied and been awarded the label of Oeko-Tex Standard 100, becoming the first company in China to obtain such a label. This company

has fully considered environmental requirements in their production process and used the imported dyes for their exported products. This has increased the production costs by about 10%, but the quality of the products has reached a higher level. Their products were previously only sold in common supermarkets and at vending stands in European countries. After the Oeko-Tex Standard 100 label was awarded, their products have been put on the shelves of luxury shops and been well received by consumers in these countries.

(3) Promoting research and development of green dyes in China

Seventy-seven direct dyes being used in China fall into the 118 banned substances by the German law, accounting for 65.2% of the total variety of dyes in China. There are 72 dyes containing benzidine and its derivatives. Benzidine used to be an important medium in the dyeing sector and about 50% of the total output of direct dyes use benzidine as the raw material. Its colour spectra are very rich, including red, black, green, gray, and brown. The toxicity of the banned dyes comes mainly from the medium of 22 kinds of aromatic amines, so research on substitute dyes has focused on these amines and the dyes produced by using these amines. The first step is to use a non-benzidine medium to replace the benzidine medium. Meanwhile, research and the development of substitutes for those banned direct dyes, acid dyes and disperse dyes should also be undertaken.

Considering the German azo ban, the wide promotion of the Eoko-Tex Standard 100, and the dilemma that the Chinese textile and dyeing sectors are facing, the authorities for the textile and dyeing sectors in China worked together with the department of commodity inspection in 1994 and 1995 for strategies, solutions, and substitutes for the banned dyes. Their starting point was that the ban should be treated as an important opportunity to increase environmental awareness in the textile and dyeing sectors, to improve the quality of dyes, to expand the market share of dyes and to promote the development of the dyes in China.

Shanghai, where many textile and dyeing enterprises are located, reacted actively to this ban. Led by Shanghai Municipal Economic Commission, Shanghai Dyes Company, many textile manufacturing companies and trading companies worked together to undertake research and development of substitutes.

Up to now, Shanghai No. 5 Dye and Chemical Company has overcome various difficulties and established a production line for a new type of yellow disperse dye with a monthly output of 10 tons. It has also completed the preparation stage for commercialized production of blue disperse dyes. Shanghai Dye and Chemical Plant has successfully developed four kinds of new disperse dyes which can be used to substitute yellow and red dyes banned by Germany and other European countries. These new dyes have been exported to other countries. Shanghai No.9 Dye and Chemical Plant has developed and produced a new D-type direct dye to substitute the benzidine based direct dyes. The sales of the products have grown since it

entered the market. In addition, this plant has also developed new S-type weak acid dyes, which can be used to dye polyamide fiber and wool. A newly developed medium to substitute benzidine will also soon be put into mass production. Shanghai No. 8 Dye and Chemical Plant has also successfully developed two sets of active dyes, which can substitute for the banned dyes used for linen products. It has also developed five new types of ME-type active dyes.

Since 1995, some big foreign companies that manufactured dyes have invested in China; for example, Shanghai BASF Chemical Company, a joint venture established by BASF of Germany and Shanghai Dye Company; Qingdao Ciba Textile Dyes Company Ltd., a joint venture established by Ciba-Geigy of Switzerland and Qingdao Dye Plant; and Wuxi Bayer Dye Company Ltd., a joint venture established by Bayer of Germany and Wuxi Dye Company.

These companies add new life to the dyeing sector in China, bringing advanced production processes and technology and promoting research and development of dye substitutes in China.

Research on substitutes for the banned dyes is a very complicated task. The substitutes must be better than the original dyes in terms of colour properties, durability, environmental requirements and price. Much progress has been made in this field in other countries while China has just made the first step. In recent years, the increasing demand for domestic and international markets for environmentally friendly dyes has accelerated research, development and production of substitute dyes in China. At present, the production capacity of a certain scale of some substitutes has taken shape. This has added new life and brought new opportunities to many textile manufacturing and trading companies.

(4) Promoting product restructuring in the textile dying sector

Despite considerable progress in the development of dyes in recent years, there is a big gap between the level of development in the textile dyeing sector in foreign countries and that in China. There are a lot of problems in the Chinese textile dyeing sector, including uneven development across the country, low quality of products, the duplicated production of common products with low level of technology. This leads to the surplus of such low quality products while good quality and high level new environmentally friendly dyes are in short supply and cannot meet demand. As a result, many users have to pay a price several times higher to import dyes from foreign countries to ensure product quality and to meet environmental requirements of the importing country.

According to statistics, China was using 104 out of 118 dyes banned by Germany in 1994, and 37 out of 77 direct dyes in the blacklist. According to incomplete statistics, China had

nearly one hundred companies producing banned dyes. Although as early as the 1970s, the department of chemical industry had formulated regulations which banned the production of some carcinogenic substances such as benzidine and use of these substances as raw materials to produce azo dyes, this ban was not implemented due to the weak enforcement mechanisms. In the past decade or so, a number of dye manufacturing enterprises, particularly those small village-and-township enterprises, continued to produce and sell these banned dyes in order to pursue high profits. These products still enjoy a certain market share due to their low price.

After the German ban was adopted, China has begun the inspection of the implementation of the Chinese ban in the dyeing sector, focusing on the use of raw materials, the production process and management. Many companies have established the rules that their products will not contain or be derived from carcinogenic aromatic amines. Since environmental standards and requirements are being upgraded in other countries, many exporting companies and enterprises have to pay more attention to the source and quality of dyes they use to ensure that their products will not contain the banned substances. The result will be undoubtedly that the market for the banned dyes will gradually shrink. Therefore, many dye producers have to readjust their product structure, stop the production and sales of those banned dyes, actively develop new dyes, improve the dye quality and try to increase the market share through good quality and more variety of dyes.

(5) Promoting foreign investment in the dyeing sector

Since 1995, some big chemical companies from Germany, Switzerland and some other European countries have come to China to establish large joint ventures to produce dyes. BASF has established a factory in Shanghai to produce pigments and agents, with an annual production of 5,900 tons of pigment, 3,100 tons of positive-ion dyes and 26,000 tons of agents. In addition, a company merged by the two biggest German dye-manufacturing companies, Bayer and Herst, has established a joint venture in Wuxi. Other joint ventures in this sector are listed in Table 13.

Table 13: Foreign Investment in Dyeing Sector in China

<i>Joint ventures and their mother corp.</i>	<i>Time of establishment</i>	<i>Investment (10,000 US\$)</i>	<i>Range of business</i>
Shanghai-BASF BASF, Germany	1993		Producing pigment and textile dyes in 3 phases; in operation since 1995
Wuxi-Dyster Dyster, Germany	1995	1800	Producing high-level disperse and acid dyes with an annual output of 3,000 tons; in operation since the first half of 1997

Dyster Shanghai Dyster, Germany	1995	2180	Producing raw material for oxygenated ion
Qingdao Ciba Ciba, Switzerland	1997	2500	Producing high-level textile dye with an annual output of 3,000 tons
Tianjin-Clariant Clariant, Switzerland			Manufacturing disperse, direct and acid dyes with an annual output of 4,000 tons.
Hoechst Guangzhou Hoechst, Germany	1995	300	Manufacturing mother colour crystals for dyes of synthetic fibers

Source: China Chemical Industry Yearbook, 1994-1997, China Chemical Industry Press

These foreign-funded companies or joint ventures use mature technologies and adequate capital to produce conventional dyes as well as popular ecologically friendly dyes on a large scale. They claim that these dyes do not contain carcinogenic aromatic amines banned by Germany and other ecological labels. They play an active role in upgrading the level of production and management in the Chinese dye sector, improving the dye quality and developing the environmentally friendly substitutes.

Benefit from high environmental requirements---a case in India

Textile and clothing industry is the biggest industry in India. The export from India accounts for 2.6% of the world's trade in textile products and clothing and the revenue from textile trade for 7% of GDP of India. The annual revenue of the textile and clothing products reached US\$ 20 billion.

The German ban has also had a substantial impact on India's export. As indicated by some materials, the export of the products using German-banned dyes accounts for 38% of the total export of textiles and clothing from India. India reacted actively to this ban mainly through legal means and upgrading the capability of adjusting to this new situation. The Indian Ministry of Forestry and Environment announced in March 1995 that the use of 74 categories of azo dyes would be banned nationwide and the import of dyes strictly controlled. In addition, India has established some testing institutions and helped the textile and dyeing companies adjust their product structure by providing domestic and international information and technical assistance.

The Indian Ministry of Forestry and Environment issued on March 26, 1997 a notification which bans the use of azo dye S.0243 (E), which went into force after the date of issuance and was implemented nationwide. In this notification, a list of banned azo dyes was incorporated and adjustment was made to the previously banned dyes.

Century Textile Industry Company Ltd. based in Bombay, India, is the biggest textile company in India.

The high-quality cotton textiles it produces are exported to OECD countries and other Asian countries. Since 1975, its export volume has been increased 100 times. The export revenue during 1996-1997 reached \$81 million US. Faced with German and domestic bans, this company adopted measures to enable its products to pass the accreditation of the German Eco-Tex label in January, 1995 and became the first company in India to pass the accreditation of such a label.

The accreditation increased the cost of the product of this company by 10%-15%, but expanded the market of the products. One year after the accreditation was given, the market share of this company has been expanded by at least 10% and an extra benefit achieved by 8%-10%.

The experience of Century Company shows that the companies from developing countries can benefit from the increasing environmental requirements.

5. COMPREHENSIVE ANALYSIS

5.1 WTO/GATT rules concerning trade and environment

With increasing international trade competition and globalization of environmental issues, the issue of environment and trade has increasingly become one of high concern for the international community. The WTO Committee on Trade and Environment, established in 1995, was mandated to address issues such as how to coordinate the relationship between environment related trade measures and trade related environmental measures to enhance sustainable development, impacts of environmental measures on market access, in particular on the developing countries. Although there was no special agreement on environmental issues in the final package as the result of the Uruguay Round negotiations, environmental issues were covered in the basic WTO/GATT principles and other related agreements.

The new WTO Agreement on Technical Barriers to Trade (TBT) stated:

“Recognizing that no country should be prevented from taking measures necessary to ensure the quality of its exports, or for the protection of human, animal or plant life or health, of the environment, or for the prevention of deceptive practices.”

“Recognizing that the contribution which international standardization can make to the transfer of technology from developed to developing countries;”

“Recognizing that the developing countries may encounter special difficulties in the formulation and application of technical regulations and standards and procedures for assessment of conformity with technical regulations and standards, and desiring to assist them in their endeavors in this regards.”

Article 2.2 of the TBT further specifies:

“Members shall ensure that technical regulations are not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade. For this purpose, technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfillment would create. Such legitimate objectives are: national security requirements; the prevention of deceptive practices; protection of human health or safety, animal or plant life or health, or the environment.”

Issues concerning transparency, technical assistance and special treatment to developing countries are provided by the TBT.

If the technical regulation or standard may have a significant effect on trade of other Parties, Parties shall:

- publish a notice in a publication at an early stage, in such a manner as to enable interested parties to become acquainted with it, that they propose to introduce a particular technical regulation or standard (Article 2.5.1);
- notify other Parties through the GATT secretariat of the products to be covered by technical regulations together with a brief indication of the objective and rationale of proposed technical regulations (Article 2.5.2);
- in regard to standards, allow reasonable time for interested parties in other parties to make comments in writing, discuss these comments upon request with other parties and take these written comments and the results of these discussions into account (Article 2.5.5)

Article 11.3 provides:

“Members shall, if requested, take such reasonable measures as may be available to them to arrange for the regulatory bodies within their territories to advise other members, especially the developing country members, and shall grant them technical assistance on mutually agreed terms and conditions regarding:

- *the establishment of regulatory bodies, or bodies for the assessment of conformity with technical regulation; and*
- *the methods by which their technical regulations can best be met.”*

Article 12.3 further specifies:

“Members shall, in the preparation and application of technical regulations, standards

and conformity assessment procedures, take account of the special development, financial and trade needs of developing country members, with a view to ensuring that such technical regulations, standards and conformity assessment procedures do not create unnecessary obstacles to exports from developing country members.”

The general principle from the above provisions is that all the Parties, on one hand, have the right to formulate and implement the environmental policies and measures to prevent environmental pollution and maintain public order; on the other hand, these measures should not impede the normal operation of the multilateral trading system and result in disguised means of trade protection. Moreover, transparency of legislation, necessary information, technical assistance as well as special treatment to developing countries should be fully considered.

For a very long period of time, there has been an irrational international economic order. The economy of developed countries has grown on the basis of long-standing exploitation and use of the world's resources at a very low cost. They exploit cheap natural resources and labour force and make their own countries prosperous. They now pursue a high quality of living and increasingly high environmental standards with advanced technology, while developing countries are still struggling for their survival. Exports of developing countries are dominated by primary and processed goods; they do not have adequate funds and capacity to conduct new scientific research and develop new technology. Their environmental requirements are inevitably lower than those of the developed countries. Historically the world economic order has for long given rise to substantial differences between developed and developing countries on many issues. Among them, the issue of different environmental requirements and standards is one of the most important focal issues between the North and the South.

Due to the differences in the level of development, the level of technology and environmental awareness, environmental standards in developed countries are generally higher than those of developing countries. Some developed countries adopted unilateral environmental measures and imposed higher environmental requirements for various purposes. Their departure points vary. One motivation may be for environmental purpose, which is aimed at protecting the environment and human health. This is a new trend in world trade development and shows that people's environmental awareness worldwide is increasing gradually. Another intention is to use environmental measures as an excuse for limiting the trade of some products and to protect certain industries. Because these unilateral measures lack transparency and scientific basis, policies formulated and implemented reflect a great degree of randomness. Therefore these measures may easily impede international trade and affect the market access of the products from developing countries.

Many international organizations and forums have made active effort to coordinate the issues of trade and environment worldwide. Chapter II of the Agenda 21 clearly states:

“The international economy should provide a supportive international climate for achieving environmental and development goals in the following ways:

- *promoting sustainable development through trade liberalization;*
- *making trade and environment mutually supportive;*
- *providing adequate financial resources to developing countries to deal with international debt;*
- *encouraging the economic policies conducive to sustainable development.*

Governments should continue to strive to meet the following objectives:

- *to promote an open, non-discriminatory and equitable multilateral trading system that will enable all countries-in particular, the developing countries to improve their economic structures and improve the standard of living of their populations through sustained economic development;*
- *to improve access to markets for exports of developing countries;*

All countries should implement previous commitments to halt and reverse protectionism and further expand market access, particularly in area of interest to developing countries.”

5.2 Comments on the German ban and its impacts on foreign trade in China's textile sectors

Azo dyes are used as leading colouring agents in the textile industry, especially in developing countries. The German ban on azo dyes aroused the international community's attention once it was issued. The German legislation was contested in the European Court of Justice, as the ban was thought to constitute a trade barrier. More strong responses came from developing countries. Major textile exporting countries, such as China and India, were mostly concerned that the ban would affect market access and competitiveness of their textile exports.

According to the TBT, it is clear that the German ban was issued to protect public health. A number of studies have demonstrated that certain azo dyes could release certain carcinogenic and toxic aromatic amines, which would do harm to human health. Of various toxic dyes, the most problematic ones are azo dyes. Some azo dyes are found to have chronic toxic effects. Generally speaking, the original intent of the German legislation is to protect consumer health rather than protecting trade, so called green protectionism. This has been accepted in general by the international community. Nevertheless, some countries in formulating regulations concerning azo dyes have taken a more cautious approach, as the long-term effects of certain azo dyes on human health and the environment are still not clear. For instance, EU is still assessing the risks of azo dyes in textiles. The result of the assessment will form the basis of whether the EU-wide regulation should be adopted.

Although TBT ensures the right of states to protect public health, it also requires countries to follow the principles of transparency, openness in formulating rules and providing necessary technical assistance to other countries and special treatment to developing countries. The study finds that Germany neglected some of the important aspects of TBT, such as transparency, consultations with major exporting countries, and providing necessary technical assistance.

Moreover, the German ban is inadequate itself. It was amended three times, and the *Fifth Amendments to the Consumer Protection Act* was promulgated in April 1997. The *Second Amendments* issued in July 1994 prohibited the use of 20 categories of carcinogenic aromatic amines by 1 January 1995, and banned the sales of textile products dyed and printed with these harmful dyes in Germany by 1 July 1995. However, when the ban was adopted, Germany did not specify the standard testing methods and the thresholds for the testing results. The fact that the act was amended three times within two years indicates the ban itself was inefficient. The ban was a very immature act when it was first introduced. It was due to its immaturity and uncertainty that influenced international textile trade, in particular exports from developing countries.

Although the ban was revised during 1995-1996 and did not actually come into effect until the *Fifth Amendments* were adopted, many German textile importers nevertheless required exporters to provide the certificate of azo-dye-free for their products, because these importers were afraid the imported goods, if found to contain the banned dyes, might be impeded in the German market due to this ban.

Before the *Fifth Amendments* came into existence, many Chinese exporters were greatly troubled by the fact there were no standard methods for testing and no thresholds for the final tested products. Many manufacturing enterprises could not be certain whether their products to Europe could meet the requirements of the importing countries until the *Fifth Amendments* provided the final testing methods by the German Ministry of Health. A threshold of 30 ppm per banned amine was also provided. A product that contains less than or equal to this threshold is considered a non-azo product. Before the *Fifth Amendments*, some exporting companies in China suffered losses, as they could not be certain whether their products contained azo dyes or not. They had to pay higher costs for imported dyes and for testing so as to avoid unnecessary losses during 1995-1996.

Despite that the original intent of the German ban was positive and legitimate, as it aims to protect human health, it has nevertheless brought about some obstacles in international trade, especially to exports from developing countries including China. Before the legislation was adopted or during its implementation, Germany did not fully consider providing necessary and relevant information and technical assistance to China or other

developing countries. Meanwhile, special treatment to developing countries was not considered either.

According to the investigation of China's major textile exporting companies, during 1995-1996, the German ban caused great pressure to many textile, dye and dyeing enterprises and trading companies in China, as their products and exports were impeded because of this ban. Due to many uncertainties of the ban itself and lack of understanding and knowledge of this ban, some producers and exporters in China had to stop exporting the textile products containing azo dyes. The competitiveness of some products was weakened due to the increased costs as a result of this ban.

After suffering from some losses and high costs, the Chinese textile sector has gradually overcome the difficulties of the trade obstacles created by the German ban through necessary adjustment and adaptation.

With the promulgation of the *Fifth Amendments*, Germany finally announced the required testing standards and methods. The textile and dye sectors and the commodity inspection authorities in China responded actively and tried to turn the ban into opportunities to improve their products, expand market share and upgrade environmental management in these sectors. The commodity inspection authorities both at national and local levels, such as in Shanghai, Guangdong, Shandong, Zhejiang, Jiangsu, Hunan and Liaoning, have established a number of testing institutions that have been accredited by Germany. This substantially reduces testing costs and makes exporters feel sure about the required quality of products. In addition, progress made in developing and use of some environmentally friendly dyes has helped reduce the product costs. Through a survey of some Chinese trading companies, the study finds that many companies no longer feel the pressure. Even though German and other European importers all require non-azo-dye products in general, Chinese enterprises do not use the banned dyes any more.

However, this does not mean that all the obstacles have been completely overcome. The domestic production of dye substitutes is far from meeting the domestic demand and many producers still have to pay higher costs to meet the higher environmental requirements. Meanwhile, the list of banned substances is still expanding and many other developed countries are following suit. Therefore, the textile, dye and dyeing sectors in China should pay close attention to international development in this area, and make great efforts to strengthen environmental management of these sectors in order to gain a better position in future international competition.

6. RECOMMENDATIONS FOR ENHANCING ENVIRONMENTAL STANDARDS AND REQUIREMENTS AND PROMOTING TRADE DEVELOPMENT OF CHINA'S TEXTILE INDUSTRY

Based on the investigation and analysis of this study, although the purpose of the azo ban is to protect human health, the ban has nevertheless brought about some obstacles to China's trade in textiles, due to the differences in environmental standards and in levels of development between China and the European countries.

To enhance the environmental standards and requirements and promote Chinese textile exports, the following recommendations are put forward:

(1) Strengthening environmental standards and requirements and establishing environmental indicators for textile products

Environmental standards and requirements for textile products in China are fairly low in general. In fact, there are no environmental requirements for many textile products. Facing increased environmental awareness and environmental standards worldwide, the quality of products based on environmental factors has become an important element to capture the international market. To gain competitive advantage in the international market, China should gradually upgrade its environmental standards and requirements for textile products, and improve the environmental image of enterprises.

In formulating its own environmental standards, China should draw on internationally accepted standards and regulations, make its standards in line with those internationally, and to provide a level ground for Chinese products to compete in international markets. However, environmental requirements vary greatly due to the levels of economic development. When formulating environmental policy, the level of the country's development and its environmental infrastructure should be fully considered. It is not desirable to set up an unachievable goal and create great pressures to domestic enterprises.

Meanwhile, in revising and upgrading product quality standards, environmental indicators should be established for textile exports. Considering China's real situation, high environmental standards will create burdens for enterprises within a certain period. Therefore, it is not desirable to establish the once-for-all environmental indicators for textile products. Certain transitional environmental standards can be adopted. By so doing, enterprises would feel less pressure. Enterprises may be required to take steps towards higher environmental standards and to gradually meet international standards.

(2) Strengthening environmental management of enterprises to ensure their environmental competitive advantage

The textile industry is a sector that has serious pollution problems. In order to increase the competitive advantage of textile products and meet the demands in the international market, strengthening environmental performance and environmental management is fundamental for Chinese textile and dyeing manufacturing enterprises.

The textile industry in China is a typical export-oriented sector. Currently there are three Chinese textile companies that have been certified for ISO 14000. As the international demand for environmentally friendly products grows, the image of Chinese textile enterprises must be improved to avoid losses that may result from green measures. It is of significance to promote ISO 14000 in the textile industry, particularly in large exporting enterprises.

Few textile products have been included in the Chinese environmental labelling program. Except for undyed silk products, no ecolabelling standards have been established for dyed textile and clothing products. While formulating such standards, priority should be given to those products with a close skin contact and baby products. Such criteria have been used in awarding ecolabels in other countries, and these ecolabelled products have enjoyed a rapid growth. China should apply its environmental label to its key textile products with the aim to increase the market share of products bearing environmental labels. It should also make its ecolabelling certification consistent with that of the international community, and establish the mutual recognition mechanism with foreign countries, so that potential trade barriers can be avoided. Meanwhile, the environmental label and its products should be publicized through various means and channels to increase public awareness and acceptance of environmentally labelled products.

(3) Undertaking technology innovation, expending foreign direct investment and actively developing domestic environmentally friendly dye substitutes

Developing domestic environmentally friendly dye substitutes is the key to expanding China's textile exports.

Research and development of dye substitutes has started in China, but is still far from meeting the demand of various domestic users. Researching and developing dye substitutes is a complicated task. To ensure that substitutes are at the same level or above that of original dyes in terms of colour properties (e.g. luster, process conditions, dyeing rate, fixing rate, evenness of dyeing and appearance), colour strength, environmental standards and price, research and development have to be done according to the plan. Emphasis should be placed on key difficult technical problems.

Relevant scientific research institutions in textile and dye sectors should strengthen their research and development of environmentally friendly substitutes. The government should increase investment to tackle key difficult technical problems. It should strengthen cooperation with foreign institutions and attract foreign investment and technology to promote domestic production of dye substitutes.

There are a number of joint ventures in the textile and dye sectors in China already. Efforts should be made to expand the scale and the area of foreign investment. Special emphasis should be placed on encouraging environmentally friendly technologies and products.

(4) Establishing a mechanism to monitor and publicize relevant information and strengthening international exchange and cooperation

Lack of necessary information is a major factor in causing trade difficulties for China's textile exports. There is a need to establish a mechanism to track and release information in foreign environmental standards and requirements to Chinese exporters.

The Information Research Center under the State Administration of Import and Export Commodities Inspection or other relevant departments should closely watch for new development of environmental standards and requirements for various products including those for textile products. If there are any new developments and relevant information, they should be provided to Chinese exporters in a timely manner such as through the Internet or other channels. Chinese exporters, especially export trading companies, should be widely informed of relevant information. This will help raise their awareness of trade and environmental issues and avoid any possible risks and losses.

Environment and trade issues have become one of high concern to the international community. China should actively cooperate with other countries to strengthen cooperation in this field. In the meanwhile, China should actively participate in the various activities organized by international organizations and institutions to be aware of the latest development trend in the area of trade and environment. At the same time, China should maintain vigilance to any negative impacts of potential green protectionism on Chinese foreign trade and boycott any illegitimate environmental requirements that violate the WTO principles.

In international exchanges, China should make it clear that sustainable development is a basic principle it pursues. This may enhance the understanding of the international community on China's efforts towards the integration of trade and environment. China should participate as much as possible in international coordination and negotiation aimed at harmonizing environmental standards to obtain mutual recognition of environmental standards and

requirements and ecolabelling environmental standards for textile products from as many countries as possible. China should actively contact foreign standard-setting organizations to obtain necessary and relevant information and technical assistance. As a developing country, China should be given a certain transitional period to implementing environmental standards before it can meet international standards.

(5) Strengthening capacity building, increasing environmental awareness and understanding of trade and environment issues of relevant personnel, and strengthening information exchange

Although public environmental awareness has generally increased in China, some management departments and companies lack necessary awareness and understanding of environment and trade issues. Their inadequate understanding of increasingly stringent environmental requirements in foreign countries and the increasingly strong international market competition has resulted in unnecessary losses to companies and to the country.

Take the German ban as an example, although the government gives high attention to this issue by issuing notices to relevant trading companies and manufacturing enterprises requiring them to strengthen their management of use of dyes and by establishing testing agencies to ensure the compliance with the requirements of importing countries. Some enterprises, due to lack of adequate understanding of the German law, still exported their products without going through necessary testing. They could consequently suffer penalties from Germany.

In 1997, the Silk Testing Center in Suzhou received over 700 samples for non-azo testing from more than 200 companies from Jiangsu, Jaingxi, Henan, Anhui, Fujian and Sichuan. The results showed that 17.1% of cotton cloth, 35.8% of silk, 10.2% of mixed textiles, 2.9% of chemical fiber and 25.0% of sticky glues contained banned substances and did not meet the non-azo requirements. If all these products had been exported without testing, the manufacturers would have been severely fined. They might have either been returned, or been burned on-site, or the importers been given huge fines. Such losses could be avoided if necessary testing is properly done.

Therefore, there is a need to increase environmental awareness and understanding of environment and trade issues of relevant personnel, through information publicity, training and workshops, to learn from foreign experience and to strengthen cooperation and exchange with foreign institutions.