IMPACT OF THE EUROPEAN RESTRICTION OF CHEMICALS MEASURE (REACh) ON THE THAI TANNING INDUSTRY

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ABSTRACT

The focus of this study was to investigate the opinions of Thai tanners on the impact of the European restriction of chemicals measure (REACh) in order to find out the actual position of the Thai Tanning Industry on this matter. The research was a cross-sectional survey intended to describe the opinions of Thai tanners on the legislation and the impact of REACh on product, production process, sales, and marketing. The total number of subjects was 100 respondents from two Tanning Industrial Zones in Samutprakarn province. The Statistical Package for Social and Sciences (SPSS) program for Windows was used to analyze the data and descriptive statistics were applied to analyze the frequency, percentage, mean, and standard deviation.

The results revealed that REACh adaptation caused changes in the production process. New techniques were required for developing new chemical formulas according to REACh's requirements. The manufacturers had to switch to new suppliers for materials supports. REACh also increased production process, lead time and production costs, which affected product price. Moreover, it did not improve product quality or enhance sales and marketing. On the other hand, it increased the burden for the industry, both in terms of cost and time, which affected production and operation efficiency. Thus, the advantageous factors of the industry decreased, which affected competitiveness. Small factories appeared to suffer more from REACh adaptation due to lack of capital investment. In that respect, REACh was viewed as an inappropriate regulation, both in content and the imposing time. On the positive side, REACh forced manufacturers to improve their products and techniques, which will enhance their competitiveness and benefit them in the future.

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CHAPTER ONE
INTRODUCTION

1.1 BACKGROUND

Thailand's leather industry has played a major part in Thailand's economy for more than three decades and established itself as one of the top producers in the world. It was one of the 13 industries in the government's trade promoting plan of The Bangkok Fashion City Project.

The leather and footwear industry depends greatly on the support from the local tanning industry. There are 148 factories and 138 tanneries located in the Industrial Zone at Km. 30 and Km. 34 on Sukhumvit Road, Samutprakarn province. The rest are scattered around the country in Khonkaen, Chiengrai, Naan, Prae, Samutsakon, Chumporn and Ubonrajthani. The industry employs 11,000 workers with approximately 90 million square feet in production per year. Thai tanneries can be categorized by production capacity as follows: small factories, employing 1-50 workers, with capacity per month of less than 100,000 square feet, medium-sized factories employing 50-100 workers with capacity of 100,000-500,000 square feet per month, and large factories employing 100 or more workers, with more than 500,000 square feet per month in capacity. The cost structure of leather production includes raw hides at 60%, chemical substances at 20%, labor at 10%, and others at 10%. The main raw materials are raw hides and chemical substances. 90% of raw hides come from cows and buffalo. 80% of raw hides are imported from overseas due to the scarcity and the low quality of local sources. Chemical substances used in the industry such as acrylic resin, urethane pigment, lacquer and dyestuff need to be imported, with an import tax rate at 1-20%. The tanning industry is capital intensive and requires high investment in capital funds and revolving funds. The high materials cost affect the competitiveness, which makes it difficult to compete in both the high-end and low-end market (สำนักงานเศรษฐกิจอุตสาหกรรม, 2545).

In recent years, the need for environmental conservation has been considered a necessary defense against the deteriorating quality of life. Many countries worldwide have issued laws and enacted legislation to protect the environment and the people from dangerous chemical substances and unsafe products. These measures have forced

manufacturers to take responsibility for their products. In 2007, the European Union passed legislation called Registration, Evaluation, Authorization and Restriction of Chemicals or REACh in short. The legislation is intended to promote health and safety of consumers and control chemical usage within member states. The registering period will extend to 2018, with the legislation fully in force in 2022 (Rettman, 2007).

REACh has been described as *"The most complex legislation in the Union's history and the most important in 20 years."* It is the strictest law concerning chemical substances and will affect industries throughout the world (*Q&A: REACH chemicals legislatio, BBC News*, 2005, November 28).

REACh requires all manufacturers to register and report to the authorities the quantity of chemical substances they produce or process. Moreover, it also places restrictions on the quantity of chemical substances contained in every product in the market, especially the "Substances of Very High Concern" (SVCH), due to their serious impact on human beings as well as the environment. The SVCHs are substances known to cause cancer or mutations (Carcinogens) or interfere with reproductive functions (Reprotoxic), which are difficult to break down, accumulate in the body or are toxic (POPs, Persistant Organic Pollutants). The European Chemicals Agency (ECHA) must be notified if the quantity used or processed is more than one ton per year and if the SVHC is present in the product at more than 0.1% of the mass of the item. Apart from reporting the usage of SVCH, manufacturers are also obliged to include plans to replace the SVHC with a safer alternative (วราพรรณ ด่านอุตรา, และรดาวรรณ ศิลปะโภชากุล, 2546).

Before the application of REACh, the restriction of dangerous chemical substances had been applied previously by many top brand name sports shoe producers such as NIKE, ADIDAS, REEBOK, DOCKERS etc. In order to create an image of green products, these top brand name producers required all their suppliers to commit to the restriction of chemical substances measure (วีระวัฒน์ ศรีฉัตราภิมุข, 2549).

Candidate List of Substances of Very High Concern for Authorization

Substance Name	Reason for Inclusion
Triethyl arsenate	carcinogenic
Anthracene	PBT*
Dibutyl phthalate (DBP)	toxic for reproduction
Cobalt dichloride	carcinogenic
Diarsenic pentaoxide	carcinogenic
Diarsenic trioxide	carcinogenic
Sodium dichromate	carcinogenic, utagenic, toxic for reproduction
5-tert-butyl-2,4,6-trinitro- m-xylene (musk xylene)	vPvB*
Bis (2- ethylhexyl)phthalate(DEHP)	toxic for reproduction
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified: Alpha- hexabromocyclododecane Beta- hexabromocyclododecane Gamma-hexabromocyclododecane	PBT*
Alkanes, C10-13, chloro	PBT*
(Short Chain Chlorinated Paraffins)	
Bis(tributyltin)oxide (TBTO)	PBT*
Lead hydrogen arsenate	carcinogenic, toxic to reproduction
Benzyl butyl phthalate(BBP)	toxic to reproduction
Diaminodiphenylmethane (MDA)	carcinogenic

Note. *PBT – persistent, bio-accumulative and toxic, *vPvB – very persistent, very bio-accumulative. From *Candidate list of substances of very high concern for authorization*. (n.d.). Retrieved August 12, 2009, from http://echa.europa.eu/chem_data/authorisation _process/candidate_list_table_en.asp

The restriction of hazardous chemical substances affects the world market on a wide scale as it concerns every product and activity dealing with chemical substances. Every sector involved in the European market needs to be aware and prepare to deal with these restrictions. In addition to the European market, similar restrictions also apply for the USA and Japan, which are the main markets for Thai leather products. These restrictions take direct aim at the Thai tannery industry, which uses many chemical substances listed as substances of very high concern. As the material supporter for Thai leather products, the Thai tannery industry has a vital role in the process.

1.2 STATEMENT OF PROBLEM

This study aims to answer the following questions:

1.2.1 What opinions do Thai Tanners have of the European restriction of chemicals measure?

1.2.2 Does the European restriction of chemicals measure (REACh) have any effect on the Thai tanning industry?

1.2.3 Does the European restriction of chemicals measure (REACh) affect their products and production process?

1.2.4 Does the European restriction of chemicals measure (REACh) affect their sales and marketing?

1.3 OBJECTIVES OF THE STUDY

This research has the following objectives:

1.3.1 Main objective

To find out Thai Tanners' opinions towards the European restriction of chemicals measure (REACh).

1.3.2 Sub-objective

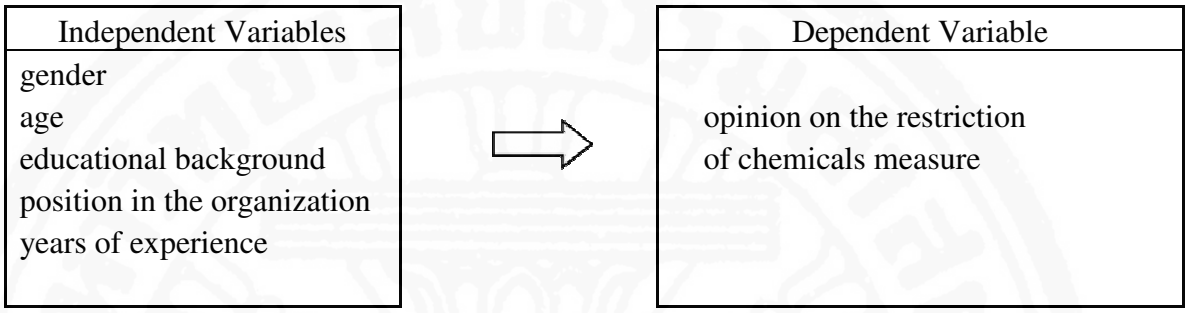
To investigate the impact of the European restriction of chemicals measure (REACh) on the Thai Tannery industry.

1.4 DEFINITION OF TERMS AND VARIABLES

1.4.1Variables

Independent variables: gender, age, educational background, position in organization, years of experience in the tannery industry.

Dependent variable: opinions on the European restriction of chemicals measure.



1.4.2 Definition of Terms

The definition of terms of this study is as follows:

Terms	Conceptual Definitions	Operational Definitions
1. Competitiveness	The ability to compete	Degree of advantage in competing
2. Experience	Activity through which knowledge is gained	Period of time in tanning industry
3. Impact	Influence, effect	Changes within the organization caused by REACh during Aug 2007- Jul 2010
4. Lead time	The period of time between process and results	Period of time between placing an order to delivery of the products
5. Market share	The portion of a market that a company participates in	The portion of the market the company participated in during Aug 2007-Jul 2010
6. Physical property	Characteristic of matter that can be detected by the five senses	Weight, texture, smell, color and size of the product
7. Proof	Evidence that establishes the truth, validity, quality of something	Presenting evidence such as lab test results or a letter of confirmation
8. Production cost	Cost of producing products	Effects of REACh on production costs during Aug 2007-Jul 2010
9. Sales volume	Quantity of product sales	Quantity of product sales during Aug 2007- Jul 2010

1.5 SCOPE OF THE STUDY

This research study aims to survey the opinions of Thai tanners affected by the European restriction of chemical measure (REACh). Thus, the study was conducted among the 138 tannery factories located in the two Tannery Zones in Samutprakarn province. There are 10 tannery factories located outside of the Tannery Industrial Zone in seven different provinces, which would be difficult to survey. Thus, these 10 factories were excluded from the population, with the study concentrating only on the 138 factories within the Industrial Zone areas.

1.6 SIGNIFICANCE OF THE STUDY

This study aims to find out the actual position of the Thai Tannery Industry regarding REACh. The findings could be used as guideline for members who plan to enter the market. Moreover, it could benefit the tannery industry as well as other industries in that they could utilize the information for future plan adaptation.

1.7 ORGANIZATION OF THE STUDY

The study of the impact of the European restriction of chemicals measure (REACh) in this paper is divided into five chapters. The first chapter consists of the introduction, providing the background of the problem, statement of problem, objectives of the study, variables and definition of terms, scope of the study and significance of the study. The second chapter reviews related theories, leather process, related reports and opinions, and relevant research. The third chapter provides the methodology of the study along with details of subjects, materials, procedures and data analysis. The fourth chapter is the discussion of the results of the study. The fifth chapter includes a summary of the findings and recommendations for further research.

CHAPTER TWO
REVIEW OF LITERATURE

This chapter reviews the literature in the main areas along with a summary, including: (1) competitive advantage theory, (2) the leather process, (3) related reports and opinions, (4) relevant research, and (5) summary.

2.1 COMPETITIVE ADVANTAGE THEORY

The concept of industry competitive advantage depends on resource management effectiveness, which is the ability to produce lower cost products under a certain economic system (Porter, 1990), as cited in พร้อมพร วรรณจีระ, 2548, น. 25). Michael E. Porter developed a tool to analyze the level of competitiveness called "Diamond Diagram," based on the idea that everyone will choose the best strategy to create the advantages by analyzing their weaknesses and strengths as well as their competitors' in order to stay ahead in a competitive market. The tool that Porter used to explain competitive advantage is Theory of Competitive Advantage. There are four relevant competitive factors: factor conditions, demand conditions, supporting and related industries, company strategy structure and rivalry (พร้อมพร วรรณจีระ, 2548, น.25-33).

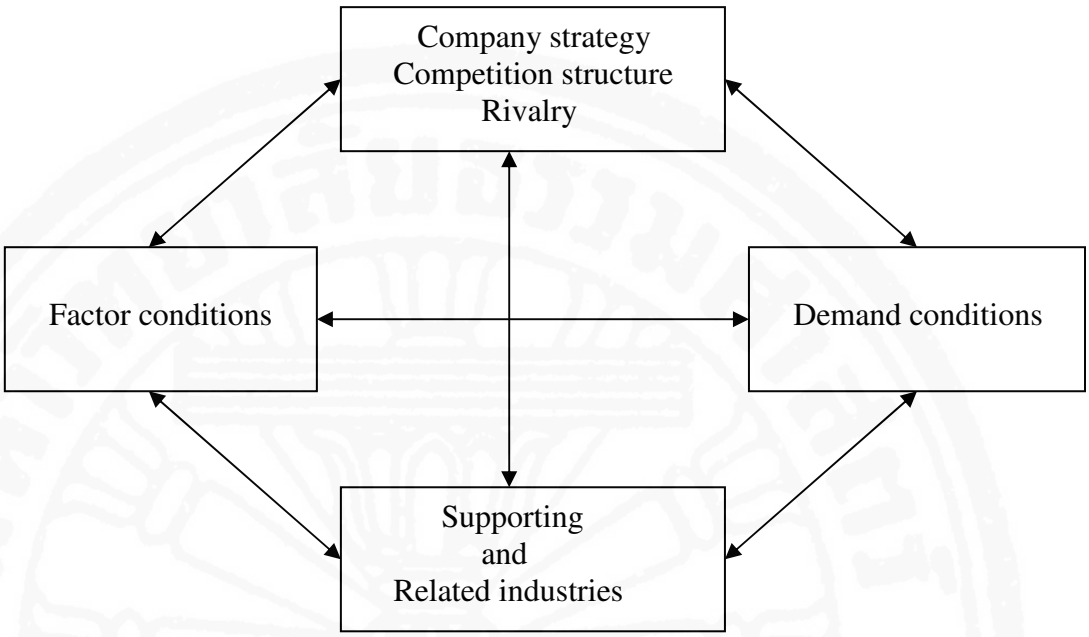
2.1.1 Factor Conditions

Factor conditions refer to human resource, natural resources, knowledge, funds and infrastructure. Manufacturers with more or better factor conditions have greater advantages than ones who have less.

2.1.2 Demand Conditions

Consumer demand causes pressure on the manufacturer to develop and produce products according to customer's needs. The first manufacturer that fulfills a need will gain a competitive advantage. A competitive advantage also occurs when the consumer demand is high as large market scale will influence mass production, which lowers production costs.

Factors determining competitive advantage



2.1.3. Supporting and Related Industries

The cooperation between related industries within a country will create competitive advantages. Manufacturers with good suppliers close by who can support them with sufficient and quality materials will have a competitive advantage over manufacturers who have to import materials. The materials costs from local suppliers will be lower than the imported ones because the delivery costs are lower. Thus, the manufacturer can produce at a lower price.

2.1.4. Company Strategy, Competition Structure and Rivalry

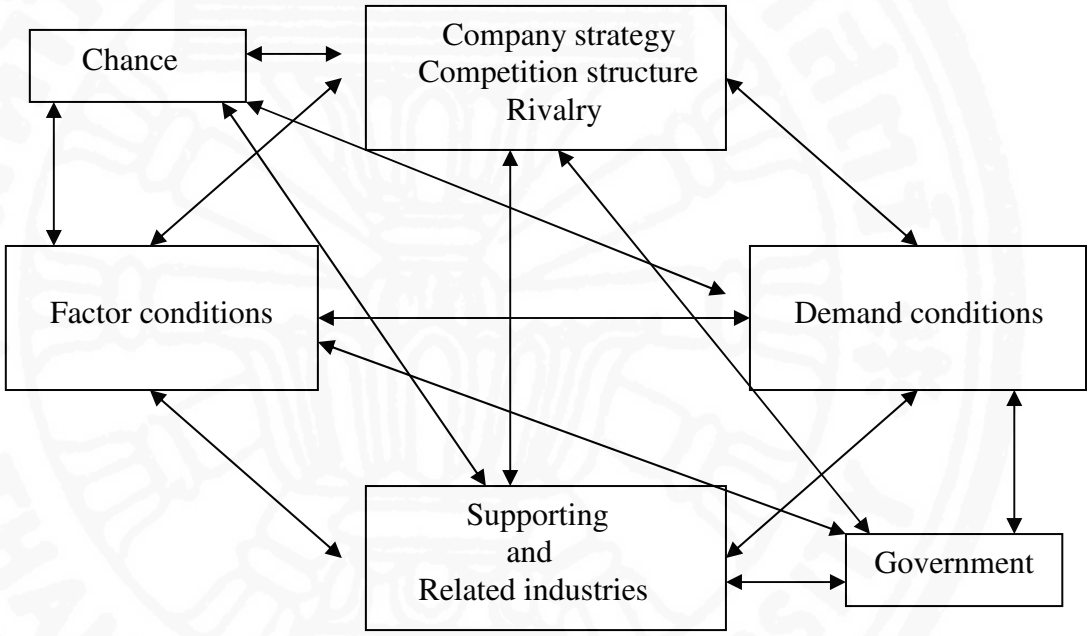
Choosing the right strategy is another factor influencing competitiveness. Factories with skilled workers may enter the high-end market to avoid fierce competition in the low-end market. The appropriate strategy will improve the chance to compete.

A competitive environment will force manufacturers to be innovative and improve themselves by developing better products and services. To be able to stay in competition, manufacturers need to facilitate their resources effectively. Therefore, productivity will increase. Moreover, the high competition will drive

manufacturers to find new markets to replace lost ones or to expand their markets to overseas.

Chance and government are additional factors influencing competitive advantage. They are variable factors that may effect the competitiveness level but do not directly determine the competitiveness (พร้อมพร วรรณจีระ, 2548).

The complete diamond system



Chance refers to significant changes that can not be controlled such as new inventions, changes in technology, an unexpected surge of demand or supply in some part of the world, change in the world monetary system, or political decisions.

Government policy may affect the competitive advantage of a country. For example, factor conditions may be deteriorated by a government's poor education policy. The role of government could thus support or hinder the competitiveness of a country.

2.2 LEATHER PROCESS

The leather making process is complex and involves many chemical substances. The process may vary from factory to factory depending on the type of raw material and the desired finished product. However, the process can be divided into four major stages: beam-house, tanning, post-tanning and finishing process (วีระวัฒน์ ศรีฉัตรภิมุข , 2549, น.4-18).

2.2.1 Beam-house Process

When the hides and skins arrive at a tannery, they are first washed to remove the salt or any chemical preservatives and any remaining blood and dirt. Special solutions such as detergents, wetting agents and anti-bacterial agents are added to the water to assist in the cleaning process. The next operation involves the removal of hair by soaking the hides in lime and sodium sulphide. The solution will dissolve the hair roots, disperse fats and get rid of other unwanted protein matter.

After dehairing, any remaining flesh and fat is removed by fleshing machines. Skins which are required to be soft and supple such as gloving leather may undergo a process called “batting”. This process reduces the elastic nature of the fiber structure and makes the grain flat, smooth and flexible.

The next operation is “deliming”. The hides are treated with mild acids to remove the alkaline remaining from the limewater treatment. Theses hides need to be neutral or slightly acid before they can be tanned. Further processes involve “pickling”, which preserves the hides in sulphuric acid and salt until they are ready for tanning, and “degreasing”, which removes unwanted fats.

2.2.2 Tanning Process

The tanning process is done by soaking the hides with a tanning agent. After draining, the hides need to be reduced of some moisture. This is done by passing the hides through a sammying machine to squeeze the excess water out. Hides that are too thick may be divided into two or more layers with a splitting machine at this stage.

2.2.3 Post-tanning Process

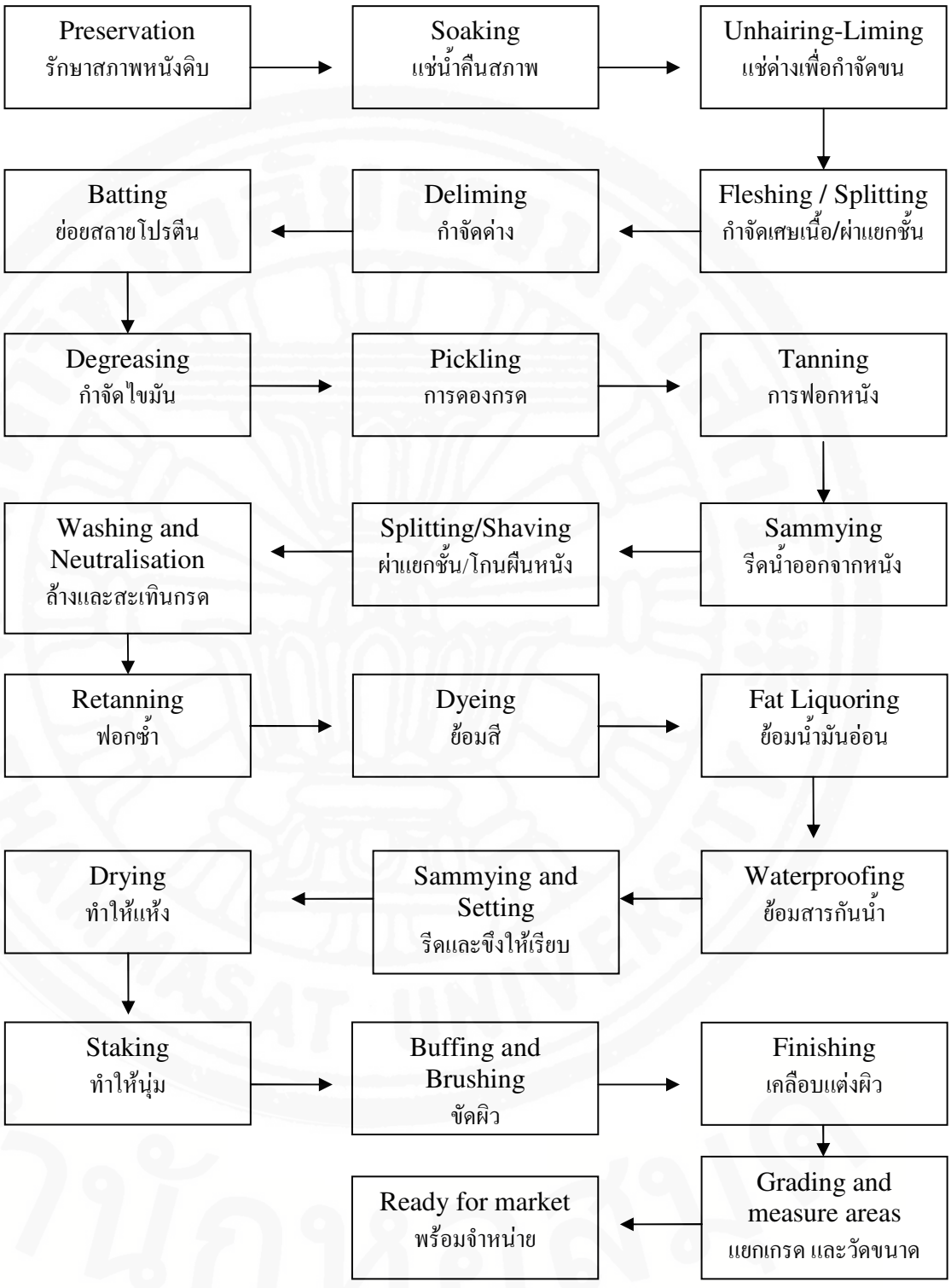
Before the leather is dyed, it has to be cleansed of dust, dirt and grease. Then Sodium Bicarbonate is added to neutralize the pH of the leather for the later process. Sometimes it is treated with chemicals so that the dye will fix onto it.

Different methods are used to apply dye to leather depending on the type of leather required. The dye can be brushed or sprayed on. Other methods include soaking the leather with dye solution or passing it between rollers impregnated with dye. Next, the leather needs to be lubricated (fat liquoring) to make it soft and supple. After that, the leather will be dried, staked to soften the leather, buffed to remove any surface defects and trimmed to remove any ragged edges or other defects.

2.2.4 Finishing Process

Various different finishes can be applied to the leather. These include waxes, synthetic resins, lacquers and colored pigments. Also, there are many techniques to create different effects such as “embossing” to produce different grain patterns and “glazing” to smooth and flatten the grain and produce a high gross and etc. When the various finishing processes are complete, the leather is measured and ready for sale.

A Complete Leather Process



Note. From *คู่มือการฟอกหนัง ภาคที่ 1*. (น.3), โดยวีระวัฒน์ ศรีฉัตราภิมุข, 2549, กรุงเทพมหานคร: ไดอะโฆรม-เคมิเคิล.

2.3 RELATED REPORTS AND OPINIONS

EU Industry Commissioner Günter Verheugen (2006) expressed some concerns that REACh will affect Europe's international competitiveness and harm the global environment by redirecting production to other countries where there are lower environmental standards (as cited in Kogan, 2006). Furthermore, The American Chemical Council (2002) pointed out that REACh legislation may violate many international agreements, such as the Agreement on Technical Barriers to Trade (TBT Agreement), Agreement on Trade – Related Aspects of Intellectual Property Rights (TRIPS Agreement), Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and GATT (as cited in วราพรรณ ด่านอุตรา, และรดาวรรณ ศิลปโภชากุล, 2546).

The European Commission forecasted that 1-2% of chemical substances will be put out of production and the chemical registration of 30,000 articles will be ready in 2012. The cost of registration and assessment for the period of 11 years will be 2.3 billion euros. The EU Commission also calculated that the cost for downstream users will be 2.8-3.6 billion euros. The cost to adjust the supply chain of the industrial sector will be around 4-5.2 billion euros, with some of this will be pushed to downstream users. The total cost for the industrial sector and downstream users will be 2.8-5.2 billion euros. Moreover, the EU Commission has estimated that the whole European industry will benefit from REACh by 150-500 million euros in 2017, or 2,800-9,000 million euros in the next 25 years (คณะผู้แทนไทยประจำประชาคมยุโรป, 2549). However, the IEH - Institute for Environment and Health (2001) reported that the estimation of EU Commission is impossible both in terms of costs and time-frame aspects. With present capacity of 24 European research institutes, the evaluation costs might reach 8.68 million million euros and the assessment test at Base Set level needs to be extended to year 2048 to be complete (as cited in วราพรรณ ด่านอุตรา, รดาวรรณ ศิลปโภชากุล, 2546).

As for Thai industry, there are both positive and negative effects of REACh. Thai producers may need to find substitutes for chemical substances that will be out of production. Not only that, the burden of chemical register and risk assessment may affect product prices. This may cause Thai producers to adapt

their formulas to avoid expenses, with some possibly switching to cheaper products, affecting product quality. On the positive side, the systematic data record of REACh may benefit Thai manufactures in research and development (ชมัยพร วิเศษมงคล, 2552).

The Office of the National Economic and Social Development Board with the Sasin Graduate Institute for Business Administration of Chulalongkorn University and Prof. Michael E. Porter of Harvard University conducted a study on national competitiveness in 2003. The study was based on the theory of competitiveness advantage of Prof. Porter and used the Diamond Model and cluster concepts as tools of analyzing. The results showed that Thailand's leather industry competitiveness is low due to the capability in science and technology being very low and the amount of highly skilled labor being insufficient. The promotion of personnel development in designing, engineering and chemistry is necessary. Moreover, co-operation between industries needed to be improved. Industry clusters should be developed to strengthen linkages. The industry still relies heavily on imported materials; therefore, local industries such as the hide industry, chemical industry and tanning industry should be promoted and developed to support upstream and mid-stream industries. Also, the industry rivalry context, which should enhance competitiveness, does not create a favorable environment as result of government inefficiency. Other than that, Thai firms still concentrate on low-cost products rather than moving up to the upper segments as the general demand conditions of Thai consumers are not sophisticated enough to support product improvement (สำนักงานคณะกรรมการพัฒนาเศรษฐกิจและสังคมแห่งชาติ, 2546).

2.4 RELEVANT RESEARCH

Frohwein and Hansjurgens (2005) conducted research on impact of the new European chemicals regulation system (REACh) on the European chemical industry based on Michael E. Porter's hypothesis, which stated that strict environmental laws will encourage innovations that enhance the level of competitiveness in an industry. The results indicated that small and medium-sized

businesses will suffer negative effects while larger businesses will benefit from the new regulation. This is due to the different nature and strategy of businesses. Small manufacturers usually produce in low volume and compete on product variety. This increases the cost and time burden, as they have to register and provide tests for every product. The REACh system also requires a replacement plan for dangerous chemical substances and this means more investment on research and development. Thus, the ability to compete will decrease. Large businesses that concentrate on a few products and produce in high volume have fewer burdens in terms of cost and time. And with more capital investment, they can cope and comply with the regulation better than small businesses.

From research done by Angerer, Nordbeckb and Satoriusa (2008) on the impact of REACh on European's industry, the results indicated no harm from REACh adaptation. The European Commission's estimated 7.5 billion cost burden of REACh will be easily covered by the industry's profit before the legislation is fully in force. On the other hand, the industry, especially small and medium-sized businesses, will benefit from the chemical data available through REACh, which will enhance business communication with supply chains. The public will also be protected against commercial frauds and misleading information by accessing the data. Moreover, REACh will help relieve public health maintenance cost in the long term.

In summary, this chapter reviewed Michael E. Porter's theory of competitive advantage, the leather process, related reports and opinions, and relevant research.

CHAPTER THREE

METHODOLOGY

This chapter describes: (1) the subjects, (2) the materials, (3) the procedures used in the collection and analysis of the data, and (4) the data analysis.

3.1 SUBJECTS

This research study aims to survey the opinions of Thai tanners affected by the European restriction of chemicals measure (REACh). The subjects of this study were tannery factories in the two Industrial Zone areas in Samutprakarn province. The total number of subjects used for this study was 100 tannery factories.

3.2 MATERIALS

The research instrument in this study was a survey based on a questionnaire. It was created based on the objectives described in the first chapter. The primary data from the questionnaires was gathered and then analyzed.

The questionnaire was divided into four parts. The first part was closed-ended questions with multiple-choices, while the second and third parts were five-point Likert scale questions. Every item had five response alternatives; “Strongly Disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly Agree”. Respondents were instructed to choose the answer closest to their opinions. And for the fourth part, the format was open-ended questions. The objective of each part is as follows:

Part I: This part intended to collect the general information of the respondents and the company they represented.

Part II: Likert 5-point rating scale questions were used to investigate opinions on impacts of REACh.

Part III: Likert 5-point rating scale questions were used to gather opinions on REACH Legislation.

Part IV: Open-ended questions were used in this part to access more information from respondents on support they needed as well as any suggestions they would like to offer on the issue.

3.3 PROCEDURES

This section describes the procedure for the research design and data collection as follows:

3.3.1 Research Design

This study was cross-sectional research intended to describe the opinions of Thai tanners towards the impact of the European restriction of chemicals measure (REACh) and opinions on the legislation. A questionnaire was used to obtain data for conducting the research. 100 respondents were asked to fill in a questionnaire to present their opinions on the matter.

3.3.2 Data Collection

The process of data collection was that the researcher contacted the Thai Tanning Industry Association and asked for permission to conduct a survey. After permission was granted, 100 questionnaires were distributed and collected between August-September 2010. Some respondents were questioned and interviewed directly by researcher.

3.4 DATA ANALYSIS

The Statistical Package for Social and Sciences (SPSS) program for Windows version 13.0 was utilized to analyze the collected data. The findings from the study are described by frequency, percentage, mean, and standard deviation. The data was analyzed as follows:

3.4.1 Percentage and frequency counts were used in analyzing the respondents' general background information.

3.4.2 A five-point Likert scale was employed to rate the respondents' opinions.

The questions in Part II and Part III, which asked for opinions on impact of REACh and opinions on REACh legislation, were rated using the following criteria:

Rating Score	**Interpretation of the Score**
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

CHAPTER FOUR

RESULTS

The previous chapter explained the subjects, material, procedures, and data analysis. This chapter reports the results of the impact of European restriction of chemical measure (REACh) on the Thai Tanning industry which is divided into four parts based on the objectives of the study mentioned earlier.

Part I: General information of the respondents and the company they represented.

Part II: Section 1 - Opinions on the impact of REACh

Part III: Opinions on REACh Legislation.

Part IV: Opinions on support needed and other suggestions.

PART I: GENERAL BACKGROUND INFORMATION

Table 4.1 shows that most of the respondents (77%) were males while 23% were females. The age of the respondents ranged from 36-45 years (52%) to under 25 years (23%), more than 45 (14%) and 25-35 years (11%), respectively. In terms of education level, most of the respondents held a certificate or diploma degree (49%), and 36% held a Bachelor's degree. 8% had a Master's degree or higher, and 7% had a high school or under level of education. The majority of the respondents (38%) had more than 16 years of experience in the industry, 31% had 6-10 years of experience, and 24% had 11-16 years, while the rest (7%) had been in the industry for 1-5 years. According to question 5, 67% of the respondents' company had been established for 11-16 years, followed by more than 16 years 24%, 6-10 years 7%, and 1-5 years 2%. The main products were shoe/garment leather 53%, while 36% were handbag and auxiliary leather. 9% mainly produced leather for furniture and automotive upholstery, whereas 2% said they produced dog-chews and pet toys. 76% mainly produced leather for the domestic market, while the rest (24%) produced for the overseas market.

Table 1. General Background Information

Item	Frequency	Percentage (%)
1. Gender		
Male	77	77.0
Female	23	23.0
Total	100	100.0
2. Age		
Under 25	23	23.0
25-35	11	11.0
36-45	52	52.0
More than 45	14	14.0
Total	100	100.0
3. Level of Education		
High school or under	7	7.0
Certificate/Diploma	49	49.0
Bachelor's Degree	36	36.0
Master's Degree or higher	8	8.0
Total	100	100.0
4. Number of years of experience in tannery industry		
1-5 years	7	7.0
6-10 years	31	31.0
11-16 years	24	24.0
More than 16 years	38	38.0
Total	100	100.0
5. Number of years the company has been established		
1-5 years	2	2.0
6-10 years	7	7.0
11-16 years	67	67.0
More than 16 years	24	24.0
Total	100	100.0
6. Main Product		
Shoe/garment leather	53	53.0
Handbag and auxiliary leather	36	36.0
Furniture/automotive upholstery	9	9.0
Others	2	2.0
Total	100	100.0
7. Main market		
Domestic market	76	76.0
Overseas market	24	24.0
Total	100	100.0

(table continues)

Table 1. (continued)

8. Company's capacity		
1-100,000 sq.ft./month	18	18.0
100,000-300,000 sq.ft./month	51	51.0
300,000-500,000 sq.ft./month	24	24.0
More than 500,000 sq.ft./month	7	7.0
Total	100	100.0
9. When do you learn about REACh?		
Before the implementation	63	63.0
After the implementation	37	37.0
Total	100	100.0
10. Where did you first obtain information about REACh?		
Buyers	35	35.0
Suppliers	9	9.0
Government Agency	38	38.0
Others	18	18.0
Total	100	100.0
11. What is your level of understanding of REACh legislation?		
Poor	13	13.0
Fair	64	64.0
Good	23	23.0
Excellent	0	0.0
Total	100	100.0
12. Does REACh apply to your company?		
Yes	81	81.0
No	19	19.0
Total	100	100.0
13. Did you do any preparation before the legislation went into effect?		
Yes	47	47.0
No	53	53.0
Total	100	100.0
14. What is your level of preparation?		
Poor	2	4.3
Fair	36	76.6
Good	9	19.1
Excellent	0	0.0
Total	47	100.0

Regarding company capacity, more than half of the respondents (51%) worked for medium-size factories with a capacity of 100,000-300,000 square feet per month. The next largest group was 24%, who worked for big factories with 300,000-500,000

square feet per month; meanwhile 18% worked in small factories with capacity of 1-100,000 square feet. The rest (7%) were from large factories that produced more than 500,000 square feet per month. 63% of the respondents answered that they were notified about REACh legislation before it actually went into effect, while 37% admitted that they learned about it after implementation. The first source that notified the respondents about the legislation was a government agency with 38%, followed by buyers 35%, neighboring factories 11%, 9% suppliers, and 7% from media sources. In terms of level of understanding, 64% of the respondents rated their level of understanding of the legislation as fair, 23% rated good and 13% said it was poor. None claimed that they had an excellent understanding. 81% of the respondents answered that their organizations were subject to REACh, while 19% said the legislation did not apply to their company. More than half of the respondents (53%) did not have any preparation before REACh went into effect. The rest (47%) confirmed that they were prepared before the implementation. As for the level of preparation of the group who admitted to having some preparation, 36 respondents (76.6%) rated their level of preparation as fair, 9 respondents (19.1%) rated it as good, and 4.3% (2 respondents) rated their preparation as poor.

PART II: OPINIONS ON IMPACT OF REACh ON PRODUCT AND PRODUCTION PROCESS, SALES AND MARKETING

Table 2. REACh Effects on Product/Production Process

REACh effects on product / production process	Level					Mean	S.D.
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
15.) You have to change the production process.	0	0	0	64	17	4.21	1.04
16.) You have to change or adjust chemical formulas to comply with REACh's requirements.	0	0	0	58	23	4.28	1.03
17.) You have to change or find new chemicals/raw material suppliers.	3	26	1	44	7	3.32	1.11
18.) Suppliers need to present proof/ guarantees that their products meet REACh's requirements.	0	0	0	65	16	4.20	1.04

(table continues)

Table 2. (continued)

19.) You have to study or implement new techniques to produce products that meet REACh's requirements.	4	19	3	42	13	3.51	1.10
20.) You have to adjust machines and instruments.	22	57	0	2	0	1.78	1.25
21.) You have to hire more employees or special technicians.	6	46	6	18	5	2.63	1.17
22.) You have to conduct special quality control/inspection.	0	0	0	78	3	4.04	1.05
23.) REACh increases lead time.	0	9	0	54	18	4.0	1.05
24.) REACh improves product quality.	20	52	2	7	0	1.95	1.23
25.) REACh increases product reliability.	0	0	0	46	35	4.43	1.02
26.) REACh increases production costs.	0	0	6	66	9	4.04	1.05
27.) REACh affects product prices.	0	3	2	65	11	4.04	1.05

According to the results from table 4.2.1, the respondents strongly agreed that because of REACh, they had to change the production process (mean=4.21) and adjust the chemical formula in order to comply with the requirements (mean=4.28). Others agreed that they had to change or find new chemical or raw material suppliers (mean=3.32) and also agreed that suppliers had to present proof or guarantees that their products met REACh's requirements (mean=4.2). The results from statement 19 showed that the respondents rather agreed that new techniques training was needed to produce products under REACh (mean=3.51). A large number of respondents strongly disagreed about the necessity to adjust machines and instruments (mean 1.78). The majority of the respondents disagreed with statement 21 about hiring more employees or special technicians, but agreed that they had to conduct special quality control and that REACh increased lead time. A considerable number of respondents disagreed that REACh had improved the physical properties of the products (mean=1.95). On the other hand, many respondents strongly agreed that REACh had improved product reliability (mean=4.43) and agreed that it increased production costs and affected product prices (mean=4.04).

Table 3. REACh Effects on Sales/Marketing

Statement	Level					Mean	S.D.
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
28.) You have to convince buyers about the reliability of the product.	0	0	0	59	22	4.27	1.03
29.) You have to present proof or guarantee that your products meet REACh's requirements.	0	1	8	48	24	4.17	1.04
30.) REACh has caused changes in marketing strategy.	0	2	6	50	23	4.16	1.04
31.) Sales representatives with knowledge about REACh are necessary.	0	7	2	72	0	3.8	1.07
32.) REACh increases sales procedures.	0	0	3	59	19	4.2	1.04
33.) REACh makes it easier to keep current buyers.	4	38	17	18	4	2.75	1.16
34.) REACh make it easier to acquire new buyers.	7	42	12	12	8	2.65	1.17
35.) REACh has increased marketing costs.	0	7	1	62	11	3.95	1.06
36.) REACh has increased your market share.	34	44	3	0	0	1.62	1.26
37.) REACh has increased your sales volume.	36	41	4	0	0	1.61	1.26
38.) REACh has increased your competitiveness.	27	46	4	3	1	1.83	1.24

As illustrated by table 4.2.2, respondents strongly agreed that they had to convince buyers about the reliability of their products (mean=4.27). Others agreed that they had to present proof or guarantees that their products met the requirements (mean=4.17). Respondents also agreed that REACh caused changes in marketing strategy (mean=4.16), that sales representatives with knowledge about REACh were necessary (mean=3.8), and REACh increased sales procedures (mean=4.2).

Furthermore, the respondents rather disagreed that REACh helped keep current buyers and helped acquire new buyers. Many respondents agreed that complying with REACh increased marketing costs (mean=3.95). Others strongly disagreed with statement 36 and 37 that REACh increased their market share and sales volume. And lastly, the respondents also indicated that they disagreed that REACh increased their competitiveness (mean=1.83).

PART III: OPINIONS ON REACh LEGISLATION

Table 4. Opinions on REACh Legislation

Statement	Level					Mean	S.D.
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
39.) REACh is fair legislation.	21	60	4	15	0	2.13	1.25
40.) REACh is appropriate legislation.	33	56	8	3	0	1.81	1.27
41.) REACh was imposed at the right time.	14	76	7	3	0	1.99	1.26
42.) Impact of REACh will be the same for large factories and small factories.	8	86	4	2	0	2.00	1.26
43.) There is enough information about REACh available.	11	28	2	49	10	3.19	1.18
44.) Present technology can support REACh's requirements.	7	7	6	76	4	3.63	1.15
45.) REACh will improve the industry.	33	58	5	2	2	1.82	1.27

The results of respondents' opinions on REACh legislation are expressed in table 4.3. From the table, it is clear that most of the respondents disagreed with the fairness of the legislation (mean=2.13), the appropriateness of the content (mean=1.81), the appropriateness of the imposing time (mean=1.99), and the impact of REACh being equal for large and small factories (mean=2.0). Apart from that, the respondents quite agreed that there was enough information available (mean=3.19), and present

technology can support REACh requirements (mean=3.63). However, the respondents showed disagreement that REACh will improve the industry (mean=1.82).

The findings of the study will be summarized and discussed in the next chapter.

CHAPTER FIVE

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

This chapter presents (1) a summary of the study, (2) a summary of the findings, (3) discussion of the findings, (4) the conclusion and (5) recommendations for further research.

5.1 SUMMARY OF THE STUDY

This section summarizes the objective, subjects, materials and procedures of the study as follows:

5.1.1 Objective of the Study

The objective of this study was to find out the opinions of Thai Tanners towards the European restriction of chemical ท measure (REACh) and to investigate its impacts on the industry in terms of product, production process, sales and marketing, as well as gaining suggestions on what support they needed in order to comply with the measure.

5.1.2 Subjects, Materials, and Procedures

Subjects: The subjects of the study were representatives from tannery factories in the two Industrial Zone areas in Samutprakarn province. The total number of subjects used for this study was 100 tannery factory representatives.

Materials: The material for this study was a questionnaire, which consisted of 14 closed-ended questions, 31 five-point Likert scale questions, and two open-ended questions. The questionnaire was divided into four parts: (1) asking for general background information, (2) asking for opinions on REACh's effects on product and production process, sales and marketing, (3) asking for opinions on REACh legislation, and (4) asking for suggestions.

Procedures: The questionnaires were distributed to 100 subjects randomly. After they were returned, the questionnaires were examined for completeness. The data were analyzed using the Statistical Package for Social and Sciences (SPSS) program for

Windows version 13.0. The statistical analysis used in this study included percentage, frequency, mean, and Standard Deviation (S.D.).

5.2 SUMMARY OF THE FINDINGS

The results of the study can be summarized as follows:

5.2.1 General Background Information of the Respondents

The results of the survey showed that the majority of the respondents were males (77%), whereas 23% were females. Most of the respondents were aged between 36-45 years old (52%), followed by 23% aged under 25 years old, 14% aged more than 45, and 11% aged between 25-35 years old. Regarding educational level, 49% of the respondents gained certificates or diplomas, 36% held a Bachelor's degree, 8% had Master's degrees or higher, and 7% had a high school or under level of education. About 38% of the respondents had more than 16 years of experience in the industry, 31% had experience of 6-10 years, and 24% had 11-16 years, while the rest (7%) had been in the industry for 1-5 years.

Regarding the company backgrounds, 67% had been established for 11-16 years, 24% had been operating for more than 16 years, followed by 7% at 6-10 years, and 2% at 1-5 years respectively. More than half of the companies (53%) mainly produced shoe and garment leather. 36% concentrated on handbags and auxiliary leather products, 9% mainly produced leather for furniture and automotive upholstery, whereas the rest (2%) mainly produced dog chews and pet toys. In terms of the main market, the majority of the companies (76%) mainly produced leather for the domestic market, while the rest (24%) had the overseas market as their main market. As for company capacity, more than half of the respondents (51%) worked for medium-sized factories with capacity of 100,000-300,000 square feet per month. The next largest group was 24%, who worked for big factories with 300,000-500,000 square feet per month, while 18% worked in small factories with capacity of 1-100,000 square feet. The rest 7% were from large factories that produced more than 500,000 square feet per month.

As for acknowledgement and understanding REACh, 63% of the respondents answered that they were notified about REACh legislation before it actually went into effect, while 37% admitted that they knew after implementation. The first source that notified the respondents about the legislation was a government agency with 38%,

followed by buyers 35%, neighboring factory 11%, 9% from suppliers, and the last (7%) from media sources. In terms of level of understanding, 64% of the respondents rated their level of understanding of the legislation as fair, 23% rated it as good and 13% said it was poor. None admitted that they had an excellent understanding. 81% of the respondents answered that their organizations were subject to REACh, while 19% said the legislation did not apply to their company. More than half of the respondents (53%) did not have any preparation before REACh went into effect. The rest (47%) confirmed that they were prepared before implementation. As for the level of preparation of the group who admitted to having some preparation, 36 respondents (76.6%) rated their level of preparation as fair, nine respondents (19.1%) rated it as good, and 4.3% (two respondents) rated their preparation as poor.

5.2.2 Opinions on Effects of REACh on Product and Production Process

According to the results, the respondents strongly agreed that REACh caused changes in the production process, and that they had to adjust chemical formulas in order to comply with the requirements. Others agreed that they had to change or find new chemical or raw materials suppliers and also agreed that suppliers had to present proof or guarantees that their products met REACh's requirements. The majority of the respondents agreed that new techniques and training were needed to produce products under REACh. A large number of respondents strongly disagreed about the necessity to adjust machines and instruments. More than half of the respondents disagreed with statement 21 about hiring more employees or special technicians, but agreed that they had to conduct special quality control and that REACh increased lead time. A considerable number of respondents disagreed that REACh improved the physical properties of products. On the other hand, many respondents strongly agreed that REACh improved product reliability and that it increased production costs and product prices.

5.2.3 Opinions on Effects of REACh on Sales and Marketing

Referring to the results, respondents strongly agreed that they had to convince buyers about the reliability of their products. Others agreed that they had to present proof or guarantees that their products met the requirements. Respondents also agreed that REACh caused changes in marketing strategy, sales representative with knowledge about REACh were necessary, and that REACh increased sales procedures. Furthermore, the respondents rather disagreed that REACh helped keep current buyers and helped acquire

new buyers. Many respondents agreed that complying with REACh increased marketing costs. Others strongly disagreed that REACh increased their market share and sales volume. And lastly, the respondents also indicated that they disagreed that REACh increased their competitiveness.

5.2.4 Opinions on REACh Legislation

The results show that most of the respondents disagreed with the fairness of the legislation, the appropriateness of the content, the appropriateness of the imposing time, and the that it impacted large and small factories equally. Apart from that, the respondents quite agreed that there was enough information available and that present technology can support REACh's requirements. However, the respondents showed disagreement that REACh will improve the industry.

5.2.5 Suggestions on Support Needed to Comply with REACh

According to part four of the questionnaire, five respondents gave useful and interesting suggestions on what kind of support they needed in order to be able to cope with REACh's requirements. The suggestions are as follows:

- Help in the form of investment aid and tax relief or lower import tax, especially chemical products.
- More scientific laboratories that support REACh's requirements.
- REACh information center that provides consultation and information specifically for the tanning industry.
- More skilled labor, especially tanning specialists.

5.2.6 Other Suggestions

One respondent suggested that REACh legislation should be canceled as it was considered a trade barrier. Instead, product manufacturers should declare the contents of their products to the public and let the consumers make their own choices.

Another respondent felt that REACh created unnecessary burdens for the industry. The restriction of chemical content in products was unreasonable. The legislation should cover only chemical products.

5.3 DISCUSSION

This section discusses the relevant points from the findings as follows:

The results of the study indicate that REACh caused changes in the production process. The manufacturers had to develop new techniques in order to be able to adapt new chemical formulas for their products. They also had to switch to new suppliers who could provide materials and guarantee that their products were in accordance with REACh standards. These were similar to the negative effects of REACh forecasted by Chamaiporn Visetmonkol (ชมัยพร วิเศษมงคล, 2552). Besides, they had to conduct special quality control for the products. The results suggested that REACh increased the burden for the production department. Although producing products under REACh regulations may improve product reliability, it did not improve product quality. It also increased lead time and production costs in which affected on product price.

As for sales and marketing, REACh caused changes in marketing strategies, and increased sales procedures and marketing costs. Sales representatives needed to be acquainted with REACh regulation in order to make sales. The buyers needed to be convinced about the reliability of the products and manufacturers were obliged to present proof that their products met the requirements. The results further show that complying with REACh did not help the manufacturers keep current buyers or acquire new buyers. Besides, REACh did not increase their market share, sales volume or competitiveness.

From the findings, we can conclude that REACh increased the burden for the industry both in terms of cost and time, which affected production and operation efficiency. Consequently, the advantageous factors of the industry decreased, which affected their competitiveness. In fact, it increased the burden while not having any positive effects, except for improving reliability. It did not improve the product quality or enhance sales and marketing. The findings were similar to the study of REACh's impact on the European chemical industry by Frohwein and Hansjurgens (2005). The results

indicated that small factories suffered from REACh adaptation more than large factories. In order to cope with REACh, manufacturers were forced to increase their investment. Therefore, large factories with the advantage of more capital were better able to cope with REACh. Although REACh increased the burden of businessed, it also forced manufacturers to improve their products and techniques, which will benefit them in the long run.

5.4 CONCLUSION

The following conclusions can be drawn from the discussions above.

5.4.1 REACh adaptation caused changes in the production process. Furthermore, new techniques were required for developing new chemical formulas according to REACh's requirements. Manufacturers had to find new suppliers who could provide materials that met REACh's standards. REACh also increased the production process as factories had to conduct special quality control for products. Finally, it also increased lead time and production costs, which affected product prices.

5.4.2 REACh caused changes in marketing strategy and affected marketing costs. It also increased sales procedures. Sales representatives needed to be acquainted with REACh regulations. Manufacturers were obliged to present proof in order to convince buyers that their products met the requirements.

5.4.3 REACh did not improve product quality or enhance sales and marketing. On the other hand, it increased the burden for the industry both in cost and time, which affected production and operation efficiency. The advantageous factors of the industry decreased, which affected their competitiveness.

5.4.5 Small factories suffered more from REACh adaptation. In order to cope with REACh, manufacturers were forced to increase their investment. Therefore, large factories with the advantage of more capital were better able to cope with REACh.

5.4.6 REACh forced manufacturers to improve their products and techniques, which will enhance the competitiveness and benefit them in the future.

5.4.7 REACh was viewed as an inappropriate regulation both in content and the imposing time, and it did not improve the industry.

5.5 RECOMMENDATIONS

Based on the findings and conclusions of this study, the following recommendations are made for further research.

First and foremost, there is a need for further investigation on the impacts of REACh on the research and development and personnel developments of the industry. Both areas are likely to be affected by the regulation but did not show a relevant impact at the time of the study. This may have resulted from the fact that both areas need a longer time to accumulate results, or that this study was conducted too early on in the implementation process to see the developments. Therefore, further investigation of the impact should be carried out in the future to ascertain the true impact. In addition, research should continue to investigate the impact of REACh on the chemical industry, a significant materials supporter of the tanning industry. The influence of REACh on the industry would affect on downstream-users such as the tanning industry. This would give a better understanding of how the whole process is affected. And lastly, to create a more accurate view of the impact, further study should be expanded to other affected industries, such as footwear, textile, garments, etc. The results gained could be used to assess the overall view of the impact and compare it between industries.

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APPENDIX A

Questionnaire in English

Impact of European Restriction of Chemicals Measure (REACh) on the Thai Tanning Industry

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This questionnaire is a part of a research paper as partial fulfillment of the requirements for a Master's Degree of Arts in English for Careers, Language Institute, Thammasat University. This questionnaire is designed to investigate the impact of REACh legislation upon the Thai Tanning Industry. The results of the study will directly benefit the industry. Your information will be kept confidential and used for research purposes only.

Thank you for taking part in the study.

Instructions: This questionnaire is divided into four parts as follows:

Part I: General Background Information of the respondents.

Part II: Opinions on impact of REACh.

Part III: Opinions on REACH Legislation.

Part IV: Opinions on what support is needed and suggestions on the issue.

If there are any questions concerning this questionnaire, please contact Srivilai Pankiwjana (Ms.) Phone: 081 808 6941 Email: srivilai_p@yahoo.com

Part I: General Information

Instructions: Please read the following statements and mark ✓ in the box that matches your condition.

1.) Gender

☐ Male ☐ Female

2.) Age

☐ Under 25 ☐ 25 - 35

☐ 36 - 45 ☐ More than 45

3.) Level of education

☐ High School or under ☐ Certificate / Diploma

☐ Bachelor's Degree ☐ Master's Degree or higher

4.) Number of years of experience in tannery industry

☐ 1 - 5 years ☐ 6 - 10 years

☐ 11 - 16 years ☐ More than 16 years

5.) Number of years that the company has been established

☐ 1 - 5 Years ☐ 6 - 10 years

☐ 11 - 16 years ☐ More than 16 years

6.) Main product

☐ Shoe/garment leather ☐ Handbag and auxiliary leather

☐ Furniture/automotive upholstery ☐ Others (please specify)

_____

7.) Main market

☐ Domestic market ☐ Overseas market

8.) Company's capacity

☐ 1-100,000 sq.ft./month ☐ 100,000-300,000 sq.ft./month

☐ 300,000-500,000 sq.ft./month ☐ More than 500,000 sq.ft./month

9.) When did you learn about REACh?

☐ Before the implementation ☐ After the implementation

10.) Where did you first obtain information about REACh?

☐ Buyers ☐ Suppliers

☐ Government Agency ☐ Others (please specify) _____

11.) What is your level of understanding of REACh Legislation?

☐ Poor ☐ Fair

☐ Good ☐ Excellent

12.) Does REACh apply to your company?

☐ Yes ☐ No (Go to Part III)

13.) Did you do any preparation before the legislation went into effect?

☐ Yes ☐ No (skip to Part II)

14.) What is your level of preparation?

☐ Poor ☐ Fair

☐ Good ☐ Excellent

Part II: Opinions on impacts of REACh.
Instructions: Please rate by checking ✓ in the box that can represent your opinion.

1 - Strongly Disagree
2 - Disagree
3 - Neutral
4 - Agree
5 - Strongly Agree

REACh effects on product / production process	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
15.) You had to change production process.					
16.) You had to change or adjust chemical formulas to comply with REACh's requirement.					
17.) You had to change or find new chemicals / raw materials suppliers.					
18.) Suppliers needed to present proof/guarantees that their products meet REACh's requirements.					
19.) You had to study or learn new techniques to produce products under REACh's requirements.					
20.) You had to adjust machines and instruments.					
21.) You had to hire more employees or special technicians.					
22.) You had to conduct special quality control/inspection.					
23.) REACh increased lead time.					
24.) REACh improved physical properties of products.					
25.) REACh increased product reliability.					
26.) REACh increased production costs.					
27.) REACh affected product prices.					

REACh effects on sales / marketing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
28.) You had to convince buyers about the reliability of products.					
29.) You had to present proof or guarantees that your products meet REACh's requirements.					
30.) REACh caused changes in marketing strategy.					
31.) Sales representatives with knowledge about REACh are necessary.					
32.) REACh increased sales procedures.					
33.) REACh made it easier to keep current buyers.					
34.) REACh made it easier to acquire new buyers.					
35.) REACh increased marketing costs.					
36.) REACh increased your market share.					
37.) REACh increased your sales volume.					
38.) REACh increased your competitiveness.					

Part III: Opinions on REACh Legislation.
Instructions: Please rate by checking ✓ in the box that can represent your opinion.

Opinions on REACh Legislation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
39.) REACh is a fair legislation.					
40.) REACh is appropriate legislation.					
41.) REACh was imposed at the right time.					
42.) Impact of REACh will be the same for large factories and small factories.					
43.) There is enough information about REACh available.					
44.) Present technology can support REACh's requirements.					
45.) REACh will improve the industry.					

Part IV: Please answer the following question.
46. What support do you need to help you comply with REACh?

_____

_____

_____

_____

47. Suggestions

_____

_____

_____

_____

Thank you for your kind cooperation in answering the questionnaire.

APPENDIX B

Questionnaire in Thai

แบบสอบถามการวิจัย

เรื่อง

ผลกระทบของมาตรการจำกัดสารของสหภาพยุโรป (REACh) ที่มีต่ออุตสาหกรรมฟอกหนังไทย

แบบสอบถามนี้เป็นส่วนหนึ่งของการศึกษาระดับปริญญาโท สาขาภาษาอังกฤษเพื่ออาชีพ สถาบันภาษา มหาวิทยาลัยธรรมศาสตร์ แบบสอบถามนี้จัดทำขึ้นเพื่อสำรวจผลกระทบของมาตรการจำกัดสารของสหภาพยุโรป (REACh) ที่มีต่ออุตสาหกรรมฟอกหนังไทย ทั้งนี้ข้อมูลของท่านจักเป็นประโยชน์แก่อุตสาหกรรมโดยตรง จึงขอความกรุณาจากท่านได้โปรดให้ข้อมูลที่ตรงกับความเป็นจริงที่สุดเพื่อประโยชน์ทางด้านวิชาการ โดยผลการศึกษาจะนำเสนอในลักษณะการสรุปไว้เป็นภาพรวม ผู้ทำการวิจัยจะเก็บรักษาข้อมูลที่ได้รับจากการตอบของท่านจะใช้สำหรับการวิจัยเท่านั้น ดังนั้น **ขอความกรุณาตอบแบบสอบถามให้ครบทุกข้อ**

ขอขอบพระคุณอย่างยิ่งในความร่วมมือของท่าน

คำแนะนำในการตอบแบบสอบถาม

แบบสอบถามนี้แบ่งออกเป็น 4 ตอน ดังนี้

ตอนที่ 1 ข้อมูลเบื้องต้นของผู้ตอบแบบสอบถาม

ตอนที่ 2 ผลกระทบจากมาตรการจำกัดสาร (REACh)

ตอนที่ 3 ความคิดเห็นที่มีต่อมาตรการจำกัดสาร (REACh)

ตอนที่ 4 ความคิดเห็นในเรื่องความช่วยเหลือที่ต้องการและข้อเสนอแนะเกี่ยวกับปัญหานี้

หากมีข้อสงสัยประการใดเกี่ยวกับเนื้อหาในแบบสอบถาม โปรดติดต่อ นางสาวศรีวิไล ปัญคิวจณาณ์ ได้ที่โทรศัพท์หมายเลข 081 808 6941 หรือทางอีเมล์ srivilai_p@yahoo.com

ตอนที่ 1: ข้อมูลเบื้องต้นของผู้ตอบแบบสอบถาม
โปรดทำเครื่องหมาย ü ลงในช่องสี่เหลี่ยมที่ตรงกับท่านมากที่สุด

1.) เพศ

☐ ชาย ☐ หญิง

2.) อายุ

☐ น้อยกว่า 25 ปี ☐ 25 - 35 ปี

☐ 36 - 45 ปี ☐ มากกว่า 45 ปี

3.) ระดับการศึกษา

☐ มัธยมศึกษา หรือต่ำกว่า ☐ ปวช/ปวส

☐ ปริญญาตรี ☐ ปริญญาโท หรือสูงกว่า

4.) ระยะเวลาที่ทำงานในอุตสาหกรรมฟอกหนัง

☐ 1 - 5 ปี ☐ 6 - 10 ปี

☐ 11 - 16 ปี ☐ 16 ปีขึ้นไป

5.) ระยะเวลาที่บริษัทดำเนินกิจการ

☐ 1 - 5 ปี ☐ 6 - 10 ปี

☐ 11 - 16 ปี ☐ 16 ปีขึ้นไป

6.) สินค้าหลักของบริษัท

☐ หนังรองเท้า/เครื่องแต่งกาย ☐ หนังกระเป๋าและเครื่องประดับ

☐ หนังเฟอร์นิเจอร์ / เบาะรถยนต์ ☐ อื่นๆ (โปรดระบุ) _____

7.) ตลาดหลักของบริษัท

☐ ตลาดภายในประเทศ ☐ ตลาดต่างประเทศ

8.) บริษัทของท่านมีกำลังการผลิตเท่าใด

☐ 1-100,000 ตร.ฟ./เดือน ☐ 100,000-300,000 ตร.ฟ./เดือน

☐ 300,000-500,000 ตร.ฟ./เดือน ☐ มากกว่า 500,000 ตร.ฟ./เดือน

9.) ท่านทราบถึงมาตรการจำกัดสาร (REACh) เมื่อใด

☐ ก่อนการกำหนดใช้ ☐ หลังการกำหนดใช้

10.) ท่านทราบเรื่องมาตรการจำกัดสาร (REACh) ครั้งแรกจากแหล่งใด

☐ ลูกค้า ☐ ผู้จำหน่ายวัตถุดิบ

☐ เจ้าหน้าที่รัฐ ☐ อื่นๆ (โปรดระบุ)

_____

11.) ท่านมีความเข้าใจเรื่องมาตรการจำกัดสาร (REACh) ดีเพียงใด

☐ น้อยมาก ☐ พอใช้

☐ ดี ☐ ดีมาก

12.) บริษัทของท่านต้องดำเนินการตามมาตรการจำกัดสาร (REACh) หรือไม่

☐ ใช่ ☐ ไม่ใช่ (ข้ามไปตอนที่ 3)

13.) บริษัทของท่านมีการเตรียมการใดๆก่อนการกำหนดใช้มาตรการหรือไม่

☐ มี ☐ ไม่มี (ข้ามไปตอนที่ 2)

14.) ระดับการเตรียมพร้อมของท่านอยู่ในระดับใด

☐ ต่ำ ☐ พอใช้

☐ ดี ☐ ดีมาก

ตอนที่ 2: ผลกระทบจากมาตรการจำกัดสาร (REACh)

โปรดทำเครื่องหมาย ü ลงในช่องสี่เหลี่ยมที่ตรงกับท่านมากที่สุด

1 - ไม่เห็นด้วยอย่างมาก

2 - ไม่เห็นด้วย

3 - ไม่มีความเห็น

4 - เห็นด้วย

5 - เห็นด้วยอย่างมาก

ผลกระทบที่เกิดจากมาตรการจำกัดสาร (REACh) ที่มีต่อสินค้า/กระบวนการผลิต	ไม่เห็นด้วย อย่างมาก	ไม่ เห็นด้วย	ไม่มี ความเห็น	เห็นด้วย	เห็นด้วย อย่างมาก
15.) ท่านต้องเปลี่ยนแปลงกระบวนการผลิต					
16.) ท่านต้องเปลี่ยน/ปรับสูตรเคมีการผลิต					
17.) ท่านต้องเปลี่ยน/หาผู้จำหน่ายเคมี หรือวัตถุดิบรายใหม่					
18.) ผู้จำหน่ายวัตถุดิบต้องสามารถรับรองได้ว่า สินค้าอยู่ภายใต้มาตรฐาน REACh					
19.) ท่านต้องเรียนรู้เทคนิคเพิ่มเติม เพื่อผลิตสินค้าตามมาตรฐาน REACh					
20.) ท่านต้องปรับปรุงอุปกรณ์และเครื่องจักร					
21.) ท่านต้องจ้างพนักงาน หรือเจ้าหน้าที่เทคนิคเพิ่มเติม					
22.) ท่านต้องมีมาตรการควบคุม/ตรวจสอบ คุณภาพสินค้าเพิ่มขึ้น					
23.) REACh ทำให้เวลาในการผลิต-จัดส่งเพิ่มขึ้น					
24.) REACh ทำให้คุณภาพทางกายภาพ ของสินค้าดีขึ้น					
25.) REACh ทำให้สินค้ามีความน่าเชื่อขึ้นมาก ขึ้น					
26.) REACh ทำให้ค่าใช้จ่ายในการผลิตเพิ่มขึ้น					
27.) REACh ส่งผลกระทบต่อราคาสินค้า					

ผลกระทบที่เกิดจากมาตรการจำกัดสาร **(REACh) ที่มีต่อการขาย/การตลาด**	ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ไม่มีความเห็น	เห็นด้วย	เห็นด้วยอย่างมาก
28.) ท่านต้องทำให้ผู้ซื้อเชื่อมั่น ว่าสินค้ามีความน่าเชื่อถือ					
29.) ท่านต้องมีเครื่องพิสูจน์หรือรับรอง ว่าสินค้าได้มาตรฐาน REACh					
30.) REACh ทำให้ต้องเปลี่ยนแปลง กลยุทธทางการตลาด					
31.) พนักงานขายจำเป็นต้องมีความรู้ เกี่ยวกับข้อบังคับของ REACh					
32.) REACh ทำให้ขั้นตอนในการขายเพิ่มขึ้น					
33.) REACh ทำให้รักษาลูกค้าที่มีอยู่ได้ง่ายขึ้น					
34.) REACh ทำให้หาลูกค้าใหม่ได้ง่ายขึ้น					
35.) REACh ทำให้ค่าใช้จ่ายทางการตลาดสูงขึ้น					
36.) REACh ทำให้สัดส่วนทางการตลาดสูงขึ้น					
37.) REACh ทำให้ยอดขายเพิ่มขึ้น					
38.) REACh ทำให้ความสามารถ ในการแข่งขันสูงขึ้น					

ตอนที่ 3: ความคิดเห็นที่มีต่อมาตรการจำกัดสาร (REACh)

โปรดทำเครื่องหมาย ✓ ลงในช่องสี่เหลี่ยมที่ตรงกับท่านมากที่สุด

ความคิดเห็นที่มีต่อ มาตรการจำกัดสาร (REACH)	ไม่เห็นด้วย อย่างมาก	ไม่ เห็นด้วย	ไม่มี ความเห็น	เห็นด้วย	เห็นด้วย อย่างมาก
39.) REACh เป็นมาตรการที่เป็นธรรม					
40.) REACh มีข้อบังคับที่เหมาะสม					
41.) REACh กำหนดใช้ในเวลาที่เหมาะสม					
42.) ผลกระทบของ REACh เท่าเทียมกัน ระหว่างโรงงานขนาดใหญ่และโรงงานขนาดเล็ก					
43.) มีข้อมูลเกี่ยวกับ REACh มากเพียงพอ					
44.) เทคโนโลยีปัจจุบันสามารถรองรับ ข้อกำหนดของ REACh					
45.) REACh จะส่งเสริมให้อุตสาหกรรมก้าวหน้าขึ้น					

ตอนที่ 4: โปรดแสดงความคิดเห็นต่อหัวข้อต่อไปนี้

46.) ท่านต้องการความช่วยเหลือด้านใดในการรับมือกับมาตรการจำกัดสาร (REACh)

_____

_____

_____

_____

47.) ข้อเสนอแนะ

_____

_____

_____

_____

ขอบคุณที่ให้ความร่วมมือในการตอบแบบสอบถาม