

## WORKSHOP

Sub-regional workshop on  
Environmental Requirements, Market Access/  
Penetration and Export Competitiveness for  
Leather and Footwear

**Bangkok, 19-21 November 2003**

## PROJECT

Project on Building Capacity for Improved Policy  
Making and Negotiation on Key Trade and  
Environment Issues

## STUDY

**DRAFT**

Draft Study on Environmental Requirements,  
Market Access and Export Competitiveness for  
Leather and Footwear in

**Philippines**

**BUILDING CAPACITY FOR IMPROVED POLICY MAKING AND NEGOTIATION  
ON KEY TRADE AND ENVIRONMENT ISSUES**

**Dr. Olivia la O' Castillo/ Dr. Purba Rao**

**National Case Study on Environmental Requirements, Market Access and  
Competitiveness in the Leather and Footwear Sectors in the Philippines  
Dr. Olivia la O' Castillo**

**Introduction:**

The focus of this paper will be on the leather and footwear sectors in the Philippines. It will cover the environmental requirements, market access and competitiveness of these sectors. The structure will thus include the following:

- Identification of environmental / health requirements
- Awareness on the issues and effectiveness of information management
- Current adjustment approach (actions taken to respond to environmental and health requirements)
- Underline elements of a pro-active approach in the national adjustment strategies to environmental and health requirements in international markets. This will include the demonstration of how the national standards plus implementation of international standards and compliance assessment procedures harmonize with each other.

In conclusion, the paper will include the assessment of the potential effects of environmental measures as adopted by the Philippines leather and footwear sectors. It will demonstrate the strategies that these industries will have to take in order to achieve higher economic efficiencies and export competitiveness while simultaneously complying with national and international environmental and health standards. It will also give recommendations on the areas where there will be a need for institutional capacity building in order to design and implement pro-active policies to environmental requirements in key export markets.

**An overview of the 'Leather' and 'Shoe' Industries will be given below in order to get the proper perspective as regards these industries in the Philippines.**

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**Leather and tannery industry in the Philippines**  
**-A Study on its Environmental Implications**  
( taken from the report of the Tanners Association of the Philippines)  
**Dr. Purba Rao**

**Background**

The leather industry, which is the primary market for the tannery industry, is made up of

- (a) Leather footwear industry
- (b) Leather goods section and the
- (c) Leather upholstery section

The leather footwear industry is receiving a lot of support from the government due to the significant contribution of Philippine footwear industry to the country's economy. This industry is also classified as an export winner. In 1996 a draft master plan was prepared providing a detailed program on different short term and long term measures to assist the leather footwear section and help it cope with the weak support industry.

The leather goods section is also considered, as promising for the export though the government attention is still non-existent. This industry is an offshoot of the leather footwear industry and is also suffering with a lack of main raw materials and other accessories.

The upholstery industry is fragmented comprising small upholsterers, their suppliers and their fabric traders. This is a small industry since the market for leather furniture and for automotive industry is comparatively small.

The local leather market relies on leather imports to make up for the fact that local supply of leather from the tanning industry is not enough. In 1996 the tanning industry had an estimated annual capacity of 46 million square feet of finished leather. Of this 60 % was intended to be absorbed by the leather footwear industry. It also had an annual capacity of 800 metric tons of sole leather. However the capacity utilization was only 30 % due to inadequate supply of raw hides and operating capital .

The tannery industry is facing a threat of competition mainly against Korean suppliers who supply about 72% of the finished leather import requirement in the Philippines for bovine and equine leather. Other countries like Hongkong ,Singapore , Japan and Indonesia are also coming in as well as Italy ,UK and Germany .

**Raw Material Supply and Trade in the Tanning Industry**

In this industry there has always been a lack of adequate supply of cow hides due to lack of structured cattle farming industry , no proper system in the slaughter houses and decreasing livestock of cattle. A more organized type of livestock raising is now coming up for meat processing industry. Right now there is only one organized cattle raising farm ,Monterey Farms, which slaughters and produces 35 raw hides a

day . This is not enough at all because an efficient drum dying technique in the tannery would need a minimum of 200 hides.

In the Philippines another problem in this industry is that the hides and skins are not given much importance leading to unaccepted quality . Livestock often get skin attack and damage by thorns, barbed wire, the horn of other animals and branding often in the most valuable parts of the hide. Also the mal practices like (a) practice of pouching to collect blood for “dinuguan” (b) removal of a big portion of the tail for “kare-kare” and (c) removal of adhering meat and fat from the flesh side of a fresh hide.

### **Environmental Issues**

The major environmental aspects in the tanning industry comes from the early part of the production process. When the chrome tanned leather is manufactured from the cattle hide, the initial stages of soaking results in a heavily polluted water containing mostly salt from the curing, including soluble proteins and manure. Also there is a high level of toxic waste water, which is released from the tanneries that goes untreated to the river systems. Thus in Bulacan the governor has put high priority on environmental management. Previously most tanneries used to operate without any effluent treatment. Now under serious threat of closure from the government the tanneries are trying to incorporate proper environmental management into their operations.

Essentially the leather manufacturing process in the tannery can be subdivided as follows:

#### (1) Raw hide salting and classification

The raw hides, which come from local slaughterhouses, are salted- cured to prevent microorganism attack and putrefaction and make the hides storable for a prolonged period. After the curing process, which takes about 2 weeks the hides are inspected and classified according to four different grades.

#### (2) Soaking and Liming

The salted hides are soaked and limed to clean the hide, remove salt, dung, blood and dirt and protect the hide from bacteria. The liming process removes the hair .The hides are then swept free of salt and placed in wooden drums filled with water and chemicals including liming agents for about 22 hours. After this process the hide is called limed pelt.

#### (3) Fleshing and Lime splitting

In this process the pelt is put into huge fleshing machines with a sharp blade that scraped off the fats, muscle, connective tissues after which the pelt is paid out on a conveyer belt and excess fats and flesh were trimmed physically by two workers.

#### (4) Chrome tanning

This process converts putrecible hides into stable material called leather. The pelts are placed on wood lined drums and treated with chrome sulphates and basifying agents that reduce the acidity. After this process, which takes 24 hours, the leather is called wet blues.

(5) Sammying

This process reduces the water content from 70 % to 50-55% by feeding wet blues into a machine containing two opposing rollers which squeeze water from the hide and partially stretch them.

(6) Chrome splitting

The chrome splitting machine has a sharp band knife blade which cuts horizontally through the leather separating it into (a) grain or upper layer and (b) flesh split or lower layer.

(7) Shaving

Here the hide's thickness is made even by a machine having shaving knives fitted on a roller which shave leather that exceeded specified thickness.

(8) Wet blue sorting where leather is categorized into different categories

(9) Retanning where wet blue leather is placed on wooden drums filled with mixture of water and chemicals, including tanning oil and dyes

(10) Sammying/setting out reducing moisture and stretching

(11) Vacuum drying/Hang drying

(12) Staking /Dry milling and toggle drying

(13) Crust sorting and trimming

(14) Finishing

**Pollutants in tannery effluents.**

(I) Solids comprising suspended solids (SS) which is the insoluble matter contained in the waste water, settle able solids and gross solids The suspended solids containing settle able solids and semi-colloidal solids cause a variety of problems when discharged from a site

The solids are produced from all parts of the leather making process and contain fine leather particles, residues from various chemical discharges and products from different waste liquids reacting together. If the waste water containing these solids are treated in the common effluent treatment plant, it gives a large volume of sludge as the solids settle. All of this sludge has to be removed, transported, dewatered, dried and deposited requiring a lot of resources and equipments. On the other hand, if the waste water

containing the solids are discharged into surface water instead of treatment, the settled sludge can form a blanket that cuts off oxygen from that area of the river or lake bed killing the plant and aquatic life

## (II) Oxygen Demand.

In the effluent there are many components, which get broken down by bacterial action into more simple components. This aerobic bacteria requires oxygen for survival as well as for the breakdown of the components, which can take place either very quickly, or a long time depending upon the constitution. If this effluent is discharged directly in the surface water it creates a very high oxygen demand making water getting stripped off from it and causing oxygen dependent plants, bacteria, fish and river to die. If the effluent contains anaerobic bacteria which are non-oxygen dependent, the waterways become toxic.

The affluent load created by tanneries is often very high and thus it must be treated before discharge.

## (III) Nitrogen

Several components in tannery effluent contain nitrogen as part of their chemical structure. The most common chemicals are ammonia from delimiting materials, and the nitrogen content of the proteinaceous materials resulting from liming/unhairing operations. This can be converted by bacteria to form water and nitrogen gas, which is the natural level of supply on a watercourse, and then the toxic anaerobic conditions rapidly develop.

## (IV) Sulphide

The sulphide content of a tannery effluent results from the use of sodium sulphide and sodium hydrosulphide and the breakdown of hair in the unhairing process. The sulphides give rise to many environmental problems.

Under alkali conditions sulphides largely remain in solution. When the pH level of the effluent falls below 9.5 hydrogen sulphide is generated from the effluent – the lower the effluent the greater the rate of evolution. Characterized by its smell of rotten eggs a severe odor problem is created. This gas is toxic in nature and causes headaches, nausea and attacks the surface of the eye. At higher levels even death can happen. In fact there have been many deaths recorded from sulphide build up in sewage systems.

In solution hydrogen sulphide causes corrosion weakening metal roofing, girders and metal supports. In sewers it causes major problems but corroding metal fitting, reinforcement and pipe work.

## (V) Neutral Salts

There are two common types of salts found in tannery effluent, sulphates and chlorides.

Sulphates are introduced in the tannery effluent by the use of sulphuric acid or through products with a high sodium sulphate content. Many auxiliary chemicals contain sodium sulphate as a by-product of their manufacture. For example chrome tanning powders contain high levels of sodium sulphate and also many synthetic retanning agents.

The sulphates in the effluent are broken down by anaerobic bacteria to produce hydrogen sulphide and odor. The hydrogen sulphide this created also causes corrosion and gradual erosion of concrete.

Chloride as sodium chloride is introduced into tannery effluent from the large quantities of common salt used in the hide and skin preservation process. As they are very soluble they cause increasing salinity in ground water. If this water is used for irrigation purposes the crop yields fall too.

#### (VI) Oils and Grease

These are released from the skin structure during leather manufacture. Also some fatty substances are produced when waste waters mix if the fat liquor exhaustion is poor. The greases and fatty precipitates usually tend to float and form mats which collect and bind other materials causing a potential blockage problem especially with effluent treatment systems. If released in the surface waters these thin layers of grease and oil make the transfer of oxygen from the atmosphere to the water drastically reduced. When these fatty substances are in the form of an emulsion they are biodegradable and thereby create a very high oxygen demand.

#### (VII) pH value

Acceptable limits for the discharge of waste waters to both surface waters and sewers are found from ranging between pH 5.5 to 10.0. Although tighter limits are often set, there is always greater tolerance to the alkali side. This is because carbon dioxide from the atmosphere and from biological processes in healthy surface water systems tend to lower pH very effectively to neutral conditions. If the pH of surface waters is moved too far either way from the pH range 6.5 –7.5, then there is loss of more sensitive fish and plant life.

#### (VIII) Chromium Compounds.

Chromium is mainly produced as waste from the chrome tanning process, as part of retanning systems and by displacement from leather by retanning and dyeing process. This chrome is discharged from processes in the soluble form but when it is mixed with other tannery waste waters from other processes, especially if proteins are present, there is a rapid reaction and precipitates are formed, mainly protein chrome, which add to the sludge generation. Also, fine, very stable colloids are formed which resist biological breakdown and hampers the biological process in both surface waters and waste water treatment plants. If chrome discharges are excessive there is the possibility of chromium remaining in solution, which, at low concentration, is toxic to daphnia thus affecting the fish food chain and photosynthesis.

### **Toxicity of effluent components**

The toxicity of effluent components in surface waters is a complex subject and there is shortage of specific data. This is due to the wide variety of aquatic life, the nature of individual components, and their degradation rate both in suspension or as part of sediment. Environmental Quality Standards are used as a method of control for the protection of aquatic life.

Regarding metals that might be present in the tannery effluents which are chromium, aluminium and perhaps zirconium, these are all classified as 'high/moderate –acute ' and 'chronic toxicity 'to organisms

and may accumulate .The toxicity of many metals also varies according to pH , temperature and water hardness. For Cr<sup>3+</sup> it causes severe toxicity at a level of 0.2mg/liter .For zinc and copper, the maximum acceptable levels are 0.3 mg/liter and 0.04 mg/liter. For the other parameters a summary of relevant standards for tannery effluents as set by the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources (DENR) are given below: (*see attached Annex for cross reference*)

Parameter	Inland waters	Marine coastline
Suspended solids	90	200
Biological Oxygen Demand	80	120
Chemical Oxygen Demand	150	250
Color PCU	200	not applicable
Chromium(Hexavalect)	0.2	0.5
Oil and Grease	10	15

All parameters except pH and color are expressed in mg/liter.

[Source: “Assessment of Tannery Effluent and Process Designs” authored by Tanners Association of the Philippines]

### A.3a PRODUCTS STANDARD for leather products

This section pertains to the product requirements which Philippine firms have to comply with when they send their products to EU, Germany, United Kingdom and the Netherlands. The products thus sent should be checked for the presence of following substances :

- Azo dyes
- Pentachlorophenol (PCPs)
- Polychlorinated biphenyls (PCBs) and terphenyls (PCTs)
- Flame retardants
- Cadmium
- Nickel
- Chrome (VI)

Azo dyes

Azo dyes are often used in the coloring process of leather , some of which (mostly within the range of color index numbers 11,000- 39,999 ) have carcinogenic properties or may form amines which in turn have carcinogenic and mutagenic properties.

Usually pigments used are not soluble and inert and so they do not release amines. The German authorities do not include azo pigments from the legislation until they release one of the listed amines under the test conditions.

	EU	Germany	The Netherlands	UK
Standard	prohibition>30ppm	same	same	same

*In the Philippine leather industry , as explained by Ms. Mary Lazaro , President of TAP (Tannery Association of the Philippines ) , they have tried to do away with azo dyes completely*

**Pentachlorophenol (PCP)**

These items are used to prevent fungal growth and decay by bacteria . In the leather production it is used for preservation finishing .PCP and its salts are harmful to human health And highly persistent in the environment .

The product standards for PCP are as follows :

	EU	Germany	The Netherlands	UK
Standard	max 1000ppm	5 ppm	5 ppm	1000ppm

**Polychlorinated Biphenyles (PCB) and Terphenyls(PCT)**

In the leather industry PCBs are not usually used though sometimes dyes may be contaminated by PCBs .

	EU	Germany	The Netherlands	UK
Standard	max 50 ppm	50 ppm	0.5 ppm per type	50 ppm

**Cadmium and Nickel**

Rarely used in leather production.

**Chrome VI**

The hexavalent chrome is always used for the chrome tanning phase of the leather production Which is an extremely toxic item. The product standards for the chrome content are as follows :

	EU	Germany	The Netherlands	UK
Standard	no legislation	max 0.1 mg/cm <sup>2</sup>	no legislation	no legislation

*In the Philippine tanning industry the use of hexavalent chrome is still there but the companies strive to meet the international standards as mentioned above.*

References:

1. "Assessment of Tannery Effluent and Process Designs" authored by Tanners Association of the Philippines]
2. Pollutants in Tannery Effluents, 1998, authored by M. Bosnic, J. Bulijan and R.P. Daniels, UNIDO
3. Valenzuela Tannery Corporation (A) and (B), 2002, case authored by Henry A. Grageda under the supervision of Prof Eduardo A. Morato, Asian Institute of Management, Philippines
4. Philippines Market Study on the Leather Industry 1998.

**Shoe industry in the Philippines**  
**-A Study on its Environmental Implications**  
( taken from a research and interview of the experts from the industry)  
**Dr. Olivia la O' Castillo**

**OVERVIEW:**

(taken from an article in the *Manila Bulletin*, B-12, September 8, 2003: *Marikina shoemakers struggle from cheap imports: Lack of timely government policy support blamed for collapse*)

“The footwear industry is 97 percent small-scale, family-owned enterprises providing the employment to at least 300,000 people doing 265 different components into the making of a pair of shoes from the glue to the nails, the heel, the raw hide, the leather, and the shoe lace. (see shoe process described below)”.

“In 1994, the country had six (6) big manufacturing companies producing athletic shoes for various brands such as *Reebok*, *NIKE*, *Skechers*, *LA Gear* and *Sergio Tachini*. These six companies employed 18,000 workers more or less. Today, only two companies with 3,000 workers exist because of lack of support from the government”. (ibid)

“During the Asian economic crises, the athletic footwear industry in the country was one of the hardest hit among the manufacturing industries. As such only two of the companies above stayed on”. (ibid)

“Statistics indicate that the footwear sector contributed US\$193 million or close to one (1) percent of the country’s export earning in 1997 by shipping out 22 million pairs of shoes”. Today, there is a decline of 62 percent in terms of value and 57 percent in terms of quantity exported. Comparatively, the value of imported footwear products was about US\$76 million, but by 2001, it declined to US\$53.5 million. However, the number of pairs of imported footwear increased from 28 million to 60 million”. (ibid)

“The Department of Trade & Industry has given its assurance to the industry that it will give its assistance by way of putting all stops to the influx of undervalued imported shoes from China. They also encouraged the filing of specific cases of mislabeling of imported shoes”. (ibid)

What is happening though is the “decaying state of the industry as a *divided* industry. The Mayor of Marikina is mobilizing their Shoe Council to give its all support to address their problems. The big companies who can afford to invest are improving their equipment, producing high-end or specialized shoes and looking for *market niche*. They know that it would be difficult to fight China and the only way to compete is to go *niche marketing of high-end or specialized footwear because the biggest advantage is in designing*. (ibid)

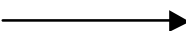
“The Philippine industry is called the *Italians of Asia*. In fact, the Canadian International Development Agency and the German government is giving them assistance”. (ibid) The industry knows ***that it needs an industry data base and the raising of awareness, commitment, and implementation of environmental standards.***

Below is a brief description of the shoe process as given by an expert of the industry.

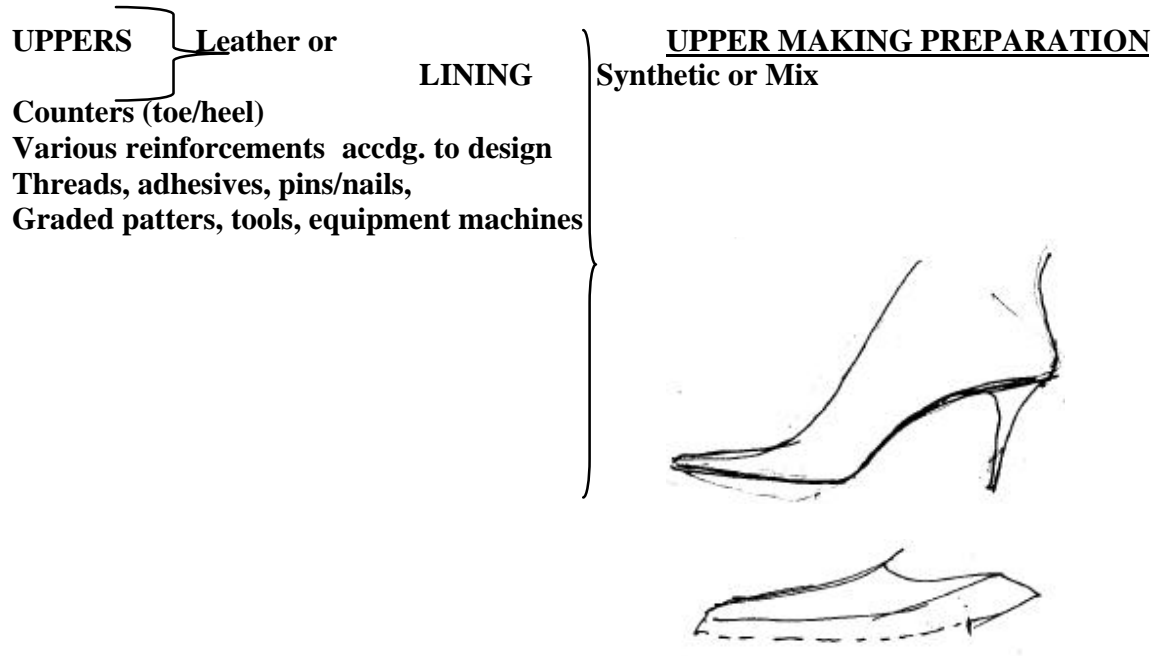
## **SHOE MANUFACTURING PROCESS**

**Tess Endriga**  
**Marikina City Footwear Consultant**  
**Chair, Technical Committee on Footwear,**  
**Bureau of Standards, Dept. of Trade & Industry**

### **PROCESS:**

- 1. Product/ Market Research**  **DEVELOPMENT**
- 2. Design/ Sampling/ Costing/ Grading**
- 3. Organizing Before Production**
  - **Preparation of Pattern Making (Grading) of uppers, linings, counters or reinforcements, chemicals/adhesives**
  - **Threads**
  - **Tools, supplies, equipment, machines**
  - **Actual cutting and sewing of complete uppers**
  - **Assembling for lasting**
  - **Lasting process: front, back, sides**
  - **Heel attachments, soles**
  - **Finishing**
  - **Packing in individual/ group boxes**
  - **Documentation for final costing and delivery**

**PRODUCTION PROCESS AFTER SAMPLES ARE APPROVED<sup>1</sup>**



**UPON GRADED CUTTING**

Sewing of Uppers (this may be subcontracted for livelihood projects)	<u>sewing machine tools</u>
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**UPON FINISHING**

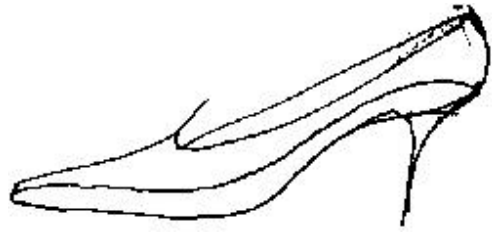
Lasting (Toe, Heel, Sides)	<u>lasting machine tools</u>
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**ATTACHMENTS OF**

Insoles with Shanks _____	<u>tools equipment</u>
Midsoles _____	<u>same</u>
Heels (with toplifts) _____	<u>machines</u>
Outsoles _____	<u>Tools, equipments</u>
Sock lining of labels _____	<u>adhesives</u>
	<u>same</u>

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<sup>1</sup> Tess Endriga  
Marikina City Footwear Consultant

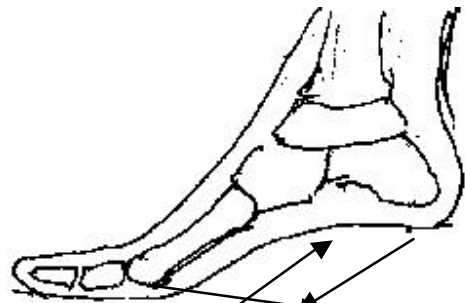


2



**FINISHING**  
**DELASTING** Tools, equipment  
**FINISHING** chemicals

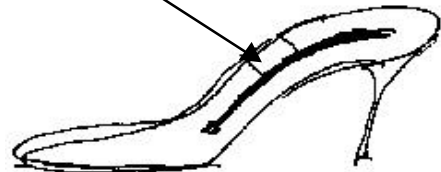
**PACKAGING**



Load-bearing area of the Human Foot

*Tempered Steel Shanks*

For CORRECT SUPPORT



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<sup>2</sup> Tess Endriga  
Marikina City Footwear Consultant

## A. ENVIRONMENTAL STANDARDS AND REGULATIONS FOR THE LEATHER AND FOOTWEAR INDUSTRIES IN THE PHILIPPINES

In the Philippines, the leather industry, of which tannery is the major focus - is the source of significant environmental impact. This includes air and water pollution (because of the production process – there are organic substances, chromium salts, vegetable and synthetic tanning agents used), different kinds of obnoxious odors, toxic and hazardous materials, and improper disposal of contaminated wastes (including the sludge). As such, the workers may be exposed to health and occupational hazards as well.

For the footwear industry, the production process' environmental impact is not as substantial as the leather-tannery industry as regards the air and water pollution. It has some amount of solid wastes, which may include some toxic and hazardous wastes, depending on the chemicals used. Similarly, these impacts may pose some occupational and health hazards to the workers.

Below are listed the national *environmental and health regulations and standards* that are aligned with the international environmental and health regulations and standards. Included are the international conventions to which the Philippines is a signatory. The leather tannery and footwear industries' production operations will have to work within the framework of the environmental regulatory system. Further discussions will indicate the level of awareness of the industries regarding these regulations and standards. The proactive approach and mechanisms taken by these industries will also be discussed.

### A.1 REGULATIONS – LEATHER :

#### Water

For the leather-tannery industry, the environmental regulations in the Philippines that greatly affect the **water pollution emitted** by this industry are the following:

- **Presidential Decree PD 982 or the National Pollution Control Law.** This law was enacted to protect the people from the growing menace of environmental pollution.
- **National Pollution Control Commission on Rules and Regulations** were prescribed to enforce PD 982. Chapter III, Sections 68 and 69 provide for the implementing rules and regulations related to water pollution control.
- **Presidential Decree No.1067** institutes the water code, revising and consolidating the laws governing ownership, appropriate utilization, exploitation, development, conservation and protection of water resources (including use of deep wells). It also has the implementing rules and regulations on the use of water.
- **Presidential Decree 1151 or the Philippine Environmental Policy** mandates the government to protect the right of the people to a healthy environment.
- **Presidential Decree 1152 or the Philippine Environment Code** provides general standards for water quality management. The Department of Environment and Natural Resources amended the water quality and effluent quality standards in 1990 with the issuance of the **DA 34 & 35**.

- **Department of Environment and Natural Resources Administrative Order # 34 (DAO 90-34) or the Stream Standards or Ambient Water Quality Criteria DAO 90-34** states that the quality of the Philippine waters shall be maintained in a safe and satisfactory condition according to best usage.
- **Department of Environment and Natural Resources Administrative Order # 35 (DA 90-35) or Revised Effluent Regulations of 1990.** DAO 90-35 provides the effluent standards that are related to stream classifications. It prohibits the discharge of sewerage and industrial effluent to Class AA and SA bodies of water.
- **Laguna Lake Development Authority or LLDA Environmental 's User's Fee System.** LLDA Resolution No. 33, Series of 1996 prescribes the rules and regulations implementing the Environmental User's Fee System in the Laguna de Bay Region. It aims at reducing pollution loading into the Bay and its tributaries. It enjoins all dischargers of liquid wastes to internalize the cost of environmental degradation and its enhancement into their business decisions or actions. (*taken from the Development Bank Pollution Abatement Manual and Handbook of Environmental Standards, 1999*).

With the effluents (such as suspended solids, BOD, COD, Chromium-hexavalent, oil grease) from the production operation process of tannery, the industry has to comply according to the standards set by these department orders. The industry, at some time during the 90's, was being assisted by *UNIDO* and *GTZ* to have a **Common Effluent Treatment Plant** in 1996. However, up to the present, nothing has materialized of this plan.

### Air

For the **Air Quality environmental regulations, the newly-enacted Clean Air Act or RA 8749** provides for a comprehensive air pollution control policy which includes air quality monitoring, roles of the local government units (LGUs) in air quality monitoring, ambient air quality standards and the criteria for establishing air quality standards, scope of air quality management, the implementing agency, **EIS, EIA, and ECC**, including an environmental revolving fund. **Department Administrative Order (DAO 81) provides the implementing rules and regulations of the Clean Air Act of RA 8749** (see **Annex 2** for the details of the standards). The process of the leather tannery, which includes the use of various chemicals, emits foul odors that may affect the air quality in the surrounding communities. As such these tanneries have to abide by the Clean Air Act.

### Management of Solid Wastes

Both the leather tannery and footwear industries have solid wastes to dispose properly. In fact, for the small and medium-sized companies in the leather tannery and footwear industries, it poses a big problem. As mentioned below, the footwear industry in Marikina City, which produces about two-thirds to one half of the Philippine shoes, is given full support by the City Mayor as regards the proper disposal of their solid wastes. As such, the city is kept very clean and orderly. The problem lies in the areas where support from the local government is not given. In such instances, the wastes thrown into the open dumpsites become ecological burdens.

***Republic Act 9003 or the Ecological Solid Waste Management Act of 2000.*** This supersedes previous decrees pertaining to the proper disposal and management of solid wastes. *The Act provides for an ecological solid waste management program, creating the necessary institutional mechanisms and incentives, declaring certain acts prohibited and providing penalties, appropriating funds therefore and for other purposes* (taken from the RA9003). This Act established a *National Solid Waste Management Commission* - under the Office of the President. It has fourteen (14) members from the government sector and three (3) members from the private sector. Its tasks includes the overseeing of the proper segregation of wastes, including collection and transport of solid wastes, reuse and recycling program, composting, waste management facilities, involvement of local government units, and incentives which will hopefully lead to a systematic, comprehensive, and ecologically friendly solid waste management program. The full implementation of this law will have direct impacts on the leather tannery and footwear industries. Presently, plans of Eco-centers, in partnership with the local governments, are underway. Waste segregation and proper solid waste disposal will be mandated and implemented because of this Act. ***Reuse and Recycling will be a major component of this Act.*** The leather tannery and footwear industries as such should start *waste minimization and cleaner production approaches*. In a way, this Act may also pave the way for these two industries to have a better environmental posture and behavior.

***Presidential Decree No. 824*** created the Metropolitan Manila Development Authority (MMDA) to coordinate and direct solid wastes collection and disposal in Metro Manila. This is important to note because there are manufacturers in the leather tannery and footwear industries located within Metro Manila. Their solid wastes are collected by this agency. Lately, segregation of wastes has been mandated but proper disposal is still a big problem.

***Presidential Decree No. 825 or the Improper Garbage Disposal*** provides for penalties on the improper waste disposal. It requires that all garbage, filth and waste should be placed in proper receptacles. Supervision over proper disposal of garbage has been devolved to the Local Government Units under the 1991 Local Government Code (Oposa, “A Legal Arsenal for the Philippines Environment”, 2002).

***Presidential Decree No. 856 or Sanitation Code of the Philippines.*** This covers the solid and liquid waste disposal. It prescribes standards for sewage collection and refuse and excreta disposal. It assigns to cities and municipalities the responsibilities to provide for efficient and proper disposal and to handle nuisance and offensive trades and occupations. It empowers the Secretary of Health to prescribe rules and regulations thereof. (Ibid, Oposa, 2002)

## Toxic and Hazardous Wastes

The country's rules and regulations on hazardous air emissions are covered by the *Clean Air Act (or RA 8749 and DAO 81)* while rules and regulations on *the hazardous water pollutants are covered by DAO 34, 35 (see Annex 3)*. *RA 6969 or the Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990* regulates the toxic substances and hazardous wastes, including nuclear wastes. It includes the penalties for violations of the act. *DENR DAO 29, Series of 1992 provides the implementing rules and regulations of RA 6969*. It regulates the importation, manufacture, processing, handling, storage, transportation, sale, distribution, use, and disposal of all unregulated chemical substances and mixtures in the Philippines including the entry (even in transit) as well as the keeping or storage and disposal of hazardous wastes into the country for whatever purpose. It includes the proper management of hazardous wastes in the country. These two legal documents present the broad types of wastes included within the scope of hazardous and those wastes which should be excluded. Hazardous wastes must be reported to the Environmental Management Bureau (EMB) annually. (*Ibid, DBP Handbook of Environmental Standards, 1999*).

*RA6969 and DAO 29* mandate the DENR Secretary or his duly authorized representative to keep, update, compile and maintain an **inventory of chemical substances** that are stored, imported, exported, used, processed, manufactured, or transported. The inventory shall contain information that the Secretary or his duly authorized representative considers relevant to the protection of health and the environment. *The Philippine Inventory of Chemicals and Chemical Substances (PICC)* contains such information. This inventory also contains the *Priority Chemical List (PCL) and the Chemical Control Order (CCO)*. *PCL* is a list of existing and new chemicals that the DENR has determined to potentially pose unreasonable risk to public health, workplace, and the environment. DENR requires all manufacturers, distributors, users, importers of chemicals included in the PCL to submit bi-annual reports. **The leather tanning industry is affected by this regulation because of their use of chromium compounds and other chemicals.** *CCO* prohibits, limits or regulates the use, manufacture, import, transport, processing, storage, possession and sale of those priority chemicals that it has determined to be regulated, phased-out, or banned because of the serious risks they pose to public health, workplace and environment. At any one time, the DENR may impose a regulation, a phase-out plan, or ban on a chemical or chemical substance when it determines that such action is necessary. **Both the leather tanning and footwear industry are affected by this regulation – especially as regards the CFCs that they emit.** (*Ibid, DBP Handbook of Environmental Standards, 1999*).

The chromium tanning compound that is used in the leather tanning is the most expensive input, and the most toxic chemical effluents. Chromium is of particular concern to government regulatory agencies. Aside from economic reasons, it is the environmental impact that is most pressing to mitigate. The *Department of Science & Technology* did a study of the Philippine Leather Tannery in the early 90's to assist the industry recover the chromium, for economic reasons, and assist in the mitigation of its environmental impacts. Presently, the DOST has no plans to give them any support.

### **Occupational and other Environmental Regulations as regards to Noise, and others as prescribed by the International Labor Organization (ILO code)**

Another regulation that affects this industry is *Presidential Decree (PD) No.442 or the Labor Code of the Philippines*. Under this code is *Article 162 or Occupational Safety and Health regulations*. It covers the general provisions, premises of establishment, occupational health and environmental control (*including noise levels, airborne contaminants, illumination levels, ventilation, temperature and humidity, levels of carcinogen, protective personal equipment and devices, and hazardous materials*) (Ibid, DBP Handbook of Environmental Standards, 1999). For the leather tanning, this Code is very important. The leather tanneries have to comply with this regulation especially in their production operations. In fact, there is difficulty in complying with this code because of the high cost of acquiring the new technologies today. As such, the industry has to be innovative in maintaining their equipment and have a sound environmental management system. Good housekeeping is another feature that they have to maintain.

### **International Conventions**

The Philippines is signatory to the *Montreal Protocol* (for the gradual phase-out of the production and usage of ozone depletion substances and CFCs), *UN Framework Convention on Climate Change*, the *Kyoto Protocol to Global Climate Change Convention*, and *Basel Convention* (on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal) and the *Stockholm Convention on Persistent Organic Pollutants (POPs)* plus the above described prescription of the *International Labor Organization on the labor code*. These international regulations also serve as a framework within which many industries have to comply. The leather-tannery is affected because of the 1 toxic and hazardous wastes sludges that are produced in their processes.

## **A.2 REGULATIONS - FOOTWEAR:**

The Footwear industry is covered by the same regulations as the leather tanning industry as mentioned above. These include air, water, solid waste, toxic and hazardous waste, noise levels, airborne contaminants, illumination levels, ventilation, temperature and humidity, levels of carcinogen, protective personal equipment and devices, and hazardous materials.

The footwear industry production process does not emit water discharges or pollutant effluents as toxic and hazardous as the leather tanning industry. Some footwear factories have *water curtains or films* to catch the spraying done to the shoes. Here some chemicals are present which may go to the sewage or discharge system of the municipalities. The amount of discharge, though, is kept to a minimum and must comply with the standards.

The same is true for the air emissions or airborne contaminants, toxic and hazardous wastes (which are minimum or very low), and the solid wastes (sludge). The proper disposal of the solid wastes will be discussed later.

### A.3 STANDARDS – LEATHER and FOOTWEAR

#### Water

The leather tannery and footwear industries have to comply with the following standards regarding water quality:

- *Department of Environment and Natural Resources Administrative Order (DAO 34)* series of 1990 is also known as the Stream Standards or Ambient Water Quality Criteria. This provides that all surface waters shall be free from domestic, industrial, agricultural, or other man-induced non-thermal components of discharges which, alone or in combination with other substances or in combination with other components of discharges (whether thermal or non-thermal).
- Existing Effluent Standards (see **Annex 3**) for leather tanneries in the Philippines are found in the *Department of Environment and Natural Resources Administrative Order (DAO) 35* – is also known as the Revised Effluent Regulations of 1990. It provides the effluent standards for toxic and other deleterious substances from various industries discharging into inland and marine/coastal waters. It also sets the effluent standards for new industries producing strong waste, upon effectivity of these regulations, and for all industries producing strong waste starting January 1995. (Ibid. DBP Handbook of Environmental Standards, 1999). This **DAO 35** is now being implemented and strict compliance will benefit the workers and environment. Majority of the tanners and footwear manufacturers belong to the SME category and they do not have the financial, technical, and human capabilities to mitigate/improve their effluent discharges. They cannot afford to put up individual wastewater treatment plants. In the Bulacan province (very near Metro Manila), a survey indicated that the tanneries in the area had a discharge of 500 cubic meters of wastewater per day. The estimate of their water usage, in conventional processes of leather manufacture, is about 35-40 liters of water for every kilo of leather made. (Report of the Tanneries Association of the Philippines “Assessment of Tannery Effluent and Process Designs”, 1996). The Philippine footwear industry faces the same problem as the leather tannery industry. Only a few large manufacturers would be able to afford a wastewater treatment plant. Moreover, they are reluctant to do so. The majority is comprised of small and medium-sized companies that cannot afford to have individual treatment plants.
- *Laguna Lake Development Authority (LLDA) Environmental User’s Fee System* prescribes the **fee** that will be paid by dischargers of liquid waste or wastewater into Laguna Lake or its tributary rivers and streams. The fee system is composed of **fixed fee and variable fee**. The **fixed fee** covers the administrative cost of implementing the EUFs based on volumetric rate of discharge. It ranges from US\$100/within 30 m<sup>3</sup> /day to US\$300/with 150 m<sup>3</sup>/day. The **variable fee** is based on the unit load of pollution

computed as the product of the volumetric discharge and the effluent concentration. The schedule of variable fees based on effluent concentration is as follows: if the effluent concentration within 50 mg/L BOD = 10 cents per kg of BOD. If the effluent concentration above 50 mg/L BOD = 60 cents per kg BOD. There are schedule of fines for operating without valid permit to operate. ***Industries operating water pollution sources and control installations are required to secure discharge permits from the LLDA.*** The issuance of discharge permits depends on the compliance by the company to water quality standards. (Ibid, DBP Handbook of Environmental Standards, 1999)

**It should be noted that this system worked out very well during its initial implementation because of the strict implementation by the director at that time. The system was able to generate substantial revenues to improve the technical and human operations. In fact, the DENR will implement this nationwide soon.** To complicate the problems of industries, the pending *Clean Water Act* will even make it more difficult for these industries to cope with the standards.

### Air

The major sources of air pollutions in the Philippines are mobile (motor vehicles) and stationary (power plants and boilers) in industrial processes. In Metro Manila and its surrounding areas, it is estimated that at least 2,700 industries emit air pollution. ***There has not been an air emission inventory conducted in the Philippines. In fact, studies indicated that in 1991, TSP, Pm-10 and lead concentrations significantly exceeded national ambient air quality standards (these were comparable with the guidelines established by the World Health Organization (WHO). Results revealed that TSP frequently exceeded the standard by 5 times, PM-10 by 3 times, and lead by 2.2 times. In Metro Manila alone, it is estimated that 116,000 tons of PM-10, 39,000 tons of SO<sub>x</sub> and 140 tons of lead a year are emitted.*** (Ibid, DBP Manuals on Pollution Abatement, 1999).

As regards air quality, the Philippines is covered by the *Clean Air Act or RA 8749 and DAO 81 (implementing rules and regulations)*. Included here are the *National Emissions Standards for Source Specific Air Pollutants (NESSAP) and National Ambient Air Quality Standards (NAAQS) for Source Specific Air Pollutants from Industrial Sources/Operations, plus the DENR's National Ambient Air Quality Guidelines (NAAQG) for Criteria Pollutants.* (see Annex 2 for the standards (Ibid, DBP Handbook of Environmental Standards and Manuals on Pollution Abatement)

The NESSAP lists the standards for source emissions. It establishes the legal ceiling on the total quantity or concentrations of a pollutant discharged from a pollution sources. DENR has fines and penalties based on these source emission standards. They require industries to comply by adopting control technologies that may reduce their air emissions and improve air quality. The footwear and leather tanning industries have to abide by these standards. (see Annex 2)

The standards in the NAAQS (Annex 2) provides the highest allowable limit of pollutant concentration as a result of emission discharge from any industrial operations.(Ibid, DBH Manual on Pollution Abatement, 1999). However, the drawback in applying these standards is the difficulty in identifying specific sources. This is especially true when the combined effect of several dischargers results in the excess of the ambient standards (Ibid, DBP...). Because of the above, the Philippines seldom use these ambient standards as a means of imposing fines or penalties. Ambient standard is used only when source emission data are not available and after thorough ambient air quality testing and meteorological monitoring are done. (Ibid, DBP...).

### **Solid Wastes Management**

The industries at this point in time are awaiting the implementing rules and regulations (which will include the standards) of the recently promulgated RA 9003 or Ecological Solid Waste Management Act. The Local Government Code requires the DENR to devolve some of its functions to the Local Government Units (LGUs). As such, the collection, disposal, and sound environmental management of solid wastes from industries will be done by the LGUs. Industries, such as the leather tannery and footwear, have to abide by the standards set by the Solid Waste Commission and the Local Government Units. Industries have to segregate, reuse, recycle, and look for approaches to build up their non-product solid wastes in their operations. Some of the tanneries and footwear companies recycle their solid wastes. There are companies that are proactive and reuse most of their solid wastes. Those that are no longer needed are given to the collectors of the LGU.

### **Toxic and Hazardous Management**

Presently, RA 6969 sets the standards for the sound and proper disposal of toxic and hazardous components of industries. The Environmental Management Bureau is responsible in the implementation of this Act. However, due to lack of financial, human, and technical resources, they are unable to fully implement it. It is good that lately, there are already some 'Treaters' for this toxic and hazardous wastes. However, they are not enough. The leather tannery industry, particularly, has to address their mismanagement of these wastes. As mentioned earlier, the Philippines is signatory to various international conventions. As such, the country has to set the framework of the standards of toxic and hazardous wastes according to these conventions. Another impinging factor is the coming '*Toxic and Hazardous Act*' that is now being crafted by the legislators. Cleaner Production is being advocated. Very few of the large footwear manufacturers are adopting this approach. One company was driven to adopt it because it is a supplier of the shoes used in the electronic industry which is already ISO-14000 accredited. Others do it because they want to export their shoes in the near future. Whereas, there are also those who are really proactive and forward looking majority of them find it difficult to change their systems because they think of these approaches as additional expense on their operations. They don't realize that in the long run, the change will give them a competitive edge and advantage.

### **Occupational and other Environmental Regulations as regards to Noise, and others as prescribed by the International Labor Organization (ILO code)**

The leather tanning and the footwear industries abide by the standards set by the International Labor Organization (ILO) as regards their occupational and safety standards in the operations. The 5S of the Japanese system have been introduced to them. However, in the leather tanning sector, only the large companies adhere to these standards. In the footwear industry, some medium-sized manufacturers already adopt these practices.

For the leather tannery sector, they use sodium sulphide and sodium hydrosulphide in the unhairing process which in turn produce some emissions which may even be toxic if done beyond the required standards. The following are the **standards for the Odorous Compounds** of Industrial Source Emissions. These are: the *detection Threshold (ppm) is 0,0005; while recognition Threshold (ppm) is 0.0047; and odor description will be like a rotten egg. As for the standards of the toxicity of various gases such as sulphide: the Threshold limit (ppm) is 10/20; the Hazardous limit (ppm) is 250; and the Lethal Concentration (ppm) is 5600.*

As regards the noise, the standards for light industrial areas range from 60-70 decibels and 65-75 decibels for heavy industrial areas.

The footwear industry also has some emissions in their operations but they are not as toxic as the leather tannery. As observed in the plant visits in the two industries, the large companies in both industries are the ones who observe these standards and have protective devices for their workers.

### **Other Voluntary Activities and Emerging Trends and Issues**

The leather tannery industry has always been the focus of attention of government stakeholders like the Department of Science & Technology and the Department of Environment and Natural Resources. They have had assistance, by way of grants, research projects and the like on how to address the environmental degradation that the industry is causing to the environment. UNIDO, GTZ, UNEP, JICA, and many other donor organizations have tried to give their support. The industry needs very badly a **Common Effluent Treatment Plant**. However, it is too costly and thus, has never been implemented. The tanneries' discharges of various types of pollutants to the surrounding rivers and lakes have caused terrible degradation.

Some large tanneries try to be proactive and encourage the leather tannery association to do likewise. They network with the **BLC Leather Technology Centre Ltd.** in the United Kingdom to keep abreast of the latest technology. They have lost their network with UNIDO and GTZ. However, these members search the website and make it a point to look at **cleaner production approaches** to minimize their impacts.

One company has been ISO-9000 accredited and is looking towards ISO-14000. There are others who are doing likewise. One big footwear company has installed a centralized exhaust system with a humidifier and dust absorber. In fact, there is one employee who goes around, the whole time, cleaning – just cleaning the workstations in the plant. Workers use protective masks, gloves, etc especially in the areas where there are possible toxic emissions. They likewise have a water curtain wall where spraying takes place (see attached box for more details)

Another company adopts the ‘greening of the supply chain’ because they supply the shoes of the electronic company which has to be ‘green’. They have to document all their operations especially the environmental activities.

**Maritalia, the soul and lifeblood of Rusty Lopez shoe production**

True to a corporate commitment to produce quality goods, it runs the most up-to-date manufacturing facility in the local industry. The company factory, referred to as Maritalia, houses the most modern equipment designed for mass shoe production. Fully operational, Maritalia can produce as much as 24,000 pairs of shoes in a month. All Maritalia machines are made and imported from Italy, where shoe production today has become an art form. Run by a full-time staff of 83 people, the 1,000 square meter factory is fully equipped with the latest systems for employee comfort.

**Presently, Maritalia has a centralized exhaust system with a humidifier and dust absorber. As a further commitment to quality, we required our employees to undergo factory training seminar as early as eight months prior to Maritalia's operation.**

In the footwear industry, the *sector producing sports or athletic footwear* exports its shoes and has to comply with the international and national environmental and health regulations and standards. The market demands it of them. This sector alone employs 18,000 workers. One company has 2,300 workers. (Manila Bulletin, Business Section, August 12, 3003)

**The DENR/EMB recently signed DAO2003-14 creating the PEPP or Philippine Environment Partnership Program to support industry self-regulation towards improved environmental performance.** This order will definitely be a big assistance to industries like the leather tannery and footwear. It will promote self-monitoring and compliance with environmental standards and encourage voluntary self-regulation leading to a sound environmental performance. The industry association will play a big role here because they will be the ones to enter into an *Environmental Consent Agreement (ECONA) with DENR/EMB*. Technical, financial, and environmental assistance will be given to enterprises that will meet the criteria set by this decree. In fact, it is a step forward in encouraging industries to have voluntary agreements just like what is now being adopted by European countries like the Netherlands and Denmark.

## **B. AWARENESS OF THE ISSUES and EFFECTIVENESS OF INFORMATION MANAGEMENT**

### **B.1 Leather**

Presently, only the large leather tannery companies (and the leather tannery association) seem to be aware of the **environmental and health requirements**. They know that they are greatly contributing to the environmental degradation of the surrounding rivers, especially with their effluents discharges. The small and medium-sized plants would rather not even think about these requirements unless the government regulatory agencies will go after them or send them 'cease and desist' orders or revoke their environmental compliance certificates.

The awareness levels of the industry exist because the Japanese and the ILO, through the Occupational and Safety Measures, have given them the 5S training (a Japanese method is setting the quality management standards in the workplace). Some companies, especially the large ones, have been given environmental training by UNIDO, GTZ, and the Department of Science & Technology. Some have been sent abroad for such training. In fact, a few are ready for ISO-9000.

It is the industry association that tries to keep their members informed of the emerging environmental and health issues and trends. They have been applying for a *Common Effluent Treatment Plant* to be placed in their municipalities, but it seems that the government cannot find the financial, technical, and human resources to assist and support them. They have monthly meetings and try to attend conferences, forums, and workshops (if invited). In fact, the Department of Science & Technology has been assisting them even during the 80's and 90's, but not much has changed within their industry. The Department of Trade & Industry has also been trying to assist them, but both stakeholders do not seem to collaborate effectively. Perhaps, it is because these agencies are not able to explain the cost benefits of cleaner production while making the products environmentally competitive in the world market.

Aside from the facts mentioned above, the Bureau of Product Standards of the Department of Trade & Industry is also trying to give some assistance to the industry in improving the quality of their products. They are in the process of updating and giving the industry the latest trends and technology available.

### **B.2 Footwear**

The footwear industry in the Philippines is trying its best to improve its capacity and technology in improving the quality of products. The Shoe council and other shoe-related associations are trying to band together to prepare their industry for the global competition. As mentioned in the

introduction, they are strategizing to have a niche marketing and produce high-end quality shoes. They are capitalizing on their strength, *designing – in order to survive*.

Marikina City, a suburb in Metro Manila, used to be the ‘shoe capital’ of the country. However, it became complacent in the 80’s and, now, its companies produce only about one-half of the locally-produced shoes. The other producers may be found north and south of Metro Manila. About a third of the producers are in Cebu which is an island in southern Philippines.

Marikina City and its footwear industry is trying its best to regain its former reputation and image. In fact, as regards the technical standards, it has established some basic components as the *precision plastic shoe lasts and molded outsoles*. The factories are already mechanized and semi-mechanized especially in quality leather footwear.

Locally, there is a *demand of about 40-50 million pair of shoes*. The industry cannot even cope up with this demand. Marikina City alone has 460 small and medium-sized shoes factories, a number of which are in the handicraft stage. It has more semi-mechanized shoes factories than the over 1,000 small shoe shops in the provinces and the rest of the Philippines. In fact, those in the provinces source their supplies from Marikina. There are almost 80 small and medium-sized factories *that are ready for mechanization after having been exposed not only to the influences of a steadily globalizing market but also to the know-how given by International experts of the two-year PPP Program of GTZ-Fagus and SACCI. The Marikina Mayor has offered through her Mechanization Program, very easy terms to the small and medium shoe factories for their efforts to mechanize their production processes*. Presently, there are two (2) safety shoes factories in Marikina which produce according to global standards. Another is located in Bulacan and is ISO-9000 certified. Some local factories have already tied up with well known foreign brands and as such are introduced to emerging environmental issues. Despite these partnerships, the manufacturers are slow to adopt environmental practices. On the over-all, there are facilities for upgrading know-how for shoemaking being given support by GTZ, KFW and the Hanns Seidel Foundation. **In fact, the KFW is funding the initial start-up of the Shoe Academy ( this is now in existence – it is called Philippine Footwear Academy. It is the first and only footwear school in the ASEAN region. See Annex 3 for more details)**. There are stages of sister city arrangements in Brockton, Massachusetts, U.S. A. and also with Vigevano, Italy. The local government is giving them support by way of a new ordinance requiring the shoe factories to use international standard sizes and to use Fren sizing system. There is *none however for environment, except for the proper disposal of their solid wastes. There is a need for strong consolidation of the small shoe factories for their survival and market niche. This may also occur if they take environment as their competitive edge and agenda*. (taken from the brochure written by Endriga, Tess. “1<sup>st</sup> Sapatero Festival” October – November, 2002, Marikina City).

One factory is supplying the shoe requirements of some Japanese electronic company. In fact, it is the only shoe factory in the country that is manufacturing this kind of shoes. At the start the electronic companies could not believe that there is a local shoe manufacturer that can supply them with the requirements that they have. Presently, this shoe company supplies about 24,000 pairs a month. Upon interviewing them, they said that they have to follow the environmental and

health requirements of their buyer as required by the ISO-14000 accredited requirements. They also have to document their operations and report them to their buyers.

## **C. CURRENT ADJUSTMENT APPROACH (actions taken to respond to environmental and health requirements)**

### **C.1 Leather**

The leather tannery industry in the Philippines needs to act faster than it thinks. It is unbelievable that even the large-sized companies have stopped being members of the British Leather Industry Association because of high membership fees. It is the large-sized companies that should be preparing for global competition. They are at least proactive in their behavior as regards mitigating environmental degradation. One company is about to be ISO-9000 certified (and might proceed to being ISO-14000). Below are some practices that they are adopting:

- Identification of the sources of their waste (solids plus sludges, including toxic and hazardous)
- Identification of the major sources of wastewater which includes the salts, ammonium, chromium and other pollutants
- Reduction of water usage and proper disposal of wastewater
- Improving technical operation efficiencies and throughputs in order to comply with environmental standards

The approach above seems to be idealistic for the industry. The picture is far from being 'rosy'. They are the source of major polluted effluent discharges to the rivers and are killing these rivers. The municipal governments where these tanneries are located have to assist and give them support by providing common effluent treatment plants.

Cleaner Production and Waste Minimization Workshops will alleviate their plight. They have had the 5S, but they were not enough. A lot of good housekeeping is still needed.

The Department of Science & Technology (DOST) and the Department of Trade & Industry (DTI) feel that enough support have been given to this industry. However, the members of the industry feel the opposite. *A project on chromium recovery was done by the DOST and UNIDO but the small and medium-sized plants could not cope with the trends.*

The Department of Environment & Natural Resources (DENR) and the Department of Health (DH) have been giving this industry some allowance regarding the effluent standards, ambient emissions, and solid wastes management. *Latelty, the DENR has launched a program called PEPP (Philippine Environment Partnership Program) which was created to support industry self regulation towards improved environmental performance.* Despite this, the industry still finds it very difficult to comply with the environmental standards because (they say) of economic reasons. The industry has a long way in fulfilling or complying with the environmental and health standards. Some really look like 'sweatshops' and should be closed.

In the final analysis, the industry knows that it cannot depend on government to give it financial or technical assistance, like providing them with the *Common Effluent Treatment Plant*. What is happening at present is that small and medium-sized companies adopt cheaper methods of production and disposal - at the expense of the environment. The DENR program mentioned above, the **PEPP**, should encourage these small and medium-sized companies to have some industry agreements, codes of good practice and voluntary standards to minimize the need for more governmental regulations. This is where their *industry association can play a key role. It may draw the framework and principles for the codes that are needed. To start with, simple EMS – environmental management system, may be adopted. The association may enter into an agreement with DENR or EMB as stated in the PEPP.*

The industry is hoping that there will be assistance by way of grants or some way of partnering where they can be given assistance especially with the new technologies. They certainly cannot afford to buy the new equipment needed to meet the environmental and health standards. Their hope, in the mean time is with the PEPP of the government as mentioned above.

There is a need to solve this impasse. Perhaps, a loan can be granted to the Association (with the guarantee of the LGU) for the establishment of a common wastewater treatment facility. The loan can be repaid from the fees collected from the companies that will discharge their effluents into the wastewater treatment facility.

## **C.2 Footwear**

The footwear industry is still at its infancy when it comes to awareness of environmental regulations and standards. It is aware of the health standards due to the ILO Occupational and Health standards that were introduced to them. One may count the few large companies who may be aware (but not that fully aware) of all the environmental regulations and standards that impinge on their industry. They know that *globalization, and its impact on their production and sales, is now a reality. They know that the market is very competitive price-wise, design-wise, and quality-wise. They know that there is an urgent need for the Philippine Shoe Industry to establish its market niche and produce globally competitive footwear in terms of cost, design and quality. (Ibid, Endriga, 2002).* The local government of Marikina is very supportive because it even mandates the industry to standardize the sizes of shoes according to international standards. It has set up a *Shoe Academy* with the assistance of the KFW of Germany. It gave them a space in the Mayor's office for a Shoe Hall to hold their meetings and have a footwear mini-library. It holds trend seminars and design contests. Technically, the *CITEM (Center for International Trade Expositions & Missions) and FOBAP (Foreign Buyers Association of the Philippines) have encouraged them to join the International Exhibitions.*

**What is markedly missing is the opportunity to learn and know about the local and international environmental regulations and standards.** In fact, this author was invited to be a speaker in one of their monthly '*kapihan*' (coffee drinking gathering) about this project. To my surprise, the majority of the members were not aware of the environmental regulations and standards presented to them. They will need an exponential jump in order to reach the level of

awareness of other industries locally and internationally as regards environmental issues, trends, and the like.

**D. Elements of a pro-active approach in the national adjustment strategies to environmental and health requirements in international markets including the demonstration of how the national standards, plus implementation of international standards and compliance assessment procedures harmonize with each other**

Of the two industries, more environmental and health assistance should be given to the leather tannery industry. There is a strong apprehension with the footwear industry because of their low level of awareness and commitment regarding implementation of the environmental regulations and standards. There is no environmental framework in their production operations, marketing, financial or accounting systems, and human organization dimensions. Both have industry associations and other mechanisms to assist them with their technical, financial, and marketing problems. But – when it comes to environmental aspects, they view them as expenses and not worth adopting or paying attention to.

The leather tannery industry has an industry association but only with the large companies actively participating. As mentioned earlier, they try to get some support from the Department of Science & Technology, the Department of Trade & Industry, Department of Health and Department of Labor, but not from the Department of Environment & Natural Resources. They are willing, though to get environmental assistance from organizations that would be willing to give them the environmental capacity-building seminars like *EMS (environmental management system)*, *CP (Cleaner Production)*, *EMA (Environmental Management Accounting)*, and others. For them, the most important assistance they would want to get for the environment is the *Common Effluent Treatment Plant*. Also, if they can afford it, they would want to adopt cleaner technologies to avoid wastes at source and mitigate the environmental problems. Some selected chemicals that have the lowest environmental impact and are relatively easier to treat. They try to keep their equipment in good condition to avoid higher operating expenses. They also try to get updates from the Bureau of Product Standards, Department of Trade & Industry, and Department of Environment & Natural Resources on the requirements on chemicals, latest trends and technologies. As mentioned earlier, they network with the British Leather Companies' Leather Technology Center on the latest technology and chemical management. They are informed as to the latest acceptable dye materials, amount of acceptable chrome, and water-based chemicals, solvents, etc. They keep abreast of these trends and technologies through the use of the internet. Some of the tanners are invited abroad.

The footwear industry as mentioned earlier needs an exponential jump as regards local and international environmental and health regulations and standards. If painstakingly done, it may be done immediately because the systems are in place. First, they have the support of their local government. The 'footwear' capital of the Philippines, Marikina City, embarked on a reform and revitalization program for the industry to keep in stride with dynamic market changes and growing demands for better quality of shoes at cheaper prices.(ibid, Endriga, 2002). *As such, the city has established the Marikina City Shoe Design and Business Center* with a goal of helping the industry upgrade the skills and quality of its shoe designers through the use of

Information Technology (ibid, Endriga, 2002). What is markedly missing is the **environment component**. According to the Endriga Report, *the center serves as the catalyst for changes by providing services essential for the growth of the business sector to generate their own economic wealth and develop their own capabilities. This center is open to all shoe manufacturers in the country. It also has its own library and gives consultancy services to SMEs. It networks with government agencies such as the Dept. of Trade & Industry, Cottage Industry and technology Center, Technical Education and Skills Development Authority and other government agencies.*

The footwear industry in Marikina has the *Marikina Shoe Designer Guild* composed of 60 designers representing different local shoe manufacturers. It also has the *Marikina Council of Fashion* to promote the exports of their footwear by sending missions abroad (ibid, Endriga, 2002)

In 1999, the *Philippine Footwear Federation, Inc. (PFFI)* worked with the GTZ-Manila, and a Shoe-Last Company named *Fagus and Sacci* in a two-year PP Program which provided seminars and factory consultations by leading international experts in the production and marketing of shoes. The CITEM provided valuable assistance and venue to the seminars (ibid, Endriga, 2002).

In the footwear industry, as mentioned earlier, there was a bright note because one company **was part of a green supply chain**. Since it supplied shoes used in the operations of electronic companies (which are ISO-14000 accredited), the company had to comply with the international environmental and health regulations and standards. The plant layout had to meet the basic EMS requirements. Their workers were strictly complying with the use of protective environmental devices. Their operations, likewise, had to have a sound environmental management program. More so, documentation is required.

The markets will be the factor that will drive these two industries to have sound environmental practices and follow the local and international environmental regulations and standards. The institutional systems seem to be in place. There are the industry associations, councils formed, local government agencies, such as the Office of the Marikina Mayor, that make it easier to harmonize the mechanisms. *An important observation about this harmonization is that the local government of Marikina is closely coordinating with the Department of Trade & Industry and Tourism.* The Shoe Council includes members from these sectors and together they map out strategies to improve the industry. *What is really needed at this point is a close coordination of raising the awareness, commitment, and implementation of **environmental trends and technologies.***

## **E. CONCLUSION and RECOMMENDATIONS**

In the end, with globalization around the corner, the Philippine leather tannery and footwear industries have to harmonize the local and international environmental and health standards. There is hope with the newly created Department Administrative Order 2003-14 or Philippine

Environment Partnership Program (PEPP) of the Department of Environment and Natural Resources. This has been under negotiations with the DENR for several years. It was only signed last June, 2003. The industries have yet to know how it will be implemented. However, the leather tannery and footwear industries will greatly benefit from this.

The Shoe Academy established by the local government of Marikina City is a step forward towards the harmonization path. Environmental and health standards may be part of the capacity-building mechanisms that they should adopt. Partnerships with relevant stakeholders will also greatly assist to move towards that direction. The footwear industry seems to be ahead towards this aspect, yet, they have left environment behind. Champions will be needed to assist them towards the environmental framework.

The various councils, federations, associations that have been formed should work towards common goals and objectives – such as the harmonization of local and international environmental and health regulations and standards. For a start, both industries should have an inventory and database of these standards. The DENR-EMB has started to list these standards in their website. Other programs are moving towards this direction. The JICA or Japan International Cooperation Agency is also initiating this project. UNDP together with the Dept. of Trade & Industry and the Board of Investment is also promoting this program. However, more stakeholders' partnerships and initiatives have still to be undertaken in order to make this a reality.

Another important step that the industries, together with the concerned government agencies, should address is to get the informal sectors composed of the small and medium-sized companies to work with them in raising the awareness amongst them about these standards. There may be a big brother-small brother approach, wherein the bigger companies give workshops or mentor and monitor the smaller ones by providing them with speakers or experts coming from their companies. Stories about this approach have demonstrated enough success.

There is *a lot of networking and collaboration within the footwear industry*. In fact, they have a team or committee that is tasked to look at the tariffs of customs on their raw materials. There is another committee that networks with the President's office and the legislators in order to protect their industry. *What is badly missing is the environmental component as regards the awareness on the existing international and national environmental and health regulations and standards*. It would do well for the footwear, as well as the leather tannery industries, to focus their attention, commitment and implementation of these standards if they want to continue to exist.

On the overall, both industries regularly attend and hold workshops, seminars, conferences, and exhibits locally and internationally. It would be favorable to them to include *the local and international environmental and health regulations and standards in their agenda today...or else it would just be to late and they have to' ship out'*.

Regarding the need for wastewater treatment facilities, the leather tannery industry is hoping that there will be assistance by way of grants or some way of partnering because they cannot afford the cost of the equipment needed to meet the environmental and health standards. There is a need

to solve this impasse by studying options. Perhaps, a Loan can be granted to the Association (with the guarantee of the LGU) for the establishment of a common wastewater treatment facility. The loan can be repaid from the fees collected from the companies that will discharge their effluents into the wastewater treatment facility.

## **ANNEX 1 Report by Dr. Olivia I. Castillo**

### **DENR ADMINISTRATIVE ORDER No. 81 Series of 2000**

#### **Subject: IMPLEMENTING RULES AND REGULATIONS FOR RA 8749**

Pursuant to the provisions of Section 51 of **Republic Act No. 8749**, otherwise known as the "**Philippine Clean Air Act of 1999**," and by virtue of Executive Order No. 192, Series of 1987, the Department of Environment and Natural Resources hereby adopts and promulgates the following rules and regulations:

**Table 3**  
**National Ambient Air Quality Standards for Source Specific Air Pollutants  
from Industrial Sources/Operations**

<b>Pollutants</b>	<b>Concentration <sup>a</sup></b>		<b>Averaging</b>	<b>Method of Analysis/Measurement <sup>c</sup></b>
	<b>m g/NCM</b>	<b>Ppm</b>	<b>Time (min)</b>	
Ammonia	200	.028	30	Nesslerization / Indo Phenol
Carbon Disulfide	30	0.01	30	Tischer Method
Chlorine and Chlorine cmpds expressed as CL <sub>2</sub>	100	0.03	5	Methyl Orange
Formaldehyde	50	0.04	30	Chromotropic Acid method or MBTH Colorimetric method
Hydrogen Chloride	200	0.13	30	Volhard Titration with Iodine solution
Hydrogen Sulfide	100	0.07	30	Methylene Blue
Lead	20		30	AAS <sup>b</sup>
Nitrogen Dioxide	375	0.20	30	Griess-Saltzman
	260	0.14	60	
Phenol	100	0.03	30	4-Aminoantipyrine
Sulfur Dioxide	470	0.18	30	Colorimetric-Pararosaline
	340	0.13	60	
Suspended	300	--	60	Gravimetric

Particulate Matter – TSP	200	--	60	Gravimetric
PM-10				
Antimony	0.02 mg/NCM	--	30	AAS <sup>b</sup>
Arsenic	0.02 mg/NCM	--	30	AAS <sup>b</sup>
Cadmium	0.01 mg/NCM	--	30	AAS <sup>b</sup>
Asbestos	2 x 10 <sup>6</sup> Particulate/NCM (over 5 micrometer in size)	--	30	Light Microscopy
Sulfuric Acid	0.3 mg/NCM	--	30	Titration
Nitric Acid	0.4 mg/NCM	--	30	Titration

<sup>a</sup> Ninety-eight percentile (98%) values of 30-min. sampling measured at 25°C and one atmosphere pressure.

<sup>b</sup> Atomic Absorption Spectrophotometry.

<sup>c</sup> Other equivalent methods approved by the Department through the Bureau may be used.

## **Section 2. Review of Ambient Air Quality Standards**

The Bureau shall provide industries, non-government organizations (NGOs) and other stakeholders the opportunity to participate in the formulation and revision of standards, determination of the technical feasibility of the revised standards, setting the schedule of implementation of the revised standards, and other related concerns. The Bureau shall, on an annual basis, in coordination with other concerned agencies, review the list of Hazardous Air Pollutants and the National Ambient Air Quality Standards for Source Specific Air Pollutants under Section 12 of the Act and recommend to the Secretary of the Department the revision thereof when necessary to protect public health and safety, and general welfare.

## **Section 3. Publication of Revised Standards**

Upon approval by the Secretary of the Department, the revised Ambient Air Quality Standards shall be published in a newspaper of general circulation and may be posted on a public internet website.

## **Annex 2**

### **DENR Administrative Order**

#### **No. 35**

#### **Series of 1990**

**Subject: Revised Effluent Regulations of 1990,  
Revising and Amending the Effluent**

## Regulations of 1982

**TABLE 1 - Effluent Standards: Toxic and Other Deleterious Substance**  
(Maximum Limits for the Protection of Public Health)<sup>a</sup>

Parameter	Unit	Protected Waters		Protected Waters		Inland Waters		Marine Waters		Marine Waters	
		Category I		Category II		Class C		Class SC		Class SD	
		(Class AA & SA)		(Class A,B & SB)		OEI	NPI	OEI	NPI	OEI	NPI
OEI	NPI	OEI	NPI								
Arsenic	Mg/L	b	b	0.2	0.1	0.5	0.2	1.0	0.5	1.0	0.5
Cadmium	Mg/L	b	b	0.05	0.02	0.1	0.05	0.2	0.1	0.5	0.2
Chromium (hexavalent)	Mg/L	b	b	0.1	0.05	0.2	0.1	0.5	0.2	1.0	0.5
Cyanide	Mg/L	b	b	0.2	0.1	0.3	0.2	0.5	0.2	-	-
Lead	Mg/L	b	b	0.2	0.1	0.5	0.3	1.0	0.5	-	-
Mercury (Tot.)	Mg/L	b	b	0.005	0.005	0.005	0.005	0.005	0.005	0.05	0.01
PCB	Mg/L	b	b	0.003	0.003	0.003	0.003	0.003	0.003	-	-
Formaldehyde	Mg/L	b	b	2.0	1.0	2.0	1.0	2.0	1.0	-	-

**Section 5. Conventional and Other Pollutants Affecting Aesthetics and Oxygen Demand. -**

Effluents from domestic sewage and industrial wastewater treatment plants not covered under Section 6 of these Regulations, when discharged into receiving waters classified as Class A, B, C, D, SA, SB, SC, and SD in accordance with Section 68, as amended, of the 1978 NPCC Rules and Regulations shall not contain the following pollutants in concentrations greater than those indicated in Tables 2A and 2B.

**TABLE 2A - Effluent Standards: Conventional and Other Pollutants in Protected Waters**

Category I and II and in Inland Waters Class C<sup>a</sup>

Parameter	Unit	Protected Waters				Inland Waters	
		Category I		Category II		Class C	
		(Class AA & SA)		(Class A, B & SB)			
		<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>
Color	PCU	b	b	150	100	200 <sup>c</sup>	150 <sup>c</sup>
Temperature (max rise in deg. Celsius in RBW)	°C rise	b	b	3	3	3	3
pH (range)		b	b	6.0-9.0	6.0-9.0	6.0-9.0	6.5-9.0
COD	Mg/L	b	b	100	60	150	100
Settleable Solids (1-hour)	Mg/L	b	b	0.3	0.3	0.5	0.5
5-Day 20 °C BOD	Mg/L	b	b	50	30	80	50
Total Suspended Solids	Mg/L	b	b	70	50	90	70
Total Dissolved Solids	Mg/L	b	b	1,200	1,000	-	-
Surfactants (MBAS)	Mg/L	b	b	5.0	2.0	7.0	5.0
Oil/Grease (Petroleum Ether Extract)	Mg/L	b	b	5.0	5.0	10.0	5.0
Phenolic Substances as Phenols	Mg/L	b	b	0.1	0.05	0.5	0.1
Total Coliforms	MPN/100mL	b	b	5,000	3,000	15,000	10,000

### ANNEX 3

## **The Philippine Footwear Academy** *The First and Only Footwear School in the Asean Region*

*Shaping the future of the Philippine footwear industry*

The Philippine Footwear Academy is the ideal place to learn advanced manufacturing process technology on footwear. Located at the Marikina City, it strategically sits at the heart of the footwear industry of the Philippines. With the ample workshop area, a library, training rooms and a CAD-CAM room, PFA nurtures the new era of footwear technicians and artisans.

The PFA is established and operated by the Philippine Footwear Federation, Inc. and Cottage Industry Technology Center aimed at producing job ready operators and technicians expert in all aspects of footwear manufacturing and design & product development.

For its pilot running, PFA offers the TESDA Accredited 3-year Footwear Manufacturing Technology Program which adopts the Dual Training System (DTS). This is a German-modeled instructional delivery system of training where the industry and the school share equal responsibility in providing the trainee the best possible job qualifications. The bulk of the training will be held within the premises of participating footwear companies for the hands-on practice. This ladderized program, which development was spearheaded by the footwear industry is divided into 3 levels namely: 12-month Operators Course; 12-month Manufacturing Process Technician Course; and 12-month Product Development Technician Course.

The 12-month Operator course adopts the DTS (6-months in-school, 6 months in-plant) designed to prepare students for entry-level employment as stitch markers, upper sewers, machine upper cutters, insole attachers, stiffener inserters, eyeleteers, upper cleaners, upper part fitters, side lasters, back part moulders, sole press operators, polishers and upper roughers. The students will also be taught communication skills, work attitudes, career guidance, personality development and team working. As such, they will be provided both basic hands-on training and related theoretical instructions.

The 12-month Manufacturing Process Technician Course adopts the DTS (30% in-school, 70% in-plant) designed to prepare students for high level employment as fore part lasters, welt sewers, automatic side and seat lasters, back part lasting operators, sole stitchers, clickers, storepersons, quality controllers and supervisors. The student will also be taught basic general office skills practiced in the footwear industry.

The 12-month Product Development Technician Course adopts the DTS (30% in-school, 70% in-plant) designed to prepare students for high-level employment as Designers, Pattern Cutters, Factory Managers and Merchandisers/Material-buyers. The student will be taught how to conduct market research, create footwear designs, construct footwear patterns, identify sources of materials, perform factory planning and implement management systems.