Indian Leather Technologists' Association

[A Member Society of International Union of Leather Technologists' and Chemists Societies (IULTCS)]

'SANJOY BHAVAN', 3rd Floor, 44, Shanti Pally, Kasba, Kolkata – 700 107
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Mission & Vision

- An Association with over 600 members from India and abroad working since last 64 years for the growth and development of Leather and its allied industries.
- Organize seminars, symposiums, workshops in order to share information, knowledge & latest development and interactions for the benefit of all concerned.
- Organize Human Resource Development programmes on regular basis.
- Publish for over 60 years, a technical monthly journal namely "Journal of Indian Leather Technologists' Association" (JILTA), widely circulated through out the World.
- Publish books for the benefit of the students at various levels of study, for the Research Scholar and the Industry.
- Work as interface between Industry and the Government.
- Assist Planning Commission, various Government Institutions, Ministry and autonomous bodies to formulate appropriate policies for the growth of the Industry.
- Assist small and tiny leather goods manufacturers in marketing their products by organizing LEXPOs in Kolkata and different parts of India.

JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION [JILTA]

Indian Leather Technologists' Association is a premier organisation of its kind in India was established in 1950 by Late Prof. B.M.Das. It is a Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS).

The Journal of Indian Leather Technologists' Association (JILTA) is a monthly publication which encapsulates latest state of the art in processing technology of leather and its products, commerce and economics, research & development, news & views of the industry etc. It reaches to the Leather / Footwear Technologists and the decision makers all over the country and overseas.

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(Member Society of International Union of Leather Technologists and Chemists Societies)

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Aloe Vera and its multifarious uses

Traditional medicine is in practice for many centuries by a substantial proportion of the population of many centuries. It is recognized that in some developing countries, plants are the main medicinal source to treat various infectious diseases. Plant extracts represent a continuous effort to find new compound against pathogens. Approximately 20% of the plants are found in the world have been submitted to pharmacological or biological test, and a substantial number of new antibiotics introduced on the market are obtained from natural or semi synthetic resources. The use of plant product for pharmaceutical purpose has been gradually increased. According to World Health Organization, medicinal plants would be the best source for obtaining a variety of drugs. The use of plant extracts, with known antimicrobial properties, can be of great significance in the treatment of various microbial infections. In the last decade, numerous studies have been conducted in different countries to prove such efficiency in number of medicinal plants. Most of the studies are restricted with crude extracts. *Aloe vera* is a perennial, drought resisting, succulent plant. It has stiff green, lance-shaped leaves containing clear gel in a central mucilaginous pulp. Its thick leaves contain the water supply for the plant to survive long periods of drought. The leaves have a high capacity of retaining water also in very warm dry climates and it can survive very harsh circumstances. When a leaf in cut, an orange-yellow sap drips from the open end. When the green skin of a leaf is removed a clear mucilaginous substances appears that contains fibres, water and the ingredient to retain the water in the leaf. The gel contains 99.3% of water, the remaining 0.7% is made up of solids with carbohydrates constituting for a large components. Concentrated extracts of *Aloe* leaves are used as laxative and as a haemorrhoid treatment. *Aloe* gel can help to stimulate the body's immune system. The aloe plant contains different nutrient contents including vitamins, minerals, enzyme, sugars, phenolic compounds, lignin, saponins, sterol and amino acid. *Aloe Vera* contains many vitamins excluding vitamin D but including the important antioxidant vitamin A, C and F. Vitamin B (thiamine) B3 (Niacin), B2 (Riboflavin), choline and folic acid are also present. A trace of vitamin B12 also present. Vitamin B complex and C are to play an important role in reducing stress and inflammation. *Aloe* contains the enzymes such as amylase, lipase and carboxypeptidase. *Lipases can* digestion by breaking down fats and sugars. *Amylase* hydrolyse starch to liberate dextrin. The activity of serum amylase is increased in acute pancreatitis. The peak value of amylase is observed within 8 – 12 hours after the onset of disease which returns to normal by 3rd or 4th day. The pancreatic carboxypeptidase is metalloenzymes that are dependent on Zn+ for their catalytic activity i.e., also called Zn proteases. It inactivates bradykinins and produces an anti-inflammatory effect. During the inflammatory process, bradykinin produces pain associated with vasodilatation and its hydrolysis to produce an analgesic effect (Obata, 1993; Shelton, 1991).

Aloe plant contains 25 per cent of solid fraction that contain sugars. The sugars are found in the mucilage layer of the plant surrounding the inner gel. It comprises both monosaccharides and polysaccharides. Sugar acts as immuno-modulators capable of enhancing and retarding the immune response. Anthroquinone is a phenolic compound found in the sap. The bitter *Aloe* consists of free anthraquinones and their derivatives like Barbaloin-IO-aloeemodin-9-anthrone, Isobarbaloin, Anthrone-C-glycosides and chromones. These compounds exert a powerful purgative effect, which are potent antimicrobial agents and possess powerful analgesic effects. *Aloe* contain saponins which are soapy substances form 3 per cent of the gel and are general cleansers, having antiseptic and anticarcinogen properties. *Aloe* contains Campesterol, F2 Sitosterol and Lupeol . It is an aspirin like compound present in *Aloe* plant possessing anti-inflammatory and anti-bacterial properties.

Topically, it has a ketolytic effect which helps to debride a wound of necrotic tissue. *Aloe vera* gel provides 20 of the 22 necessary amino acids required by the human body. There are 7 of the 8, non-essential amino acids are Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Theronine and Valine. The 12 essential amino acids are Alamine, Arginine, Asparagine, Cystenine, Glycine, Glutamic Acid, Histidine, Proline, Serine, Tyrosine, Glutamine and Aspartic Acid. Minerals are defined as natural components formed through geological processes needed in small amounts to regulate body functions. Minerals found in *Aleo vera* are calcium, zinc, chromium, potassium, etc. Magnesium lactate inhibits histidine decarboxylase and prevents the formation of histamine from the amino acid histidine.

Roles of elements to the health of human are follows.

Potassium

It regulates water balance, levels of acidity, blood pressure, controlling the activity of heart, muscles and the nervous system.

Calcium

It is important to bone growth and formation, blood clotting, nerve and the muscle functioning, regulate lower blood pressure, kidney function, reduce blood cholesterol level.

Copper

Copper is involved in the absorption, storage and metabolism of iron, formation of red blood cells and keeps bones, blood vessels, nerve and immune system healthy.

Zinc

It is vital to immune resistance, wound healing, digestion, reproduction, physical growth, diabetes control, maintaining normal vitamin A level.

Manganese

It is necessary for the metabolism of proteins and fat. It also supports the immune system, blood sugar balance and is involved in the production of cellular energy, reproduction and bone growth.

Iron

Its major function is to combine with protein and copper in making haemoglobin, the component of the blood that carries oxygen from the lungs to the tissues. It may result in weakness, fatigue, paleness of the skin, constipation and anemia.

Chromium

It supports the immune system and metabolic activities, but carcinogenic in nature.

We have discussed analytical details of Aloe vera. But Aloe vera has long been known to have medicinal properties to common man who are indifferent to such details. It has been used as a medicinal herb by native peoples for centuries. The modern world discovered its usefulness as a burn remedy and a soothing balm for irritation decades ago, and now it can be found in all kinds of products, ranging from burn creams to lotions. Its use as an antibacterial agent is less well-known, however, and it is that use which shall be discussed here. Practitioners of traditional and alternative medicine have long though of aloe as having antibacterial properties. This has recently been borne out by scientific studies that show aloe vera helps in the treatment of minor skin infections such as cysts and minor wounds, and that the inner-leaf gel inhibits the growth of Streptococcus and Shigella bacteria. These last have only been demonstrated in a laboratory setting, but it can be assumed that they have the same effect inside the human body. It is the leaves of the aloe vera plant, both the interior and the rind, which contain the medicinal compounds.

Aloe vera is a succulent, and like most succulents, it has very thick, fleshy leaves. Some of the many biologically active compounds that are found in aloe leaves include anthraquinones, several lectins, sallcylic acid and acetylated mannans and ploymannans. It is thought that two of these are what give aloe vera its antibacterial properties. The first are the anthraquinones. These are actually an entire group of phenolic compounds which can be found in the sap. They include barbaloin, anthracene, emodin, and anthrone-C-glycosides and chromones. These are found in most aloe vera plants and all of them are potent antimicrobial agents. Sallcylic acid is the other compound thought to give aloe vera its antibacterial qualities. It is an aspirin-like substance that shows high antibacterial action and also acts as an anti-inflammatory. This compound has kerolytic effect on wounds, which means it helps remove dead tissue. The strongest antibacterial effect is found in extracts of the aloe leaves and in the gel made from the inner leaves. These products can be used both internally and topically. They are available at many health food stores and even in some supermarkets. Many health food stores also sell aloe vera juice for internal use. In addition, they can easily be made at home from fresh leaves. The gel can be used to treat both minor wounds and skin infections, including cysts and boils. To use the gel this way, apply it directly to the infected area. Either bottled gel or a freshly cut aloe leaf may be used. If a fresh aloe leaf is available, cut the leaf and apply the gel to the wound or the affected area. Repeat the application several times a day. Aloe Vera may also be taken internally to help with other forms of infection. If aloe Vera is taken internally, a product made specifically for ingestion should be used. Follow the instructions given by the manufacturer. The usual dose is around one tablespoon for an adult. A gel made from the inner leaves will be most helpful. Pregnant or nursing women should avoid taking aloe orally. Children under the age of five should also not take aloe vera at this time. Aloe vera extract can now be found in many products other than the juice and gel normally sold at health food stores. Many of these products are specifically designed to be used in applications where an antibacterial agent is necessary. Bandages infused with aloe are now becoming common. There are a number of sunburn creams containing aloe vera. It is also now possible to find ready-made salves and ointments that are designed to treat wounds and skin infections which contain aloe vera extract or aloe vera gel. The extract is now even being added to antibacterial hand soaps and gels. While the extract is not meant to be the primary antibacterial agent in these products, its inclusion will render them even more effective. Aloe vera also brings other good qualities

to such soaps and gels, such as its abilities to soothe irritation and moisturize. The aloe Vera plant has long been recognized as having amazing medicinal properties, having been used in medicine for hundreds of years. Antibacterial qualities are high on the list of properties this incredible plant possesses. Let's give aloe Vera the recognition it deserves.

What are interesting points to us that discussion of properties of aloe vera for physiological care makes it is highly suitable too for use in fancy glove leather, sports shoes, and other therapeutic shoes and wares. Such kinds will not only make leather anti bacterial but also ale vera contaminated leather will nourish skin irritation, allergies etc.

Goutam Mukherjee

Goutam Mukherjee

66th Foundation Day Celebration

Up to now Foundation Day Celebration Sub-Committee have met thrice and have decided as follows with E.C.'s concurrence:

The Foundation Day Celebration main programme has been arranged on Friday, the 19th August, 2016 at the Mini Auditorium of the Science City, Kolkata.

Tentative programme schedule is as follows :-

01.00 PM	:	Registration
02.00 PM to 05.00 PM	:	Foundation Day Celebration Programme -:
	(1)	**Chief Guest :** Dr. Ashish Banerjee Hon'ble Minister – in – Charge Dept. of Science & Technology, Development & Training and Statistics & Programme implementation Govt. of West Bengal
	(2)	**B. M. Das Memorial Lecture :** Dr. B. Chandrasekaran Director, CSIR – CLRI, Chennai
	(3)	**Lecture by :** Mr. Nari Kalwani Chairman & Managing Director Asian Leather Limited, Kolkata
	(4)	**Presentation of B. M. Das Memorial Awards :** To the Toppers in Leather/Footwear Technology Examinations of various universities.
05.00 PM to 05.30 PM	:	High Tea
05.30 PM to 06.00 PM	:	Quiz Contest
06.00 PM	:	Drama / Play titled "MANUSH BHOOT" by the group "Mangolik"
08.30 PM	:	Dinner

In addition to above a Foundation Day Celebration will be arranged on the actual Foundation Day i.e. Sunday the 14th August at ILTA Registered Office at 11.30 AM. All members are requested to attend this event.

LEXPOs

LEXPO Sub-Committee have met thrice since its formation and subject to availability of the venue, have drawn up a tentative plan of holding LEXPOs during F.Y. 2016-17 as follows :-

Durgapur IV	:	Fair Period – 31.12.2016 to 15.01.2017
Kolkata XXXX	:	Fair Period – 04.02.2017 to 19.02.2017
Siliguri XXIII	:	Fair Period – 11.03.2017 to 26.03.2017

Letters have already been sent to the competent authorities requesting for allocation of ground accordingly. Replies are awaited.

Downfall of Exports

We had a meeting of all associations involved in leather and leather goods industries, exports and managing the leather complex in Kolkata.

We discussed thoroughly the probable reasons behind the downfall of exports of leather, leather goods & it's allied products from eastern part of India as well as from other states as a whole. The reasons could be :-

1. Scarcity of availability of raw hides – due to several reasons like, banned of slaughtering of cow in several states, problems faced by raw hides suppliers in transportation of fallen hides from one state to other as well as buffalo hides, lack of motivation in organized farming, cross border illegal exports, etc.

2. On going recession throughout Europe and rest of the World which is our main importer.

3. Devaluation of foreign currency like Euro & Pound.

4. Complication in customs clearance of any sample coming from Europe, USA, any other country by courier mainly at Delhi customs. There is lot of harassment & delay kills the purpose of sending by courier which is one of the main criteria for business development & growth.

5. Very old norms for customs clearance of finished leather / leather goods are still prevailing – needs to update.

6. Several govt. formalities like licensing, port clearance, customs clearance and many other statutory obligations are taking huge unproductive time. Single point clearance of many of those obligations could be a solution.

There may be other reasons as well. Industry is expecting some initiatives from the Govt. to resolve many of the issues mentioned above.

You are requested to :-

a) Kindly inform us your '**E-Mail ID**', '**Mobile No**', '**Phone No**', through E-Mail ID: admin@iltaonleather.org or over Telephone Nos. : 24413459 / 3429 / 7320. This will help us to communicate you directly without help of any outsiders like Postal Department / Courier etc.

b) Kindly mention your **Membership No. (If any)** against your each and every communication, so that we can locate you easily in our record.

c) **Kindly obtain an Acknowledgement Slip (available at ILTA Office) for any document handed over to ILTA Office.**

Susanta Mallick
General Secretary

Executive Committee Members meet every Thursday at 18-30 hrs. at ILTA Office.
Members willing to participate are most welcome.

XXXIV IULTCS CONGRESS

(International Union of Leather Technologists and Chemists Societies)

"Science and Technology for Sustainability of Leather"

R&D focus of research institutes, chemical companies and organizations around the world has been the sustainable development of the leather sector. In this scenario, the congress aims to address the following technological challenges:

- Fundamentals in leather science
- Strategies for sustainability
- Innovation and value addition for leather
- Advances in chemicals for smart and intelligent leathers
- Design innovation for lifestyle leather products
- Emission control strategies
- Enriching human capacity
- Global research alliances and partnerships

Important Dates:

- Congress Dates: 5 – 8 February 2017, preceded by India International Leather Fair, Chennai (1–3 February 2017)
- Congress Localization: Chennai
- Abstract submission due: 31 October 2016
- Selection of papers: 15 November 2016
- Early bird registration till: November 2016
- Expected Number of Participants: 200 International, 300 Indian

Organizers:

- Indian Leather Technologists Association (ILTA)
- CSIR-Central Leather Research Institute (CSIR-CLRI)

Congress Partners:

- Council for Leather Exports, India (CLE)
- Indian Finished Leather Manufacturers & Exporters Association (IFLMEA)

Organization committee:

- Congress President: Dr T Ramasami, Former Secretary, S&T, Govt. of India
- Patrons:
  - Mr M Rafeeque Ahmed, Chairman, Council for Leather Exports
  - Mr N Shafeeq Ahmed, President IFLMEA

- Institutional representatives:
  - Dr B Chandrasekaran, Director CSIR-CLRI,
  - Mr Arnab Jha, President ILTA,
- Congress Convener: Dr N K Chandrababu, Chief Scientist, CSIR-CLRI;
- Working President: Dr S Rajamani, ILTA

Indian Leather Industry, through CSIR-CLRI & ILTA and through the Council for Leather Exports and IFLMEA welcome all the visitors, industrialists, academicians and researchers interested in leather to participate at the XXXIV IULTCS Congress. With India International Leather Fair, just before the congress and good climate to visit Chennai, the participants to the congress would be taken through a rich experience of S&T innovations in leather and the cultural diversity of India.

Please visit our website www.iultcs2017.org for further details.

UPDATE on REGISTRATION FEE - IULTCS Congress' 2017

Quote:

Dear Members of the Leather Fraternity:

Greetings from India!

With a view facilitate and enable wide international participation, the organizing committee of XXXIV IULTCS Congress on the basis of the support from Indian leather industry had resolved to down revise the registration fee from USD 550/- to USD 300/- for individual delegates and award concessions for groups of sizes larger than 10 (USD 250).

I would much appreciate if you could speak to all those interested members, faculties, R&D staff, students (USD 150) and en-roll a larger delegation from your country. If we get a confirmation before 15 September 2016, we would even work out budget accommodation for you.
To facilitate the arrangements (our expectations are about 250 international delegates) and also the arrangements for various aspects such as visa, we would request you to please register for the conference (we have attracting refund policies as well) as soon as possible - say by July 31.

We look forward to your visit, perhaps with family as we have a tremendous spouse's program also lined up for them. Please visit www.iultcs2017.org for an update

Thanks and regards

Sreeram
IULTCS Congress Secretariat

Unquote:

(Source: IULTCS Congress 2017 Secretariat's email dated – 27/06/2016)


IULTCS 2017
INDIA
XXXIV IULTCS CONGRESS
5-8 February 2017, CSIR-CLRI, Chennai, India
www.iultcs2017.org
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INDIA PARTNERS
Council for Leather Exports (CLE)
IFLMEA
Indian Finished Leather Manufacturers & Exporters Association (IFLMEA)
For further details please contact: Congress Secretariat, CSIR-CLRI, Chennai, India, Email: iultcs2017@clri.res.in

Slaughtering Processes and Its Environmental Effects

Dr. Goutam Mukherjee

Associate Professor, Govt. College of Engg. & Leather Technology, Kolkata

Abstract:

Nobody wants to talk about slaughterhouses. It's not exactly pleasant dinner time conversation, especially if someone at the table has a steak in front of them. Even people used to discussing the disgusting conditions where animals are raised on factory farms, are reluctant to delve into in-depth discussions of the conditions in slaughterhouses, but they are a crucial component of the factory farm system. After all, nine billion animals are slaughtered each year

As factory farms have consolidated into fewer companies, these companies have obtained more power within the industry; this results in slaughterhouses that must meet the demands of these companies. Moving at a fast pace often leads to dangerous conditions such as food contamination from fecal matter, mad cow disease, and worker injury due to the high speeds demanded; workers can be expected to kill up to 400 cows an hour. In addition, slaughterhouses are cleaned using strong chemicals and water, contributing to the pollution problem, and wastewater contamination. The problems of slaughterhouses clearly go beyond killing innocent animals.

Introduction:

All most all by-product of slaughter house can be utilized. However, various circumstances do not always permit by-product recovery. The reasons may be inadequate quantity of materials, lack of markets, cost of processing etc. In such instances, they simply form part of waste lot for which different methods of processing and disposal have to be considered. For the slaughter house wastes composting, bio-methanation and rendering systems are suggested. Selection of appropriate method, however, depends mainly on type of wastes and its quantity. Incineration is also an option for treatment of slaughter house waste. The manufacture of animal products for human consumption (meat and dairy products) or for other human needs (leather), leads inevitably to the production of waste. Under traditional conditions, quantities of products processed in a certain area use to be small and by-products can be better utilized. These result in production of smaller quantities of waste than those produced by large scale abattoirs. Nature is able to cope with certain amounts of waste via a variety of natural cleaning mechanisms. However, if the concentration of waste products increases, nature's mechanisms become overburdened and pollution problems start to happen. Usually, small-scale home processing activities produce relatively small amounts of waste and waste water. Nature can cope with these. Yet as a consequence of the increasing emphasis on large scale production (e.g. for reasons of efficiency, increase in scale of production and hygiene) considerably greater amounts of waste will be produced and steps will have to be taken to keep this production at acceptable levels. Methods will also have to be formulated or developed for a more efficient use of by-products and for improved treatment of waste products. Because large scale processes are not easy to survey, the checking of waste production is a problematic undertaking and special efforts are needed to find out where in the production process waste is produced.

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Discussion:

An example that may illustrate relationship between scale of production and production of waste is that of production of hard cheese. Before large scale production of cheese came into existence, whey was considered as a valuable by-product that could be used as animal feed. In the Netherlands, about 50 percent of all the milk produced is used for the production of cheese. Whey which is produced during process could lead to enormous environmental problems partly because cost of transport of this whey (in preserved state) to farms for use as animal feed is a costly affair. Only after environmental considerations had become more important, efforts were made to solve this problem. Eventually this has resulted in the establishment of a production line of whey-powder which is now-a-days considered a valuable product (e.g. (Amul Pro powder). The example also manifests that the borderline between a waste product and a useful product is sometimes hard to draw.

In the present discussion major thrust have been given to the impact on the environment by the following processes e.g. (1) the slaughtering processes at slaughterhouses; (2) the storage, preservation and processing of hides; and (3) the processing of milk, all at industrial levels. For the discussion concerning the waste production within each of these animal-product-processing industries, it is worth looking at operations that precede and follow the industrial waste producing processes.

* In slaughterhouses: Animals are reared, fed and transported to the slaughterhouses from farm houses. After processing, meat is stored before it is transported to retail outlets. The "preceding" activities produce manure etc. while for storage and transport for "follow up" activities i.e. slaughter) cooling facilities are needed. This puts a heavy claim on energy sources.

* In tanneries: Hides produced at slaughterhouses must be stored. To prevent spoilage, they should be preserved. Methods used to process hides will to some extent determine the durability of produced leather. Chrome tanned leather and leather products contain about 2-3% chromium (on dry weight). Worn out leather products, such as shoes and jackets are frequently dumped at municipal dumping places.

* Before its collection and transportation to a processing plant, milk is produced and stored at the farm. This requires energy and leads to spoilage of milk to some extent and production of wastewater (tank cleaning). After processing at plants, dairy products are packed and stored and transported to retailers. At the end of its lifeline, packing material ends up with generation of solid waste. Repeated use of milk bottles produces waste water (after cleansing). At the site of the consumer, storage makes a demand on energy and incorrect storage or usage may lead to spoilage. It has been estimated that 2-10% of all dairy products are wasted by the consumer as a result of spoilage.

In general terms, waste products may occur as waste water, solid material, volatile compounds or gasses that are discharged into the air.

Wastewater

An important environmental impact of the animal processing industry results from the discharge of wastewater. Most processes in slaughterhouses, tanneries and dairy plants require the use of water. This water and water used for general cleaning purposes will produce wastewater. Strength and composition of pollutants in the wastewater evidently depend on the nature of processes involved. Discharge of wastewater to surface waters affects water quality in three ways:

1. Discharge of biodegradable organic compounds (BOC's) may cause a strong reduction of the amount of dissolved oxygen, which in turn may lead to reduced levels of activity or even death of aquatic life.

2. Macro-nutrients (N, P) may cause eutrophication of the receiving water bodies. Excessive algae growth and subsequent dying off and mineralisation of these algae, may lead to the death of aquatic life because of oxygen depletion.

3. Agro-industrial effluents may contain compounds that are directly toxic to aquatic life (e.g. tannins and chromium in tannery effluents; un-ionized ammonia).

Biodegradable organic compounds

Parameters for the amount of BOC's are the Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and the concentration of Suspended Solids (SS). The BOD and COD are overall parameters that give an indication of the concentration of organic compounds in wastewater. The concentration of suspended solids represents the amount of insoluble organic and inorganic particles in wastewater.

Biochemical Oxygen Demand (BOD)

Agro-industrial wastewater generally contains fat, oil, meat, proteins, carbohydrates, etc., which are generally referred to as bio-degradable organic compounds (BOC). This term is a denominator for all organic substances used and degraded by micro-organisms. For most common organisms present in the aquatic environment, degradation requires oxygen. The BOD is the amount of oxygen required by micro-organisms to oxidize the organic material in the wastewater.

Chemical Oxygen Demand (COD)

COD represents oxygen consumption for chemical oxidation of organic material under strongly acidic conditions. COD test yields results within a period of a few hours and therefore provides direct information. In this test biodegradable as well as non-biodegradable compounds are oxidized. COD therefore only provides an indirect indication of the potential oxygen depletion that may occur from the discharge of organic material in surface waters. Use of BOD is preferred to that of COD because it provides a more reliable indication of degree of pollution of wastewater in terms of bio-degradable matter. Nevertheless, COD is still a widely used parameter for wastewater in general because of the short period of time within which it can be determined.

For wastewater from slaughterhouse COD/BOD ratio generally varies between 1.5 and 2.2 with an average value of 1.8. (Luppens, 1994).

For dairy industries COD/BOD ratio of the wastewater is generally 2.63 for low BOD values (< 450 mg/l). For high BOD values (> 450 mg/l) the ratio is 1.25 (EPA, 1971).

Suspended Solids (SS)

Suspended solids are insoluble organic and inorganic particles present in wastewater. SS is mainly material that is too small to be collected as solid waste. It does not settle in a clarifier either. Discharge of SS increases turbidity of water and causes a long term demand for oxygen because of slow rate of hydrolysis of organic fraction of the material. This organic material may consist of fat, proteins and carbohydrates. The natural biodegradation of proteins (from for instance meat and milk), will eventually lead to the discharge of ammonium. Ammonium oxidation into nitrite and nitrate by nitrifying bacteria, leads to an extra consumption of oxygen. Problems resulting from the discharge of biodegradable organic compounds may be addressed by means of biological wastewater systems, either of the aerobic or of the anaerobic type. In aerobic systems organic compounds are oxidized by aerobic micro-organisms (oxygen required) into CO_2, H_2O and new bacterial biomass. Anaerobic systems are based on the capacity of anaerobic bacteria (no oxygen required) to degrade the organic material into CO_2, CH_4 and small quantities of biomass.

Nitrogen (N)

In wastewater Nitrogen is usually present as fixed in organic material or as ammonium. Occasionally also nitrate may be present (this may be the case in dairy industries where HNO_3 is used for cleaning operations). Kjeldahl developed a test to measure the nitrogen content of wastewater. The Kjeldahl - nitrogen (NKj) is the sum total of organic and ammonia-nitrogen.

Phosphorus (P)

Presence of Phosphorus (P) is determined photometrically. It concerns inorganic phosphate (mostly ortho-phosphate) and organically bound phosphate. Nitrogen and phosphorus removal can be achieved through special wastewater purification systems, which are based on either biological or physico-chemical processes.

Toxic compounds

Ammonia particularly in un-ionized form is directly toxic to fish and other aquatic life **(NH_3 is 300-400 times more toxic than NH^{4+}; Barnes et. al., 1984)**. Chromium and tannins are toxic compounds. Detoxification of wastewater may be reached by the use of special wastewater purification systems. Measurements of the quantity of fat, oil and grease (FOG) and acidity (pH) can only take place in a tedious way and yields inaccurate results. Nowadays, the presence of FOG is hardly mentioned in reports and for this reason this aspect has not been treated in this study (Barnes et. al., 1984; Metcalf & Eddy, 1991).

European Community directives give values for BOD equal to 25 mg/l, for N of 10-15 mg/l and for P of 1-2 mg/l for urban wastewater discharge (EEC, 1991). In the Netherlands target values for water quality of large resp. small surface waters are set at 2.2 resp. 1.5 mg/l for N and 0.15 resp. 0.08 mg/l for P (RIVM, 1991).

Solid waste

By-products that are not used in any way will be referred to as solid waste. They must be dumped.

The following types of solid waste may be distinguished:

- Toxic compounds. These compounds require special attention, e.g. special dumping grounds.
- Organic compounds. These compounds may require attention under certain conditions because of hygienic reasons or because during decomposition ill odour or leaching problems may arise.
- Non degradable compounds. These may be dumped at regular dumping grounds.

Air pollution

Air pollution may cause problems of various kinds:

1. Global warming, as a result of emissions of CO_2;
2. Changes in the ozone-layer, as a result of emissions of NOx, CH_4, N_2O and CFC's;
3. Acid rain, as a result of emissions of SO_2 and NH_3;
4. Health conditions .
5. Dust (for instance as a result of emission of milk powder) and/or bad odour, as a result of emissions of VOC.

Use of energy leads to the discharge of gasses such as CO2 , CO, NOx and SO_2. Chilling and freezing (CFC's and NH3) activities, smoking of meat products and singing/scorching of pigs also lead to emissions into the air.

Discharge of volatile organic compounds (VOC) may occur in dairy plants when cleaning agents are used and in leather industry when leather finishing substances are used. Dust may be produced in bone cutting and bone processing industries, buffing operations and production of milk powder inevitably leads to production of dust as well.

Slaughter Activities

In the discussion on slaughter activities, the focus will be on the slaughtering of pigs, cattle and poultry. According to the FAO (1993), these three types of animal make up almost 93% of the total world meat production. For the discussion of the slaughtering process and the waste production, a distinction will be made between red meat (pigs and cattle) and poultry.

In the slaughter process basically the following by-products and waste products become available:

(1) **manure, contents of rumen and intestines**
(2) **edible products such as blood and liver;**
(3) **inedible products such as hair, bones, feathers;**
(4) **fat (recovered from the wastewater by means of fat-separators);**
(5) **wastewater.**

In most developed countries, slaughtering is a centralized activity. Consumer in these countries has a preference for lean meat and a few selected offal only, such as brain, kidney, sweetbread, tongue, etc. For this reason, the carcass is often deboned at the slaughterhouse and cooled before being sent to retail outlets. As a result, large quantities of by-products (bones, lungs spleen, oesophagus etc.) are left behind at the slaughterhouse. They fall in the category of inedible offal. For economic and environmental considerations, these need to be suitably processed and utilized. Clean fatty tissues such as kaul and mesentery fat may be processed into edible fat. Other tissues may be used to produce composite bone-cum-protein meals or individual products like bone-meal, meat-meal and blood-meal. In principle all edible and inedible by-products can be processed and put to further use (e.g. human consumption, pet food, feed industry or fertilizer). Modern abattoirs are well equipped and are in the possession of running water, steam, power, refrigeration, transport and other facilities. These facilities make it also possible that glands are preserved for the production of glandular products.

In developing countries a large variety of slaughter sites exist. Slaughter sites vary from simple slaughter slabs to very modern slaughterhouses. Large scale industrial processing units are imported from developed countries, often without rendering or waste treatment facilities. Many slaughterhouses (of various types) are insanitary and pose threats to health, particularly around rapidly expanding population areas. Often old slaughterhouses discharge blood and untreated wastewater. The elimination of sick animals and subsequent destruction are frequently carried out inappropriately (Kaasschieter, 1991a). Blood may coagulate in drains where it putrefies, causing bad odours and sanitary and environmental problems.

Edible and inedible by-products are frequently wasted during the slaughtering and further processing owing to amongst others:

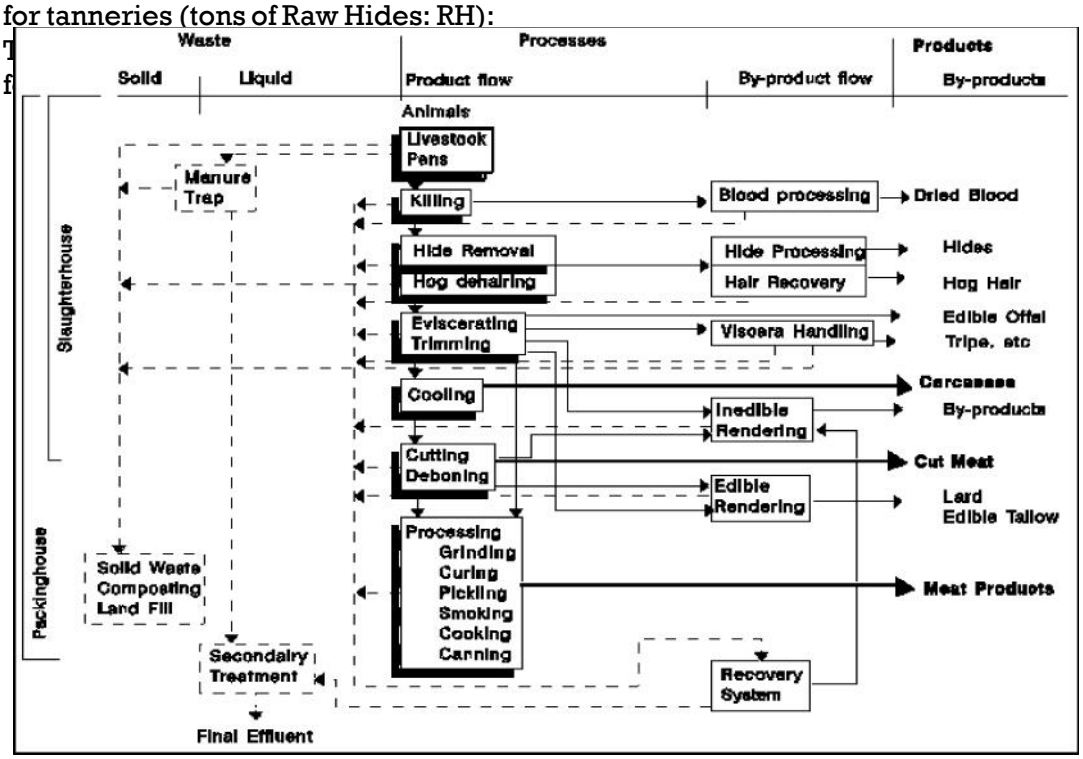
1. Insufficient skills and discipline in slaughtering;
2. Poor quality of slaughtering equipment in the slaughterhouse, slaughtering on the floor, no slaughter line, lack of adequate maintenance and lack of spare parts;
3. A non-cost-effective processing of by-products either because of the small quantities involved, the high costs of processing or the low value of the end product;
4. Lack of equipment for the processing of by-products; and
5. Lack of regulations on the discharge of wastes or the inability of the authorities to enforce regulations.

Charges for slaughtering in abattoirs are often kept low to prevent illegal slaughtering. Furthermore, slaughter fees constitute a source of income for the municipality. As however these funds are not used for the operation and maintenance of the abattoir, abattoirs have difficulties in maintaining certain standards. Approximately 80 percent of the population in developing countries lives in rural areas (Kumar, 1989). The great majority of animals is likely to be slaughtered and processed domestically or in small slaughter slabs. The processing and the utilization of offal require a technology and capital lay-out which are completely different from those in developed countries. Huge capital investments in infrastructure of plants and machinery, as is the case in developed countries cannot be justified. In developing countries also most of the soft and fat tissues are used for consumption purposes. This reduces the amount of offal with 10-15% of the live weight killed (LWK). Incidences of natural death of livestock in developing countries are relatively high. This rather leads to sanitary problems than to environmental problems as most of the dead animals are scattered over large areas.

The 'indirect' key-indicator is used to rate degree of pollution caused by the amount of industrially processed product as follows:

For the different types of industries, the industrially processed products are:

- for slaughterhouses: tons of Live Weight Killed (LWK)
- Sometimes produced waste can not be expressed per ton of LWK, but has to be expressed per ton of product (e.g. per ton carcass weight, or ton smoked meat).
- for tanneries (tons of Raw Hides: RH):
- T
- f



Slaughtering process:

In slaughterhouses animals are received and kept around in stockyards and pens for 1 day. The animals are watered, but in most cases not fed unless they are kept more than 1 day.

The animals are then driven from the holding pens to the slaughtering area where the following activities take place:

- Stunning;
- Suspension from an overhead rail by the hind legs;
- Sticking and bleeding over a collecting trough. The collected blood may be sewered or processed;
- Hide removal (cattle) or scalding and dehairing (hogs);

In some plants hogs are skinned to eliminate scalding and dehairing. Scalding is a method to loosen hair before removal. For several minutes the hogs are held in a scalding tank at 45°C to 65°C. After scalding, the hogs are mechanically dehaired by abrasion and singed in a gas flame to complete the hair removal process.

- Decapitation;
- Opening of the carcass by cutting;
- Inspection of the carcass;
- Evisceration (removal of intestines and internal organs);
- Splitting and cutting of the carcass; and
- Chilling or freezing.

Meatpacking

Many large scale plants ship whole graded carcasses to retail markets, others perform some on-site processing to produce retail cuts. The processes are the following:

- Cutting and deboning; and
- Meat processing. This includes a variety of operations amongst which grinding, mixing with additives, curing, pickling, smoking, cooking and canning.

Rendering

Rendering is a heating process for meat industry waste products through which fats are separated from water and protein residues for the production of edible lards and dried protein residues. Commonly it includes the production of a range of products of meat meal, meat-cum-bone meal, bone meal and fat from animal tissues. It does not include processes where no fat is recovered.

There are basically two different rendering processes:

- High temperature rendering: through cooking or steam application (5 systems are known: (1) simple cooking; (2) open pan rendering; (3) kettle rendering; (4) wet rendering; and (5) dry rendering.)
- Low temperature rendering (around 80°C). This process requires finely ground material and temperatures slightly above the fat melting point. It results in a better quality lard. The rendering at low temperatures is a highly sophisticated process requiring large throughputs and trained personnel. For many developing countries the system is not suitable. (Kumar, undated).

Handling of viscera, paunch and intestines

Viscera can be recovered as edible products (e.g. heart, liver). They can also be separated for inedible rendering or processing (e.g. lungs).

The paunch contents, 'paunch manure' (partially digested feed), is estimated to range from 27 to 40 kg. The paunch can be handled in four ways:

1. Total dumping. All of the paunch contents is flushed away into the sewer.
2. Wet dumping. The paunch contents are washed out and the wet slurry is screened on the presence of gross solids, which are subsequently removed.
3. Dry dumping. The paunch contents are dumped for subsequent rendering or for disposal as solid waste without needless water flushing.
4. Whole paunch handling. The entire paunch may be removed, intact, for rendering or for disposal as solid waste.

Intestines may be rendered directly, or hashed and washed prior to rendering. For the processing of intestines de-sliming prior to thorough washing is necessary.

Categories of slaughter-plants

Plants for red meat slaughtering may be categorized on the basis of the final products. A plant that processes meat into products such as canned, smoked and cured meats is significantly different from a plant with facilities for slaughtering without further processing.

Slaughterhouses and packinghouses (slaughtering and meat processing) may each be divided into two categories on the basis of the quantity of waste produced (EPA 1974).

Slaugther houses:

Simple slaughter house:

A plant that slaughters animals and does a very limited amount of by-product processing. Its main products are fresh meat in the form of whole, half or quarter carcasses or in smaller meat cuts.

Complex slaughter house:

A plant that slaughters and does extensive processing of by-products. Usually at least three of the following operations take place: rendering, paunch and viscera handling, blood processing, and hide and hair processing.

Packing houses

Low-processing packinghouse:

A plant that both slaughters and processes fresh meat into cured, smoked, canned and other meat products. Only the meat from animals slaughtered at the plant is processed. Carcasses may also be sold.

High-processing packinghouse:

A plant that also processes meat purchased from outside. Sometimes, a high-process packinghouse has facilities for tanning operations.

There are also plants that do not slaughter themselves but restrict their activities to the processing of meat (meatpacking). These plants have a waste production comparable to that of a simple slaughterhouse.

MEASURES PROPOSED TO IMPROVE THE SLAUGHTER HOUSE WASTE MANAGEMENT

Management of Solid Waste

Since it's a large slaughter house, the generated solid wastes, could be processed in environmentally acceptable manner. For the particular slaughter houses, Bio-methanation is suggested to manage the solid waste. Bio-methanation requires less space. Biomethanation of slaughterhouse is done in many places. The success of the process, especially the effective removal BOD has led Biogas plant to be acceptable for slaughter house.

Biomethanation plant can be constructed in two ways. The gas is produced in one or more digesters and then it can be stored in a separate gas holder from where it is drawn as and when required. The other alternative is that the digester and gas holder are built so as to form one single unit. The gas is produced in the lower part of the structure, while the upper tank serves as a gas holder. While the second option is extremely simple and cheap in construction, but it has the disadvantage that gas production is affected during recharge. On the other hand, with a separate gas holder, continuous supply of gas can be assured even when one or more digesters are being charged. It is, therefore, more practicable for larger units to have separate gas holders.

Liquid Waste/Effluent

During the operations of the slaughter house the waste generated is of liquid and solid nature. The liquid waste should be washed away by safe potable and constant supply of fresh water at adequate pressure throughout the premises of slaughtering. The waste water

from slaughter house is heavy in pollution and, therefore, it should not be allowed to mix with the municipal drain system without pre-treatment meeting sewage standards as per the Bureau of Indian Standards (BIS).

The waste water treatment system should essentially comprise of:

- Self cleaning type screening or two stage screening (Bar type)
- Anaerobic treatment;
- Aerobic treatment; and
- Filter press for dewatering of the sludge.

Collection of Blood

The blood available from the slaughter house should be collected and made use of in pharmaceutical industry. Bleeding areas should be clearly identified in the slaughter house and blood drains should be and collection should be done immediately so that its full potential could be utilized.

Improved Method of Dressing

Adequate tools should be provided for dehiding of the animals, hides and skins should be immediately transported out of the slaughtering area in a closed wheel-barrow or similar other devices. In no case the hides and skins should be spread on the floor of the slaughtering area for inspection. Legs, bones, hooves etc. should also be removed immediately from the slaughtering area through a spring load floor chute or closed wheel-barrow.

Evisceration

(**Evisceration** is the removal of viscera (internal organs, especially those in the abdominal cavity). This can refer to: Disembowelment, removal of the internal organs of an animal).

At slaughter houses adequate compartments for immediate separation and disposal of condemned material must be provided. The authority must take care that intestines are not punctured during evisceration to avoid contamination of carcasses.

Safe Disposal of Waste Products

Slaughtering of animals generates wastes consisting of non edible offal (like lungs, large intestines, various glands, animal tissues, organs, various body parts, etc.) stomach/intestinal contents, dung, sludge from waste water treatment, bones, etc. All these types of wastes are required to be disposed by adopting methods like rendering/controlled incineration/burial/composting/Anaerobic digestion etc.

Odour Control

The tropical climate of our state enhances the process of degeneration of any tissue material remaining as a waste in the premises of the slaughter houses. Therefore, the slaughter house premises always give a particular stink. In order to avoid this stinking odour proper ventilation of slaughtering

halls, washing of the floors with non-poisonous disinfectants and if need be use of aerobic deodorants must be provided at each slaughter house.

Pest control

Pests (insect, rodents and birds) should be controlled to prevent their access to slaughterhouses, production areas and storage departments. This is best achieved by the construction of buildings and working places where access of insects, rodents and birds is hindered, but it will be almost impossible to secure buildings totally against pests. However, good designs and constructions may delay the attack of pests. These are a worthwhile objective of an overall rodent control program. Even if the buildings are well-constructed and as pest-proof as possible it will be necessary to have a regular pest control.

Modernisation of Slaughter House

The slaughter house is controlled by local bodies, which should follow the standards prescribed, but due to non-existence of modernised slaughter houses, environmental pollution arising out of the slaughtering activities cannot be controlled. The local bodies must, therefore, take up modernisation of the slaughter house in Kollam and achieve the pollution control norms.

Conclusion:

Although, there is no official count of the unauthorised abattoirs, ministry officials said that they may number more than 30,000. CPCB officials also say that it is the responsibility of civic bodies to manage solid waste and liquid waste scientifically who more often than not dump the organic solid waste from slaughterhouses into landfills. The large professional slaughter houses are not a problem. The medium and small enterprises are the ones not adhering to norms. Also, each major city has slaughterhouses that have now aged and the waste disposal is outdated. Slaughterhouses fall in the 'B' category of projects as per the environment impact assessment notification and thus only require state clearances. But according to some ministry officials, they may soon require a clearance from Centre too.

Though the Central Pollution Control Board (CPCB) already has norms in place to regulate this industry, its officials said that stricter norms and adoption of new technology is the need of the day. The new norms have laid down effluent parameters and standards dividing them into two categories based on the size of the slaughter house. Large slaughterhouses and meat processing units slaughtering more than 200 large animals or more than 1,000 small animals have to meet stricter norms compared to the medium and small slaughterhouses. The slaughter houses also have to ensure scientific disposal of organic waste matter using approved technology. Organic matter such as rumen, intestinal contents, meat trimming and inedible meat is largely left to rot and also causes diseases around landfills and near water bodies.

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COMPLIANCE SYSTEMS TO BE EASED FOR IMPORTERS

The government is looking to expand the scope of the single window clearance mechanism for importers launched on April1, which could significantly cut the cost and time for importers and, in turn, help improve ease of doing business.

To further simplify inbound shipments, the government is working towards allowing all physical import license to be uploaded online with a digital signature. This will do away with the cumbersome compliance measures requiring importers to show physical copies of import licence or rules of origin certificates to the authorities each time.

"The next step is to do away with the need to present physical copies of licenses each time one imports. It will all be made online with the next two months," said a government official.

(Business Standard – 23/05/16)

FOOTWEAR EXPORTS RECOVER IN BRAZIL

According to data released by the Brazilian Shoe Manufacturers Association, footwear exports registered an increase of 60% in December in comparison with the previous month. This recovery resulted in a minor reduction of the global figures for the 2015 external trade figures.

In December, Brazil has sold abroad 17.6 million pairs valued at 119.57 million US Dollars, up by 60% when compared to November, and growing by 0.3% from similar month in 2014. Looking into the accumulated figures for 2015, Brazil has exported 124 million pairs worthing 960.4 million US Dollars, which resulted in a decline of 4.2% in volume and 10% in value when compared to 2014.

According to Heitor Klein, President of Abicalcados, the Brazilian Footwear Association, this was an expected result. "This stronger dollar effect was seen at the end of the year, with the more favourable exchange rate applied in the second half now being reflected in the payments", Mr. Klein has said, adding that it is quite risky to forecast any future trends. Notwithstanding, he expects this to be the beginning of a gradual recovery for the Brazilian footwear exports.

The data released by Abicalcados indicates the United States as the main destination market for Brazilian footwear sold abroad, with a total of 11.76 million pairs exported to the North American country, valued at 191.87 million US Dollars. The stronger US Dollar and the recovery of the American economy explain the performance of the exports to this market.

The second main destination for Brazilian footwear is still Argentina. The neighbor country have bought 67.48 million US Dollars worth of shoes, 17.4% less than in 2014. The economic crisis in the country and the protectionist measures were pointed by Mr. Klein as the main drivers of this performance.

France is the third most important destination market for Brazilian footwear as it has acquired 8.46 million pairs, worth 55 million US Dollars, down by 21.6% when compared to 2014.

(Indian News Agency – 23/05/2016)

HOW TO COMPUTE YOUR TAXABLE INCOME

In order to file your income tax return you first need to collect all the information required to file it. The next important step is to compute your total taxable income. After this, final tax payable or refundable is calculated by applying the applicable tax rates in force and then deducting taxes already paid by way of TDS/TCS or Advance tax from the tax due amount arrived at.

Here's a step by step guide on how to calculate one's total taxable income:

As per the income tax laws a person can have a total of 5 sources of income which are: Income from salary, Income from House Property, Income from Business or Profession, Income from Capital Gains, Income from Other sources. All income of a tax-assessee has to be categorized as one of the above.

Income from Salary

You can compute income from your salary using the TDS certificate in Form 16 issued by your employer. This is to be done as follows:

- Collect your salary slips and Form 16 for the financial year. - Now add all your emoluments like (Basic salary, DA, TA, DA on TA, HRA, all other allowances, and reimbursements) which will be mentioned in your salary slips and Form 16 (Part B).

  Add the Bonus (TVP- Ex gratia) received in the FY for which income is being computed.

- The total will be termed as your gross salary.

- Deduct the following from your gross salary :

  Exempted portion of HRA, - Transport Allowance (maximum exemption can be up to Rs. 19200 per annum) - All reimbursements subject to the furnishing of actual bills i.r.o expenditure incurred (Medical reimbursement can be maximum up to Rs 15000)

- The result will be your net income from salary.

Income from House Property (HP)

Income from house property mainly consists of rental income received by the assessee from the house that he has let out. In case, assessee has only one house and that too is self occupied by him, then also he will be required to compute his income from house property.(which will be nil or a negative value in most cases)

The assessee must consider following points while computing his income from House Property. - Compute the Gross Annual Value (GAV) of your let out HP as follows:

- Compute the Fair Market Value (expected rent from similar property) and Municipal Valuation (valuation as per municipal authorities). Take the higher value of the two. This higher value is termed as Expected rent.

- Compare the Actual rent received/Receivable for the year with the expected rent and the higher value will be the GAV of the House.

Note: If property is covered under Rent Control Act, then Expected rent cannot exceed the Standard rent.

- Calculate the Net Annual Value (NAV) by deducting municipal taxes actually paid during the year from GAV. Deduct the following from the NAV to compute the income/loss from House Property

- 30% of NAV - Annual interest cost paid on the amount of loan taken, if any, to purchase the said House.

Note: In case of self occupied property, the GAV would be taken as nil and maximum deduction of interest paid would be limited to Rs 200000.

Income from Capital Gains

Computing income from capital gains involves some effort depending on the number and complexity of transactions. You might need an expert to calculate the same depending upon the nature and number of transactions. Broadly, income from capital gains is computed as follows:

- Compute your Long term capital gains (LTCG) from sale of all capital assets. - Compute your Short term capital gains (STCG) from sale of all capital Assets. - Claim the deductions u/s 54, 54G, 54EC etc. if any.

Income from Business/Profession

Calculating the taxable income arising from gains from Business/ Profession might be a challenging task. In case, the business or professional set up is not on a big scale and does not involve complex transactions, then income from Business/Profession can be computed by the assessee himself/ herself but in most cases, it is beneficial to take the advice of an expert(like a chartered accountant) to do this. . There several provisions under the Income Tax Act which deal with the allowance/ disallowances of various expenditures and incomes. Other concepts like AMT, Book Profits, and Presumptive incomes are also applicable while computing gains from a Business/Profession.

For a simple business, the assessee can compute his taxable business income in the following manner:

- Take the Net Profit mentioned in the Books of Accounts as the base value.

- Add back all the deductions that are disallowed under the income tax act (Refer Section 37, 14) which you have already availed in the P&L account maintained as a part of books of accounts.

- Subtract the expenditures that are allowed as per the provisions of income tax laws (Refer section 32, 35, 36).

It is always better to take the help of a chartered accountant, as the calculations tend to change with each case.

Income from Other Sources

- All the incomes that cannot be classified in the heads of income mentioned above will be considered as income from other sources. It generally consists of Interest Income, Dividend income, Gifts (where taxable) etc. These figures are to be collected by categorizing all the credit entries in your savings account passbook/statements. In case of accrued income such as interest earned on cumulative fixed deposits which will not reflect in your savings account as credit entries, you can obtain interest certificates from the institution where you have placed the FD. You will need interest certificates only in case tax has not been deducted at source from the accrued income because in case of TDS a TDS certificate will be issued to you.

- Saving account credit entries (except inter-account transfers) are to be categorized under the above mentioned five heads of income. In this manner, compute your annual income from other sources like Interest income, Dividend income, family pension, Lottery income, income from race horses etc.

- Interest income typically includes interest from fixed deposits, recurring deposits, savings accounts, bonds, debentures etc. Dividend income typically comes from mutual fund schemes where you have opted for the dividend option and equity shares. Most people would have only these two kinds of income from other sources.

- Subtract the deductions available under Income Tax act for which you are eligible.

Set Off of Current year losses and set off of brought forward losses. After computing income under each head of income, you might see losses reflecting under some heads of income. The income tax laws allow the assessee to set off the losses under one head of income from income under the same head or other heads of income too.

However, there are certain restrictions on set off of losses such as:

- The loss from business can't be set off from income from salary.

- Long term capital losses can't be set off against any other head of income.

- Short term capital losses can be set off against any other short term capital gains as well as long term capital gains, but not against any other head of income

- Losses from owning and maintaining race horses can't be set off against any other head of income

Even if there are no losses under any head in the current year, then also any losses which could not be set off in earlier years and have been brought forward by the assessee can be set off from the current year income of the same head in which the loss was incurred. Any unsettled loss can be carried forward to the next year. There are multiple conditions attached to carry forward and set off of losses so it is advisable to consult an expert in this matter.

Gross Total Income

It is the sum of income from all 5 heads after setting off the losses under the relevant heads of income. It is worth noting that Gross total income is to be categorized in 2 parts i.e. one which is to be taxed at normal slab rates (NORMAL INCOME) and other which is subject to tax at specific rates.

For this purpose, following are not considered as normal income:

- Short Term capital Gains on which Securities Transaction Tax has been paid (taxed @ 15%)
- Long term capital gains except for those exempted u/s 10(38) (Taxed @ 20%)
- Casual income like lottery income, income from horse racing (taxed @ 30%)

Deductions under chapter VI-A

We all are aware of the popular deductions like deductions under 80C (upto Rs 150000), but there are many more deductions that can be claimed by the assessee. Make sure you claim all the relevant deductions from your Gross total income which are given under sections 80C to 80U.

In case the amount of deductions exceeds the Gross total income (GTI), then the amount of deduction shall be restricted to the amount of GTI.

Further, deduction under chapter VI-A can only be claimed from NORMAL INCOME computed above.

Some of the investments/expenditures which can be claimed as deductions include: Investment in NSC, PPF, ULIPs, ELSS, NPS, VPF, Tution fee, Mediclaim policy, Life insurance policy, donations given to certain approved institutions, royalty income received by the author of books, rent paid (subject to conditions).

- Subtract the Deductions under Chapter VI-A from your Gross Total Income. The result will be your total taxable income. After calculating your total taxable income, apply the tax rates relevant for the financial year for which the income has been calculated to compute your tax liability.

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LESA

LEATHER SCIENCE ABSTRACTS

VOLUME 49 **NUMBER 06** **JUNE, 2016**

NATIONAL INFORMATION CENTER FOR LEATHER & ALLIED INDUSTRIES (NICLAI)

NATIONAL INFORMATION SYSTEM FOR SCIENCE & TECHNOLOGY (NISSAT)

CENTRAL LEATHER RESEARCH INSTITUTE

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All enquiries for further details should be addressed to: THE DIRECTOR, **(ATTN.: EDITOR, LESA)** CENTRAL LEATHER RESEARCH INSTITUTE, ADYAR, CHENNAI-600 020, INDIA.

CONTENTS

VOLUME 49 **NUMBER 06** **JUNE, 2016**

List of Periodicals covered in this issue :

List of Periodicals Covered in This Issue :

Angew. Chem.

Bul. Institut. Politech. Din lasi(Romanian)

Chem. Ind. Dig.

Chem. Wkly.

Indian J. Exp. Biol.

J. Am. Leather Chem. Assoc.

J. Indian Leather Technol. Assoc.

J. Soc. Leather Technol. Chem.

Leather Age

Leather Int'l

Leather News India

World Leather

LEATHER SCIENCE AND TECHNOLOGY

LEATHER INDUSTRY. HISTORY. MANAGEMENT. ECONOMICS. EDUCATION

49.14702

A harbinger of good times. BASU (A), (New Business and Innovation Center, M/s. Tata Chemicals Limited, Survey No. : 315, Hissa No.: 1-14, Ambedveth(V), Paud Road, Mulshi, Pune-412 011, Maharashtra State, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 53-4 & 56-7).

A neat phrase viz. : "Necessity is the mother of invention" is heard many times that best captures platform as the springboard for sustainable, profitable growth. Discussed the way in which the chemical industry in India can exploit skilled labor and an innovative ecosystem to its advantage. Advocated the incorporation, of the global best practices in the chemical industry for sustainable management of energy, water and waste. (3 Ref.; 2 Photos).

49.14703

Challenges facing international engineering companies in India. JAIN (AK), SANDEEP KUMAR, (M/s. Fluor Daniel India Private Limited, 3rd Floor, Building No.: 10, Tower A, DLF Cyber City, Phase II, Gurgaon-122 002, Haryana State, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 79-82).

Ample opportunities exist for international Engineering, Procurement and Construction (EPC) players in the Indian infrastructure industry with more than US $1 trillion investment planned in the 12th Indian Five-Year Plan. The opportunities in oil and gas infrastructure projects are, of course, not without accompanying challenges owing to innumerable issues such as pre-execution delays like land acquisition, impractical industrial policies, permissions(e.g. environmental etc.), schedule delays triggered by client indecision, poor implementation of change management system, client's inability to arrange finances, weakening financial strength of both and sub-contractors etc. The situation is often aggravated by unrealistic bids by new entrants creating unreasonable expectations in the minds of owners regarding both price and schedule for big infrastructure projects. Government's immediate attention is required towards this sector, which needs a comprehensive review to help it flourish and contribute to gross domestic product(GDP) growth. Discussed the various execution, procurement and construction challenges which international EPC players face in India and how they could be resolved. (1 Photo).

49.14704

How truly effective leaders plan, organize and delegate. ROPELLA (PB), (Ropella Group, No. : 8100 Opportunity Drive, Milton, Florida 32583, USA). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 120-2 & 124-5).
Answered the queries such as (a) how do great chemical-industry leaders effectively manage their times and priorities? (b) Why do typical time-management strategies usually fall short of the goal? (c) What are the four sample steps to make delegation work for you? Discussed

the learning of how to graph, prioritize and delegate key tasks in the most efficient and logical system and the learning, also of the secrets which the great industry leaders utilize to de-clutter their work day and maximize the value of their time. Successful managers are proactive, rather than reactive-they avoid five delegation pitfalls following their parameters and effectively minimizing tasks that steal their limited time. Discussed also the simple tools and techniques for smarter management, more efficient priority setting and delegation that works like a charm. (1 Fig.; 2 Photos).

49.14705

Growth & challenges in Indian colorant industry. RAVI KAPOOR, (M/s. Heubach Colour Private Limited, Neelkanth Business Park, A-Wing, Office No. : 302, Khalia Village, Vidhyavihar(West), Mumbai – 400 086, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 151-3).

The Indian colorant industry like other sectors has been facing challenges domestically and internationally. The compliance with environmental norms and innovating new and better processes and products are proving to be key factors for achieving sustainable growth. In a nutshell, highlighted some of the key issues that are crucial to the industry's future. (2 Photos).

49.14706

Innovations packaging : new pharmaceuticals packages protect proteins and prevent falsification. (Chem. Wkly.; 59, 22; 2014, Jan., 7; 184-6).

The medicinal products market is changing. Sensitive biopharmaceuticals require more robust packages. Falsification has to be prevented with special seals and codes and additional package features are necessary so that patients can safely administer medication. Pharmaceutical companies and the packaging sector are faced with huge challenges. Described the packaging sector, that has a multitude of innovations in store for the pharmaceuticals industry. Discussed the solutions for the pharmaceuticals industry. (5 Photos).

49.14707

Quality issues-Will they affect the growth of the Indian pharmaceutical industry? NAIR (MD), (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 94-6 & 98-100).

The Indian pharmaceutical industry has seen a tumultuous year in terms of quality issues. Indian pharma companies have been singled out for being negligent on quality, environment and safety issues. However, despite the negative publicity the sector has received in recent times it has yet again been a standout performer as compared to other sectors. Various issues, that plague the drugs and pharmaceutical industry and growth prospects in the sector are looked at. Discussed the impact of Ranbaxy-type episodes on the industry's image. (2 Photos).

49.14708

Outsourcing operations to third party contractors : Guidelines for risk management. YEMENU (D), CERENZIO (R), (Technical and Customer Services Division, ISN, ETH Zurich, Leonharshelde 21, LEH 8092, Zurich, Switzerland). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 111-2 & 115-8).
The outsourcing of operations to third-party contractors has become a standard method for minimizing operational overheads while driving toward increased production and profit in the current 21st century global economy. However, the practice of contractorisation carries inherent occupational safety risks, rendering businesses liable for damage to workers, operations, the environment and local communities. Contractors and suppliers must be aware of the pre-qualification information related to health, safety, procurement and management strategies that must be maintained by the companies that haired them. Explained the importance, of having a robust contractor management system which is supported by measurable statistics and supporting evidence from regulatory, governmental and industry export sources on multiple regions and outlined the key elements of such a system and served as a framework for its implementation. (8 Ref.; 2 Fig.).

49.14709

Picking up the pace. GUPTA (SK), SANJEEV GUPTA, (Department of Industrial and Management Engineering, Indian Institute of Technology(IIT), Chennai-600 036, India). (Leather Int'l; 215, 4837; 2014, Jan./Feb.; 22-4).

Examines the contributing factors, market performances and current economic trends affecting India's global share of the leather industry as this industry in India is being realized as "exponentially growing" according to the Indian Commerce Ministry and India Trade Promotion Orgnization(ITPO). (1 Tab.; 2 Fig.; 1 Photo).

49.14710

Agrochemical industry in India. SAHA (B), (R&D Division, M/s. Nagarjuna Agrichem Limited, Second Floor Place No. : 61, Nagarjuna Hills, Opposite Business School, Banjara Hills, Hyderabad-500 082, Telengana State, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 146-9).

Indian agrochemical industry has shown steady growth over last few years with a turnover reaching $3.8 billion in FY2012. India is now the 4th largest supplier of agrochemicals in the world. Highlighted the industry's strengths, weaknesses, opportunities and threats. Discussed the quality issues, R&D, future prospects and related issues. (1 Tab.; 4 Fig.; 1 Photo).

49.14711

Sustainable Chemistry : Bio-based chemicals-A wealth of opportunities for the economy & environment. (Chem. Wkly.; 59, 24; 2014, Jan., 21; 188-90).The transformation of the raw material base is a global question. The current hurdles and technological challenges require creativity and on going R&D efforts. (3 Photos).

49.14712

Oleochemicals gaining prominence in speciality chemicals. PANCHAL (M), CHARU KAPOOR, AGARWAL (B), (Chemicals, Energy and Supply Chain, TATA Strategic Management Group, No. : B-1001 Marathon Futurex, N.M. Joshi Marg, Lower Parel(East), Mumbai - 400 013, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 89-90 & 92-3).
Oleochemicals have historically been an integral part of chemical industry. The global oleochemicals market is likely to reach 18 million tonnes by 2018 from 13.5 million tonnes currently. Increase in demand for bio-degradable products and sustainable solutions coupled with changes in regulations in recent times are further increasing the influence of oleochemicals in various segments of chemical industry. Surfactants, soaps and detergents, cosmetics and food additives have traditionally been based on oleochemicals but recent advancements have created new applications in various specialty chemicals segments such as in polymers, lubricants and biosurfactants. Many of these are replacements of petrochemical based products. It is expected that by 2020 biosurfactants would comprise 25% of the overall surfactant market. These emerging areas offer significant opportunities for companies in the long run. Chemical companies, which explore organic and inorganic growth options in this space could be poised for major growth. (4 Ref.; 3 Fig.; 1 Photo).

49.14713

Sustainable models in the fine and speciality chemicals industry. RAJAGOPAL (R), (M/s. Chemical Weekly, Corporate Office, No. : 602, 6th Floor, B-Wing, Godrej Coliseum, Behind Everard Nagar, Off. Eastern Express Highway, K. J. Somaiya Hospital Road, Sion(East), Mumbai-400 022, India). (Chem. Wkly.; 59, 24; 2014, Jan., 21; 199-204).

The global fine and the speciality chemicals business is a multiproduct, multi-technology, multi-location enterprise spread across diverse economic zones. Briefly explained the shifts in the industry landscape, evolving trends in the sustainability practices; sustainability models; energy efficiency including the enhancing the efficiency of production processes, adopting the energy efficiency systems as well as focusing the energy saving product development; green chemistry and technology platforms, waste valorization; bio-based products; managing the sustainability initiatives; sustainable value creation, emerging challenges; managing innovations; remaining competitive; appropriate business model and future directions. (4 Tab.; 2 Photos).

49.14714

Need to focus on renewable energy. VENKATARAMAN (NS), (M/s. Nandini Consultancy Center Private Limited, Thirumalainagar Annexe, No. : 54 First Main Road, Perungudi, Chennai-600 096, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 71-2 & 74-6).

The nation faces an impending energy crisis. India presently imports around 180 million tons of crude oil, around 110 million tons of coal and 14 billion cubic meter of natural gas. The country's energy needs have to increase by 9 to 10% per annum for maintaining a gross domestic product(GDP) growth of 8% per annum. This means that the import of coal, natural

gas and crude oil will have to double in the next 7-8 years which will be an alarming situation, as it will make the current account deficit jump to unacceptable levels. Renewable energy sector provides enormous opportunities. However, the Indian renewable energy sector is at the cross roads. The industry is really moving at snail's pace, in spite of the looming energy crisis. The country is yet to build even 2,000 MW at the end of 2013 against the target of 20,000 MW of solar power by 2020. The on shore wind power project is operating at an average

49.14715

Africa awakening : Opportunities for Indian chemical industry in Africa. MAZUMDAR (R), (Research & Analysis Group, EXIM Bank, 21st Floor, Center One Building, World Trade Center, Cuffe Parade, Mumbai-400 022, India). (Chem. Ind. Res.; 27, 1; 2014, Jan.; 103-6 & 108-9).

The chemical industry in Africa is an emerging market and offers opportunities galore for the Indian chemical industry. As the countries in Africa grow and urbanize, household consumption will increase, resulting in an increase in demand for chemicals. Currently, the major exporters of chemicals to Africa are China, Germany, USA, India and Australia. These four countries constituted 41% share in Africa's imports of chemicals in 2011. China remains the top exporter of chemicals to all the major destinations in Africa. Major importers of chemicals in Africa are South Africa, Egypt, Nigeria, Algeria and Tunisia, together having a share of over 76.7%. Discusses the chemical industry in Africa, trends and emerging issues in use of chemicals in the continent and opportunity areas for Indian chemical industry to increase its exports to Africa. (4 Ref.; 3 Tab.; 3 Fig.; 1 Map).

49.14716

The coming global commercialization of bio-butanol. NEJAME (S), (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 138-40 & 142-4).

Modern bio-butanol production is gaining traction in the US and Brazil and may soon displace petroleum based synthesis in sugarcane advantaged countries like India. At the same time, energy economics turn toward renewable sources to diversify against petroleum price shocks, new butanol technologies have proven themselves at scale with yields, productivity and titers approaching those of ethanol fermentation. Looked at the traditional uses and demands for n- and iso-butanol and compared the historical shift from synthetic ethanol to bio-ethanol. Demonstrated the parallels to the development of bio-butanol. Discussed the superior physical properties like energy content, vapour pressure, non-hygroscopic nature and

materials compatibility of butanol fuel as is butanol's role as a higher value add chemical important in the construction, automotive and the paint & coating industries. Discussed also the opportunities for butanol in the Indian chemical and biofuel markets. (1 Tab.; 7 Fig.; 1 Photo).

49.14717

Shale gas-Changing the face of the global petrochemical industry. GOEL (A), (M/s. India Ratings & Research Private Limited, Wackhardt Towers, 4th Floor, West Wing, Bandra-Kurla Complex, Bandra East, Mumbai-400 051, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 65-6 & 68-9). Shale gas has emerged as a game changer in the energy space, particularly in the US, where it has opened up a vast new source of natural gas and brought down local natural gas price substantially. As Middle Eastern countries use more gas for domestic energy and fuel for water desalination, gas allocations to the petrochemical industry are limited, while European and Asian shale developments would take several years, thus providing the US chemical industry a substantial advantage in terms of both energy and feedstock prices. Focused the way, in which the shale gas is transforming the dynamics of the global petrochemical industry, the eventual rise of the US as a major petrochemical player and the diminishing dominance of the Middle Eastern countries in the sector. (2 Tab.; 1 Photo).

49.14718

Some thoughts on India's leather sector exports. SAHASRANAMAN (A), (M/s. CEMCOT, No. : F-2, "Shreyas", No. : 87 Greenways Lane, Greenways Road, Raja Annamalaipuram Chennai-600 028, India). (Leather News India; 5, 1; 2014, Jan.; 49-52).

Highlighted some interesting features, that have come across while browsing through the export performance of the Indian leather sector and derived the possible conclusions. (2 Tab.).

49.14719

Sustainable Brazil. (Leather News India; 5, 1; 2014, Jan.; 44-5).

Discusses the leather sector, technological development, problems regarding the tannery wastes disposals, traceability in the supply chain, leather production and value addition in Brazil. (2 Photos).

PROTEINS AND COLLAGEN

49.14720

Air permeability and moisture penetration performance of leather from a microscopic view. ZHONG (A), JIANG (X), LIU (J), XU (W), (Wuhan Textile University, Hongshan District, Wuhan City, Hubei Province, 40073, People's Republic of China). (J. Soc. Leather Technol. Chem.; 99, 1; 2015, Jan.-Feb.; 30-2).

Describes the microscopic spatial structure change of natural leather collagen**III** (i.e. 16kv collagen) that was simulated using Tinker software. The dynamics of the process for 16 kv[amino acid sequence number of Type **III** collagen] collagen was simulated at 300K, 320K, 340K and 360K. It is found through a series of analyses that Rgr(radius of gyration) of all of the atoms of 16 kv collagen molecules increases with the increase of chosen temperature and its average value decreases from 24.9Å to 21.0Å. People can find that the molecular chains of collagen gradually will be one curved and there's large degree of bending at 360K by considering this along with the simulation trajectory of dynamics at different temperatures. This is further evidence that the atomic distance between collagen molecules is getting smaller with the increase of the experimental set temperature and it can also explain the mechanism of performance degradation of natural leather. (3 Ref.; 8 Fig.).

ENZYMOLOGY

49.14721

Peptide : N-glycanase is expressed in prestalk cells and plays a role in the differentiation of prespore cells during development of *Dictyostelium discoideum*. GOSAIN (A), SRIVASTAVA (A), SARAN (S), (School of Life Sciences, Jawaharlal Nehru University, New Mehrauli Road, New Delhi-100 067, India). (Indian J. Exp. Biol.; 52, 3; 2014, Mar.; 197-206).

Peptide : N-glycanase(PNGase) enzyme is found throughout eukaryotes and plays an important role in the misfolded glycoprotein degradation pathway. Reported the expression patterns of the pngase transcript(as studied by the analysis of â–galactosidase reporter driven by the putative pngase promoter) and protein(as studied by the analysis of â-galactosidase reporter expressed under the putative pngase promoter as a fusion with pnage Open Reading Frame Finder(ORF) during development and further elucidated the developmental defects of the cells lacking PNGase(png(-)). The results show that the DdPNGase is an essential protein expressed throughout development and â–galactosidase activity was present in the anterior part of the slug. The prestalk A(Arctic) and AO(Arctic Oscillation) patterning was expanded and covered a large section of the prespore region of the slugs in structures derived from a null mutant for pngase. The png- cells preferentially populate/stalk region when developed as chimeras with wild type. They also tend to form the prespore/spore cells when the mutants were mixed in higher ratios. The results emphasized that the DdPNGase has an essential role during development and the mutants have defects in a system that changes the physiological dynamics in the prespore cells. DdPNGase play a role in development during aggregation and in the differentiation of prespore cells. (24 Ref.; 32 Fig.).

49.14722

Protective effect of alcoholic effect of *Entadapursaetha DC.* against CCl_4-induced hepatatoxicity in rats. GUPTA (G), MORE (AS), KUMARI (RR), LINGARAJU (MC), DHIRENDRA KUMAR, DINESH KUMAR, MISHRA (SK), TANDON (SK), (Division of Pharmacology and Toxicology, Indian Veterinary Research Institute(IVRI), Izatnagar-243 122, Bareilly District, Uttar Pradesh State, India). (Indian J. Exp. Biol.; 52, 3; 2014, Mar.; 207-14).

The alcoholic extract of stem of *Entadapursaetha DC.*(PSE) 30, 200, 300 mg/kg body weight, po for 7 days) showed hepatoprotective activity against CCl_4(carbon tetrachloride) (2 mL/kg body weight, ip)-induced hepatotoxicity. The extract exhibited a significant dose-dependent hepatoprotective effect comparable to standard drug silymarin, by preventing increase in serum levels of alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, total protein and total bilirubin, lactate dehydrogenase; by lowering hepatic levels of manonaldehyde, nitrate-nitrite, mycloproxidase activity; enhancing activities of antioxidant enzymes, superoxide dismutase, catalase and increasing reduced glutathione levels in liver, which suggests the antioxidant property of PSE. Histopathological studies also supported the above biochemical parameters. The results suggested that alcoholic extract of *Entadapursaetha* possesses significant hepatoprotective activity in CCl_4-induced acute hepatotoxicity in rats and this is likely to be mediated through its antioxidant activities. (40 Ref.; 3 Tab.; 7 Fig.).
49.14723

Phenylpropanoid enzymes, phenolic polymers and metabolites as chemical defenses to infection of *Pratylenchus coffeae* in roots of resistant and susceptible bananas(*Musa spp.*). VAGANAN (MM), RAVI (I), NANDA KUMAR (A), SARUMATHI (S), SUNDARARAJU (P), MUSTAFFA (MM), (Physiology and Biochemistry Laboratory, National Research Center for Banana, Thayanur Post, Thogamalai Road, Tiruchirappalli-620 102, Tamil Nadu State, India). (Indian J. Exp. Biol.; 52, 3; 2014, Mar.; 252-60).

Investigated the activity of the first(phenylalamine ammonia lyase, PAL) and the last(cinnamyl alcohol dehydrogenase, CAD) enzymes of phenylprepanoid pathway in the roots of resistant(Yangambi Km5 and Anaikomban) and susceptible(Nendran and lobsuta) banana cultivars caused by root lesion nematode, *Pratylenchus coffeae*. Also, analyzed the accumulation of phenolics and deposition of lignin polymers in cell walls in relation to resistance of the banana cultivars to the nematode. The resistant cultivars when compared to the susceptible cultivars, had constitutively significantly higher PAL activity and total soluble and cell wall-bound phenolics than in susceptible cultivars(cvs). The resistant cultivars responded strongly to the infection of the nematode by induction of several-time higher PAL and CAD enzymes activities, soluble and wall-bound phenolics and enrichment of lignin polymers in cell wall and these biochemical parameters reached maximum at 7th day post inoculation. In addition, analyzed the profiles of phenolic acid metabolites in roots of Yangambi Km5 and Nendran by high performance liquid chromatography(HPLC) to ascertain the underlying biochemical mechanism of bananas resistance to the nematode. Identification and quantification of soluble and cell wall-bound phenolic acids showed six metabolites and only quantitative, no qualitative, differences occurred between the resistant

and susceptible cvs. and between constitutive and induced contents. A very prominent increase of p-coumaric, ferulic and sinepic acids, which are precursors of monolignols of lignin, in resistant was found. These constitutive and induced biochemical alterations are definitely the chemical defenses of resistant cvs. to the nematode infection. (46 Ref.; 1 Tab.; 6 Fig.).

49.14724

Innovations for tanning industry. LAKSHMANAN (D), CHANDRABABU (NK), SEKARAN (G), MANDAL (AB), (Council of Scientific and Industrial Research-Central Leather Research Institute(CSIR-CLRI), Adyar, Chennai-600 020, India). (J. Indian Leather Technol. Assoc.; 64, 3; 2014, Mar.; 291-4).

Describes here about the core idea behind the developments for reviewing a new fangled, efficient and affordable small scale technologies including enzyme application for skins to bridge the gap between rural and urban areas and these studies give a transient process.

POST-TANNING

FINISHING

49.14725

A new drying application for garment leather. ALONSO (S), ZITZUMBO (R), (CIATEC AC, Omega 201, Fraec. Ind. Delta, León, Mexico). (J. Soc. Leather Technol. Chem.; 98, 1; 2014, Jan.-Feb.; 10-6).
Analyzed the effect of two drying alternatives on a fine garment leather. Compared the natural hang drying to tumble forced convection drying. The project is of interest due to the extended drying time under a high humidity environment which demands a high inventory of skins and a long overall manufacturing process time. The two drying processes deliver leather pieces of different characteristics. Consequently, compared the physical and subjective properties of the products. The forced convection drying process is set up for the conditions that best maintain quality of leather compared to the natural convection drying process. The results show that timbler drying causes a greater area contention with respect to natural hanging drying; however, a more pliable leather is obtained, optical for garment leather application with suitable elasticity. Compared also both drying alternatives are acceptable when the physical properties as both passing the standards required for a garment leather application. Analyzed also the humidity at the exist of the tumbler drying equipment to obtain a moisture curve to define the moment at which the leather reaches an appropriate humidity so that the drying process can be stopped. (23 Ref.; 6 Tab.; 6 Fig.).

LEATHER CHEMICALS AND AUXILIARIES

49.14726

A base-stabilized Lead**(I)** dimer and aromatic plumbylidenide anion. CHIA (S), XI (H), LI (Y), LIM (KH), SO (C), (Division of Chemistry and Biological Chemistry, Nanyang Technological University, 21 Nanyang Link, Singapore 637371, Singapore). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6298-301).

Describes the aromatic low-valent load analogue of an indenyl anion that undergoes oxidation with $SnCl_2$(Tin**(II)**chloride) to form the base-stabilized lead**(I)** dimer 2. Discusses the reduction of **2** with lithium that regenerates **1.** These compounds were characterized by nuclear magnetic resonance(NMR) spectroscopy and X-ray crystallography. (39 Ref.; 3 Fig.; 2 Schemes).

49.14727

Evonik's DYNAVIS technology targets the life-blood of construction equipment-hydraulic fluid. (Chem. Wkly.; 58, 44; 2013, Jun., 11; 203-4).

Currently, many man-made wonders would never take place without hydraulic-drive construction equipment; whether it would be spectacular skyscrappers, offshore wind parks on the high seas, or multi-lane freeways. There's still ample potential for improvement as has been clearly being shown by the new technology of Evonik Industries called DYNAVIS for expanding the capabilities and efficiency of this essential equipment. The enhanced efficiency of this equipment in improving the performance and fuel efficiency and CO_2 emissions fall. (1 Fig.; 3 Photos).

49.14728

Control of selectivity in palladium-catalyzed oxidative carbocyclization/Borylation of allenynes. DENG (Y), BARTHOLOMEYZIK (T), BÄCKVALL (J), (Department of Organic Chemistry, Arrhenius Laboratory, Stockholm University, SE-106 91 Stockholm, Sweden). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6283-7).

Describes the development of a highly selective carbocyclization/borylation of allenynes with bis(pinacolato) diboron(B_2pin_2)under palladium catalysis and with *p*-benzoquinone (BQ) as the oxidant. The use of either LiOAc-$2H_2O$(Lithium acetate-Heavy Water) with 1,2-dichloroethane(DCE) as the solvent or $BF_3.Et_2O$ (Boron trifluoride diethyl etherate) together with THF(tetrahydrofuran) is crucial for the selective formation of borylated trienes and vinylallenes, respectively. (67 Ref.; 3 Tab.; 4 Schemes).

49.14729

Isomer sensitive activation of methane in the gas phase by $[HMO]^+$ and $[M(OH)]^+$(M=Ti and V). KRETSCHMER (R), SCHLANGEN (M), SCHWARZ (H), (Institut für Chemie, Technische Universität Berlin, Strasse des 17, Juni 35, 10623 Berlin, Germany). (Angew. Chem.; 52, 23; 2013, Jun., 3; 6097-101).

It is opinioned that to have the right elements is sometimes just not sufficient, as shown by $[M(OH)^+$(M=Ti, V) which do not react with methane. However, reshuffling of the "tiles" to $[HMO]^+$ changes the reactions behavior completely leading to the first example of C=H(carbon-hydrogen) bond activation of methane by an early first-row transition-metal cation. (91 Ref.; 3 Fig.).

49.14730

Palladium-catalyzed direct C=H alkylation of electron-deficient pyrrole derivatives. JIAO (L), BACH (T), (Lehrstuhl für Organische Chemie I and Catalysis Research Center(CRC), Technische Universität München, Lichtenbergstr. 4, 85747 Garching, Germany). (Angew. Chem.; 52, 23; 2013, Jun., 3; 6080-3).

Describes what looks like a Friedel-Crafts alkylation reaction of electron-deficient pyrroles is actually a palladium(Pd)^{II}-catalyzed, norbormene-mediated C=H(carbon-hydrogen) activation reaction, in which the alkylation of the pyrrole core occurs by reductive elimination. Several ether 2,3-disubstituted pyrroles as well as ethyl 1*H*-pyrrole-2-carboxylate underwent the selective C5 alkylation in good yield. (88 Ref.; 1 Tab.; 6 Schemes).

49.14731

Bianylphosphonite gold**(I)** complexes as superior catalysts for oxidative cyclization of propynyl arenes into Indan-2-ones. HENRION (G), CHAVAS (TEJ), GOFF (XL), GAGOSZ (F), (Departement de Chemie, UMR 7652 and 7653 CNRS, Ecole Polytechnique, 91128 Palaiseau, France). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6277-82).

Describes a series of variously functionalized propynyl arenes that was smoothly connected into indan-2-ones by a new gold(**I**)- catalyzed oxidative cyclization process. [Lau]NTf_2[trifluoromethanesulfonyl] is a superior catalyst both in terms of yield and kinetics for the present transformation. (42 Ref.; 4 Tab.; 4 Schemes).

49.14732

Low-temperature oxidation of ethylene over platinum nanoparticles supported on mesoporous silica. JIANG (C), HARA (K), FUKUOKA (A), (Catalysis Research Center, Hokkaido University, Kita 21 Nishi 10, Kita-ku, Sapporo, Hokkaido 001-0021, Japan). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6265-8).
Describes the ethylene released from fruits and vegetables that accelerates their spoiling even in refrigerators. Tested the supported metal nanoparticles for oxidatively removing traces of ethylene from a gas mix. A Pt(Platinum) catalyst supported on mesoporous silica gave complete conversion of 50 ppm ethylene even at 0°Centigrade. IR(Infrared spectroscopy) experiments suggest the facile oxidation of CO(carbon monoxide) over Pt on the silica supports is the key to the catalytic activity. (21 Ref.; 1 Tab.; 6 Fig.).

49.14733

Highly atom-efficient oxidation of electron-deficient internal olefins to ketones using a palladium catalyst. MITSUDOME (T), YOSHIDA (S), MIZUGAKI (T), JITSUKAWA (K), KANEDA

(K), (Department of Materials Engineering Science, Graduate School of Engineering Science, Osaka University, 1-3 Machikaneyama, Toyonaka, Osaka 560-8531, Japan). (Angew. Chem.; 52, 23; 2013, Jun., 3; 5961-4).

Describes a 100% atom-efficient synthesis of ketones from electron deficient internal olefins that was achieved using O_2(oxygen) as a "green" oxidant. Various electron-deficient olefins were oxidized to the corresponding ketones with over 90% selectivity and without the formation of olefin isomers or their oxidized products. (26 Ref.; 2 Tab.; 1 Fig.; 1 Scheme).

49.14734

Directed animation of non-acidic arene C=H bonds by a copper-silver catalytic system. TRAN (LD), ROANE (J), DAUGULIS (O), (Department of Chemistry, University of Houston, Lamar Fleming Junior Building, No. : 3585 Cullen Building, Room 112, Texas 77204-5003, USA). (Angew. Chem.; 52, 23; 2013, Jun., 3; 6043-6).

Describes the development of a method for direct animation of â–C(sp^2)= H(Beta unsaturated carbonyl) bonds of benzoic acid derivatives and ã–C(sp^2)=H(gamma unsaturated carbonyl) bonds of benzylamine derivatives. Discusses the catalysis of the reaction by $Cu(OAc)_2$(Cupric acetate) and a Ag_2CO_3(Silver Carbonate) cocatalyst and shows high generality and functional-group tolerance, as well as providing a straightforward means for the preparation of ortho-aminobenzoic acid derivatives. (55 Ref.; 3 Tab.; 2 Schemes).

49.14735

Ruthenium-catalyzed carbonylative C-C coupling in water by directed C-H bond activation. TLILI (A), SCHRANCK (J), POSPECH (J), NEUMANN (H), BELLER (M), (Leibniz Institut für Katalyse an der Universitat Rostock, Albert-Einstein-Strasse 29a, 18059 Rostock, Germany). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6293-7).

Presents the title reaction of arenes bearing ortho-directing groups(DG) in the presence of a ruthenium catalyst and aryl iodide. The reaction is general for variously substituted aryl iodides to give ketones in moderate to good yields and water serves as the solvent. The system is highly selective towards the mono-carbonylative arylation of ortho C-H(carbon-hydrogen) functionalization. (58 Ref.; 4 Tab.; 2 Schemes).

49.14736

Catalytic generation and selective heterocoupling of two electron-rich alkenes. GALVÁN (A), CALLEJA (J), FAÑANÁS (FJ), RODRIGUEZ (F), (Instituto Universitario de Quimica Organometálica "Enrique Moles", Universidad de Oviedo, Julián Clavería 8, 33006 Oviedo, Spain). (Angew. Chem.; 52, 23; 2013, Jun., 3; 6038-42).

Describes the synthesis of complex heterocyclic products from simple alkylamine and alkynol derivatives in a double cycloisomerization/heterodimerization cascade reaction. The reaction

includes the heterocoupling reaction of two different electron-rich alkenes and leads to the formation of four new bonds and three stereocenters(two of them quaternary). (19 Ref.; 5 Schemes).

49.14737

Rhodium**(III)**-catalyzed redox-neutral coupling of *N*-phenoxyacetamides and alkynes with tumble selectivity. LIU (G), SHEN (Y), ZHOU (Z), LU (X), (State Key Laboratory of Organometallic Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, No. : 345 Lingling Road, Shanghai 200032, China). (Angew. Chem.; 52, 23; 2013, Jun., 3; 6033-7).

Describes the development of a novel oxidizing directing group for a rhodium**(III)**-catalyzed C=H(carbon=hydrogen) functionalization of *N*-phenoxyacetamides with alkynes. A small change in the reaction conditions leads to either ortho-hydroxyphenyl-substituted enamides or cyclization to deliver benzofurans with high selectivity. (68 Ref.; 3 Tab.; 5 Schemes).

49.14738

Dibenzopentadenes from $B(C_6F_5)_3$-induced cyclization reactions of 1,2-bis(phenylethynyl) benzenes. CHEN (C), HARHAUSEN (M), LIEDTKE (R), BUSSMANN (K), FUKAZANA (A), YAMAGUCHI (S), PETERSEN (JL), DANILIUC (CG), FRÖHLICH (R), KEHR (G), ERKER (G), (Department of Chemistry, Graduate School of Science, Nagoya University, Furo, Chikusa, Nagoya, 464-8602, Japan). (Angew. Chem.; 52, 23; 2013, Jun., 3; 5992-6).

Describes the strong Lewis acid $B(C_6F_5)_3$ that efficiently converts some bis(arylethynyl) benzene into dibenzopentalenes through a series of Lewis acid induced cyclization reactions at room temperature. Thus the reaction has the potential to be useful in the synthesis of substituted dibenzopentalene derivatives which are difficult to make by conventional means. (48 Ref.; 5 Fig.; 4 Schemes).

49.14739

Tandem synthesis of photoactivebenzodifuran moieties in the formation of microporous organic networks. KANG (N), PARK (JH), KO (KC), CHUN (J), KIM (E), SHIN (H), LEE (SM), KIM (HJ), AHN (TK), LEE (JY), SON (SU), (Department of Chemistry and Department of Energy Science, Sungkyunkevan University, Chunchun-Dong, Jangan-Gu, Suewon 440-746, Korea). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6228-32).
Introduces the benzodifuran moieties into microporous organic networks(MONs) through a tandem process consisting of Sonogashira coupling of 1,3,5-triethynylbenzene and 2,5-diodo-1,4-hydroquinone and intramolecular cyclization. The resultant benzodifuran-containing MON showed promising photocatalytic activities in the oxidative conversion of primary animes into imines. (46 Ref.; 1 Tab.; 8 Fig.).

49.14740

Indeno[2,1-*b*]fluorine : A 20 À–electron hydrocarbon with very low-energy light adsorption. SHIMIZU (A), KISHI (R), NAKANO (M), SHIOMI (D), SATO (K), TAKUI (T), HISAKI (I), MIYATA (M), TOBE (Y), (Division of Frontier Materials Science, Graduate School of Engineering Science, Osaka University, 1-3 Machikaneyama, Toyonaka, Osaka 560-8531, Japan). (Angew. Chem.; 52, 23; 2013, Jun., 3; 6076-9).

Describes the synthesis of the first example of meta-quinodimethane embedded in an idenofluorene framework. 10, 12-Dimesitylindeno[2,1-*b*] fluorine exhibits extremely low-energy light adsorption, despite the small conjugation space of the molecule, which consists of only 20 À electrons. (36 Ref.; 7 Fig.; 1 Scheme).

49.14741

Self-assembling neodymium/sodium heterobimetallic asymmetric catalyst confined in a carbon nanotube network. OGAWA (T), KUMAGAI (N), SHIBASAKI (M), (Institute of Microbial Chemistry(BIKAKEN), Tokyo, 3-14-23 Kamiosaki, Shinagawa-ku, Tokyo 141-0021, Japan). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6106-201).

Describes a self-assembly heterobimetallic catalyst, comprised of a Nd/Na/amide (Neodymium/Sodium/amide) ligand confined in an entangled multiwalled carbon nanotube(MW/NT) network and which outperforms the unconfined catalyst in anti-selective catalytic asymmetric nitroaldol reactions. The confined catalyst could be used repeatedly through simple filtration and was applied to a concise enantioselective synthesis of anacetrapile. (69 Ref.; 2 Tab.; 12 Fig.; 1 Scheme).

49.14742

Correlating metal poisoning with zeolite deactivation in an individual catalyst particle by chemical and phase-sensitive X-ray microscopy. RUIZ-MARTÍNEZ (J), BEALE (AM), DEKA (U), O'BRIEN (MG), QUINN (PD), MOSSELMANS (JFW), WECKHUYSEN (BM), (Inorganic Chemistry and Catalysis, Debye Institute for Nanomaterials Science, Utrecht University, Universiteislaan 99, 3584 CG Utrecht, The Netherlands). (Angew. Chem.; 52, 23; 2013, Jun., 3; 5983-7).

Describes the fluid catalytic cracking(FCC) as the main conversion process used in oil refineries and also the use of an X-ray microscopy(XRM) method for showing that metal poisoning and related structural changes in the zeolite active material lead to a non-uniform core-shell deactivation of FCC catalyst particles. The study links the detrimental effect of V(Vanadium) and Ni(Nickel) poisoning with zeolite destruction and dealumination in a spatial manner within a single FCC catalyst particle. (34 Ref.; 20 Fig.).

49.14743

Mechanical carbohydrate sensors based on soft hydrogel particles. PUSSAK (D), PONADER (D), MOSCA (S), RUIZ (SV), HARTMANN (L), SCHMIDT (S), (MPI für Kolloid und

Grenzflächenforschung, Am Muhlenberg 1, 14424 Postdam, Germany). (Angew. Chem.; 52, 23; 2013, Jun., 3; 6054-7).

Presented a simple method for the measurement of specific biomolecular interactions with soft colloidal hydrogel particles(SCPs) as sensors. Studied the carbohydrate/lectin interactions by optical detection of the mechanical deformation of the particles on a lectin surface. The affinity of various carbohydrate inhibitors could also be readily determined. (20 Ref.; 1 Tab.; 9 Fig.).

49.14744

Computational studies and experimental results-An example of excellent teamwork in studying carbocyclization. THIEL (I), HAPKE (M), (Leibniz Institute für Katalyse c.V. a der Universität Rostock(LIKAT), Albert-Einstein-Strasse 29a, 18059 Rostock, Germany). (Angew. Chem.; 52, 23; 2013, Jun., 3; 5916-8).

Discusses that the facts regarding the carbocyclization may be not the whole truth, but very helpful suggestions and guidelines for the experimental work can be deduced from computational studies on Rh(Rhodium) catalyzed[3+2+1] cycloaddition reactions for the construction of cis-fused bicyclohexenones from the construction of cis-fued bicyclohexenones from alkylidene-cyclopropanes and carbon monoxide. (12 Ref.; 3 Schemes).

49.14745

A palladium/chiral amine co-catalyzed enantioselective dynamic cascade reaction : Synthesis of polysubstituted carbocycles with a quaternary carbon stereocenter. MA (G), AFEWERKI (S), DEIANA (L), PALO-NIETO (C), LIU (L), SUN (J), IBRAHEM (S), CÓRDOVA (A), (Department of Natural Sciences, Engineering and Mathematics, Mid Sweden University, 85170 Sundsvall, Sweden). (Angew. Chem.; 52, 23; 2013, Jun., 3; 6050-4).

Describes the synthesis of polysubstituted 5- and 6-membered carbocycles by the title reaction. The one-pot dynamic relay process generates four new stereocenters, including a quaternary carbon center, in a highly enantioselective fashion(99.5:0.5'!99:0.5 e.r.(enantiomeric ratio)) by using a simple combination of palladium and chiral anime co-catalysts. (68 Ref.; 1 Tab.; 1 Fig.; 4 Schemes).

FINISHING MATERIALS

49.14746

ã-Ray-responsive supramolecular hydrogel based on a diselenide-containing polymer and a peptide. CAO (W), ZHANG (X), MIAO (X), YANG (Z), XU (H), (State Key Laboratory of Medicinal Chemical Biology, College of Life Sciences, Nankai University, Weijin Road, Nankai, Tianjin 300071, China). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6233-7).

Describes the exposure of a supramolecular hydrogel based on a disilenide-containing polymer and a peptide amphiphile containing a drug moiety to ã radiation led to a gel-sol transition owing to the oxidative cleavage of diselenide bonds in the polymer main chain. The hydrogel can also act as a ultraviolet(UV)-mediated drug self-delivery system and suggests a new avenue combined radio- and chemotheraphy. (55 Ref.; 12 Fig.).

49.14747

Silver-mediated cycloaddition of alkynes with CF_3CHN_2 : Highly regioselective synthesis of 3-trifluoromethylpyrrazoles. LI (F), NIE (J), SUN (L), ZHENG (Y), MA (J), (Department of Chemistry, Tianjin Key Laboratory for Modem Drug Delivery & High Efficiency, Tianjin University, No. : 92 Weijin, Nankai, Tianjin 30072, China). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6255-8).

Describes the title reaction that provides a convenient and efficient method for the construction of 5-substituted 3-trifluoromethyl-pyrazoles under mild reaction conditions. This protocol could be used for the easy synthesis of the marketed drug Celecoxib(antiarthritic). (38 Ref.; 1 Tab.; 1 Fig.; 7 Schemes).

49.14748

Detecting dimethyl fumarate content in leather and textile products by GC-MS. FU (K), ZHANG (C), ZHANG (H), ZHOU (W), (Ningbo Entry-Exit Inspection and Quarantine Bureau of People's Republic of China, No. : 318, LiuTing Street, Ningbo, Zhejiang 315192, People's Republic of China and Zhejiang Sci-Tech University, No. : 866 Yuhangtang Road, Hangzhou, Zhejiang 310018, People's Republic of China). (J. Soc. Leather Technol. Chem.; 98, 2; 2014, Mar.-Apr.; 76-81).

The presence of dimethyl fumarate(DMFm) in products should be below the maximum limit of 0.1 mg/kg according to the European Union(EU) standard(2009/251/EC). Describes the gas chromatography-mass spectroscopy(GC-MS) method, that is used to determine the content of DMFm in leather and textile products. This method is simple, rapid and highly accurate. An Agilent 6890N-5973 GC-MS instrument and a DB(Decibel)-5MS column are used in this method. The best extraction solvent from DMFm with over 90% extracted is ethyl acetate by optimizing the extraction process parameters and the method successfully quantifies DMFm with a good linear relationship (R^2=0.9998) within the range 0.1-20 mg/kg. The recovery rate of this method is 80-100%, the relative standard deviations(RSD) is 2.3-9.1% and the lowest detection limit is determined as 0.01 mg/kg. (8 Ref.; 4 Tab.; 6 Fig.).

49.14749

Synthesis and mechanical properties of polyacrylic acid resin retanning agent. ZOU (X), LAN (Y), ZHANG (Q), ZHAN (X), (Department of Chemical and Biological Engineering, Zhejiang University, Road 38, Hangzhou 310027, Zhejiang Province, China). (J. Soc. Leather Technol. Chem.; 98, 3; 2014, May-Jun.; 127-30).

Describes the polyacrylic acid retanning agent(PAA), PAH(Polycyclic Aromatic Hydrocarbon)-1 and PAA-2 with weight average molecular weights(Mw) of 14.4 x 10^3 and 23.1 x 10^3g/mol respectively that were prepared by water solution homopolymerization of acrylic acid monomer. Investigated the effects of molecular weight and moisture absorbency on glass transition temperature(Tg) and mechanical properties. The results showed that PAA-1 and PAA-2 have similar capacity for moisture absorbency, namely about 14.5% at 20°Centigrade(T=20°Centigrade) and 65% relative humidity(RH=65%). RH=65%, the Tg of PAA-1 and PAA-2 fell from 86.17°Centigrade and 90.71° Centigrade to -11.44°Centigrade and -3.09°Centigrade respectively after equilibrating for 48 hours at T=20°Centigrade. Dynamic mechanical analysis(DMA) showed the storage moduli of PAA-1 and PAA-2 were significantly decreased at -26.99°Centigrade and -8.78°Centigrade respectively, the storage modulus of PAA-2 was higher than that of PAA-1 due to its higher molecular weight. (19 Ref.; 1 Tab.; 5 Fig.).

49.14750

Biopolymers produced from gelatin and whey protein concentrate using polyphenols. TAYLOR (MM), LEE (J), BUMALAG (LP), LATONA (RJ), BROWN (EM), (United States Department of Agriculture(USDA), Agricultural Research Service(ARS), Eastern Regional Research Service(ERRS), No. : 600 East Mermaid Lane, Wyndmoor, Pennsylvania 19038, USA). (J. Am. Leather Chem. Assoc.; 109, 3; 2014, Mar.; 82-8).

Several researchers have recently demonstrated the feasibility of producing biopolymers from the reaction of polyphenols with gelatin in combination with other proteins(e.g. whey) or with carbohydrates(e.g. chitosan and pectin). These combinations would take advantage of the unique properties of both species and at the same time create products with enhanced functional properties. Demonstrated successfully the polyphenolic gallic acid and the vegetable tannins quebracho and tara that could be used to modify gelatin and whey protein concentrate(WPC) resulting in a subsequent change in the physicochemical properties of each. Considerable improvements were seen in the subjective properties of the leather when gelatin-polyphenol products were used as fillers and when compared to control samples, there was no significant impact on mechanical properties. Commenced an evaluation, of the potential, of tara-modified gelatin/WPC biopolymers, specifically for their application as fillers. Explored the modification parameters for gelatin/WPC combinations and presented the results of product characterization using physicochemical analyses. These studies could further contribute to the use of sustainable resources in production of unique products that may have leather processing applications. (22 Ref.; 15 Fig.).

49.14751

Fabrication of highly hydrophobic paper by coating with modified collagen hydrolysate. YOU (Y), ZENG (Y), LIU (Y), LIAO (X), SHI (B), (Key Laboratory of Leather Chemistry and ~~Engineering of Ministry of Education, Sichuan University, Chengdu 610065, People's Republic~~

of China and National Engineering Laboratory for Clean Technology, Leather Manufacture, Sichuan University, Wangjiang Campus, Section of Chengdu No. : 24, Southern Yichuan, Chengdu 610065, Sichuan Province, Republic of China). (J. Soc. Leather Technol. Chem.; 98, 2; 2014, Mar.-Apr.; 69-75).

Describes the development of an environmentally friendly biopolymer calcium-alginate(CAA) used as a coating material for the preparation of hydrophobic paper by incorporating alkenyl succinic anhydride(ASA) into collagen hydrolysate(CH) and the treatment of the base paper with CAA by a dip-coating technique to improve its water resistance. It was found that the acylated CH has a significantly higher surface hydrophobicity than 'CH and that coating with CAA is beneficial to improve the hydrophobic property of paper. Experimental results indicated that the contact angle of water droplet on CAA-coated paper surface was about 125 and the C/O(carbon to oxygen) ratio of CAA-coated paper was increased to 3.76. X-ray photoelectron spectroscopy(XPS) analysis and field emission scanning electron microscopy(FMSEM) images of paper surfaces proved that CAA was well retained on the surface as a hydrophobic layer. Moreover, the strength properties of CAA-coated paper were superior to those of uncoated paper. (25 Ref.; 4 Tab.; 13 Fig.).

LEATHER PROCESSING MACHINES

49.14752

More versatility in pre-finishing machinery. (World Leather; 27, 2; 2014, Apr./May; 22).

Describes the progresses, that have been made in the fields of machineries for various pre-finishing operations such as ironing/embossing, buffing and bundling. (1 Photo).

FUR PRODUCTION

49.14753

Ecological technology for leather and furskin dry cleaning and restoration. GAIDAU (C), MARTINESCU (T), SIMION (D), NICULESCU (M), MOCIOIU (T), SENDREA (C), FLEANCU (M), (Leather Research Department, INCDTP-Leather and Footwear Research Institute Division, No. : 93, Ion Minulescu Str, Bucharest, 031215, Romania). (Leather Age; 36, 5; 2014, Apr.; 13 & 14-9).

The use of tetrachloroethylene(PERC) as solvent for degreasing of sheepskins and dry cleaning of furskins and leather articles is worldwide spread as an efficient process. Almost 90% of dry cleaning services are based on the use of PERC, a carcinogenic solvent, involved in ozone depletion process. The alternatives to PERC take into consideration the use of liquid CO_2 or decamethylcyclopentasiloxane, commercially known as D5, a solvent commonly used in cosmetic products and practically devoid of toxicity. The study of decamethylcyclopentasiloxane as alternative solvent for leather and furskins dry cleaning was performed by experimenting in a dry cleaning equipment designed for both D5 and PERC use. The technology for furskin and leather articles dry cleaning was developed and

the main results confirmed the advantage of D5 in comparison to PERC use : the color parameters improvements(intensity, brightness), the dimension preservation(shrinkage temperature increasing), the softness restoration and improvement even in the case of very old items and the odor elimination. The dry cleaning risks for materials processed with unknown technologies were diminished, as well as the need of the after dry cleaning restoration of leather and furskin items. A micro and non destructive assessment on fiber(MHT) (Micro hot table method), softness(Softmeter) and color measurements(Data color colorimeter). (5 Ref.; 1 Tab.; 25 Fig.).

LEATHER PROPERTIES. QUALITY CONTROL

49.14754

Behind the wheel. KINDERMANN (A), (M/s. Wollsdorf Leather; Wollsdorf 80, 8181 Wollsdorf, Austria). (Leather Int'l; 2014, Autumn-Auto Leather Supl.; 4). Deals with the feel of the leather cover of a steering wheel and the specific properties of the used leather.

49.14755

Visible-light-responsive â–Rhombohedral boron photocatalysts. LIU (G), YIN (L), NIU (P), JIAO (P), CHENG (H), (Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, No. 72 Winhua Road, Shenyang 110016, China). (Angew. Chem.; 52, 24; 2013, Jun., 10; 6242-5).

Investigated the â-Rhombohedral boron as an elemental photocatalyst. Boron crystals were found to be photocatalytically active in the generation of ÿOH(hydroxyl) radicals under irradiation with visible light; however, the presence of an amorphous oxide layer on the surface of the crystals impaired their photocatalytic activity. (40 Ref.; 12 Fig.).

49.14756

The role of neutral salt for the hydrolysis and hierarchical structure of hide fibre in pickling. CHENG (H), CHEN (M), LI (Z), (Key Laboratory of Leather Chemistry and Engineering of Ministry of Education, Sichuan University, Chengdu 610065, People's Republic of China and National Engineering Laboratory for Clean Technology of Leather Manufacture, Wangjiang Campus, Section of Chengdu No. : 24, Southern Yichuan, Sichuan University, Chengdu 610065, Sichuan Province, Republic of China). (J. Am. Leather Chem. Assoc.; 109, 4; 2014, Apr.; 125-30).

Pickling process carried out for adjusting the skin to the desired *p*H for tanning, in which neutral salts were added to avoid skin fiber from the acid swelling. Aimed an investigation, of the contribution of neutral salts to the hydrolysis and the fibrous structure of the collagen fiber in acid solutions. Investigated also the collagen fiber and bovine hide in sulfuric acid solutions with sodium chloride of sodium sulfate. Determined the total protein concentration in the solutions. Investigated additionally the hierarchical structures of bovine hide in different acid and neutral salt systems by optical microscope, total electronic microscope(TEM) and scanning electron microscope(SEM). Suggested the importance of

neutral salt for the hydrolysis and the dispersion of collagen fiber in pickling. It implied that the osmatic swelling by acid could not reach the inner scale of fibril. The decrease in mechanical properties for the leather tanned with salt free pickling may have been caused by osmotic destroyed the interactions among the fibril and fiber bundles. (19 Ref.; 1 Tab.; 23 Fig.).

49.14757

Improvement in leather surface hydrophobicity through low-pressure cold plasma polymerization. FENG (Y), LIAO (X), WANG (Y), SHI (B), (Key Laboratory of Leather Chemistry and Engineering of Ministry of Education, Department of Biomass and Leather Engineering, Sichuan University, Chengdu 610065, China). (J. Am. Leather Chem. Assoc.; 109, 3; 2014, Mar.; 89-96).
Vinyltriethoxysilane(VTES) was polymerized and deposited on the surface of upholstery crust leather by using low-pressure technology. The initial water contact angle of the leather surface increased from 120°Centigrade to 140°Centigrade after plasma treatment(50W, 300s), showing a significantly improved hydrophobicity of leather surface. The increased hydrophobicity of leather surface could remained even the leathers were stored for 240 days. The surface morphologies of leather were characterized by Scanning Probe Microscope(SPM) and Scanning Electron Microscope(SEM). A coating of VTES polymer on the plasma treated leather surface unlike the fibre-like texture of untreated leather was observed by SPM. SEM and SPM image indicated that this coating film was on the surface fibres rather than the whole surface of leather, which would not reduce permeability of the air and water vapour of the leather. Energy Dispersive X-ray Spectroscopy(EDS) was performed to determine the chemical composition of leather surface. The contents of Si(Silicon) and O(Oxygen) increased remarkably as leather surface was covered with polymerized VTES. The X-ray Photoelectron Spectroscopy(XPS) showed that the peaks attributed to C=C(Carbon=Carbon) bonds of VTES and C=O(Carbon=Oxygen) bonds of collagen disappeared after plasma polymerization. All these results demonstrated that VTES was polymerized and deposited on the surface of collagen fibres after plasma treatment, which resulted in a hydrophobic surface of leather. (32 Ref.; 2 Tab.; 16 Fig.).

BY-PRODUCTS

49.14758

Nothing to hide : Animal welfare and animals as valuable providers of consumer products. GRANDIN (T), (World Leather; 27, 2; 2014, Apr./May; 13).

Explained the work, that has been done by the authoress for helping abattoirs in many parts of the world to improve the way they operate. Focused the practice, of breeding animals to meet demands for meat in the first place. Cattle raising is justified for meat eating because, for the most part, the cattle that is eaten are likely to have lived at all if the cattle had not been raised and as long as the cattle's welfare is looked after and in continuing to do so. (1 Photo).

49.14759

Methods used for heavy metals removed from wastewater. BARGAN (AM), CIOBANU (G), LUCA (C), (George Asachi Technical University of Lasi, Bulevardul Professor Dimitric Mangeron 67, lasi 700050, Romania). (Bul. Institut. Politeh. Din lasi; 60(64), 1; 2014; 59). (Romanian).

Reviews the methods used to remove heavy metals(including chromium) to avoid ill effects on public health. Chemical precipitation, ion exchange, adsorption, membrane filtration, electrodialysis and photocatalysis are all suited for this purpose. The main aim is via adsorption and ion exchange using raw materials based on phosphates. Presents some of the advantages and disadvantages.

49.14760

Novel chrome recovery system integrated with water and salt recovery for reuse. RAJAMANI (S), (Asian International Union of Environment(AIUE) Commission, Old No. : 18, New No. 45, First Street, South Beach Avenue, MRC Nagar, Chennai-600 028, India). (Leather Age; 36, 5; 2014, Apr.; 37-9).
Dealt with the background of the novel development, technical details and merits of the cleaner technology. (16 Ref.; 4 Fig.).

49. 14761

The chromium effect. BAJPAI (D), (M/s. Bureau Veritas Consumer Products Services (India) Private Limited, Uttar Pradesh State, India). (Leather Int'l.; 2014, Autumn, Auto Leather Suppl.; 11).

Discusses the determination of chromium leathers and expounds at greater length on the solutions when human contacts with the leather occurs.

49.14762

Modified nanotextured carbon materials for volatile organic compound absorption. DAVID (E), MAMALIGA (I), (Gorghe Asachi Technical University of lasi, Boulevardul Profesor Dimitrie Mangaeron 67, lasi 700050, Romania). (Bul. Institut Politeh. Din lasi; 60(64), 2; 2014; 19). (Romanian).

Discusses the adsorption of the volatile organic compounds from gaseous wastes that was carried out using various precursors and conditions. Classified the adsorbents in terms of macro-structure and porosity. Examples, that show the technologies used today for VOCs such as toluene, benzene, formaldehyde, acetone and phenols, both alone and in mixtures, are given.

49.14763

Treatment using both direct and alternating electric currents on hide bacteria in brine curing and pre-soaking liquors. BIRBIR (Y), DOLEK (N), BIRBIR (M), (Technology Faculty, Electric and Electronic Engineering Department, Marmara University, Goztepe, Istanbul, 34722, Turkiye). (J. Soc. Leather Technol. Chem.; 98, 2; 2014, Mar.-Apr.; 47-55).

Animal hides support the growth of highly diverse Gram-negative and Gram-positive bacterial populations. These bacterial populations cause important damage to the hides during brine curing and pre-soaking processes, subsequently reducing the quality of the final leather. It is usually difficult to combat the diverse resistance offered by both Gram-negative and Gram-positive bacteria in these processes in a short time with conventional antimicrobials. Examined the inactivation effect of a combined electric current treatment using both 1.5A direct and 2A alternating currents on : 1) each test isolate of Gram-negative bacteria(*Enterobacter cloacae, Pseudomonas lueola, Vibrio fluvialis*) and their mixed culture; 2) each test isolate of Gram-positive bacteria(*Enteroloccus faecium, Bacillus pumilus, Staphylococcus cohnii*) and their mixed culture; 3) the mixed culture of test bacteria except for Gram-positive endospore-forming bacteria(*Bacillus pumilus*), 4) the mixed culture of all bacteria in liquid media containing organic substances and 25% NaCl(sodium chloride). Isolated the test bacteria from salt-pack-cured hides. Observed two, three and four log reduction factors of all test bacteria after the application of the direct electric current applied together with alternating electric current treatment for 12, 26 and 34 minutes, respectively. As a conclusion, the combined electric treatment applied for 34 minutes was found to be fairly effective in reducing the bacterial cell count to a relatively low level at which bacteria damage to the hides is reduced in brine curing and pre-soaking liquors. (29 Ref.; 4 Tab.; 1 Fig.).

49.14764

The quantitative calculation between chrome technological parameters in leather making and chrome absorptivity. TAO (E), MA (H), HAO (C), (College of Resource and Environment, Shaanxi University of Science & Technology, University Zone of Wei Yang District, Xi'an 710021 and Leather Institute of Haining City, No. : 201 Haizhou West Road, Jianxing 314400, Shaanxi Province, People's Republic of China). (J. Soc. Leather Technol. Chem.; 98, 2; 2014, Mar.-Apr.; 63-8).

Studied the relationship between the single technological parameter and chrome absorptivity[percentage of absorbed total chrome] based on laboratory tests and process manual data. Employed the stepwise regression analysis to obtain the quantitative correlation between tanning parameters and chrome-absorptivity, on the basis of establishing a relationship between multi-process parameters and comprehensive factors of chrome binding capacity using commercial tanneries actual measurements as contrast. The results showed that, the quantitative calculation of chrome absorptivity through technological parameters could absolutely reflect the actual situation in the tannery process amongst the multiple steps in the heterogeneous and mixed systems contained in the leather making process. (23 Ref.; 2 Tab.; **7** Fig.).

TANNERY. ENVIRONMENTAL ASPECTS

49.14765

Chemical safety : Standards and regulations. (Chem. Wkly.; 59, 40; 2014, May, 13; 203-6).

Highlights the need, for mandatory and stringent regulatory requirements for chemical manufacturers. (16 Ref.; 3 Photos).

49.14766

Sustainability in process innovation : Development of a green tanning process supported by LCA methodology. PUCCINI (M), SEGGIANI (M), CASTIELLO (D), VITOLO (S), (Department of Civil and Industrial Engineering, University of Pisa, Largo Lucio Lazzarino 1, 56122 Pisa, Italy). (J. Am. Leather Chem. Assoc.; 109, 4; 2014, Apr.; 110-6).

Describes the leather industry, which needs to support its market by environmental criteria as a guarantee of quality as a response to the growing concerns about a variety of environmental issues expressed by public opinion and political bodies. Assessment tools as Life Cycle Assessment(LCA) methodology, which allows a more thorough knowledge of the products to the enterprises and can help to guide the environmental policies, are recommended (e.g. EC(European Union) Directive on Ecologic Lables). The LCA methodology, described in details by the ISO 14000 series, allows the assessment of the environmental impacts due to products, processes, or services by the identification of the inputs(e.g. energy and material consumption) and outputs(e.g. waste and pollutant production) streams exchanged by the process with the environment(i.e. from raw materials procurement to waste streams disposal). The application of LCA as tool for integration of sustainability aspects in process design and development is gaining wider acceptance and methodological development. Described the use, of life cycle modeling for supporting the development of a novel tanning process based on the use of a new class of tanning agent produced from renewable resources(e.g. glucose). The experimental activity performed to investigate the technical feasibility of the innovative tanning cycle was supported by the modeling of the process using the LCA methodology in order to assess the environmental performance of the leather production cycle. Therefore, a LCA analysis was performed in order to compare the glucose-tannage process with the traditional one from an environmental point of view. (7 Ref.; 6 Tab.; 4 Fig.).

49.14767

Product of the environment. KRAL (I), (Industrial Development Division, United Nations Industrial Development Organization(UNIDO), Vienna, Austria). (Leather Int'l; 215, 4838; 2014, Mar.; 6-7).

The issues surrounding the by-products and pollutants of the leather industry have been a concern of manufacturers and regulators for a long time. It is examined whether the current acceptable standards are enough. (1 Tab.; 1 Fig.).

49.14768

Stay within REACH. (Leather Int'l; 216, 4839; 2014, Apr.; 28 & 30).

It is found that the current time is rather than the other times, is most appropriate time for the European manufacturers and importers of leather to brush up on the rules of REACH, the European chemical regulation laws and ensure that their use of chemicals is safe, legal and eco-friendly with environmental and safety issues more pertinent than even in the industry. (1 Tab.; 1 Photo).

49.14769

Cyber staying ahead of today's cyber threats. BALDI (M), (Global Architect team, M/s. Honeywell Process Solutions, Head Office, Nos. : 56 & 57, Hadapsar Industrial Estate, Pune-411 013, Maharashtra State, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 155-7).

Chemical plant security has become one of the scrutinized issues since the September 11 attack on the United States, with lawmakers and experts continuously calling attention to the havoc terrorists could wreak by disrupting operations at these facilities. Yet, many chemical companies don't receive consistent information on how to best protect their sites. Discusses about a comprehensive and integrated approach, to ensuring security and safety in the industry. Elaborates an emerging cyber security approach to combat unsafe cyber elements. (2 Photos).

49.14770

Cracker plant receives a full check up. PESCHEL (K), (Department of Plant Safety & Inspection, TÜV SÜD Chemie Service, GmbH, 41538 Dormagen, Germany). (Chem. Wkly.; 59, 34; 2014, Apr., 1; 214-5).

The cracker plant normally processes naphtha, a crude oil derivative. Hydrocarbons flow through the maze of pipes at high pressure and high temperature, when in service. Everything came to a stop during the turnaround. The plant was completely emptied, cleaned and opened. Maintenance, servicing and inspection activities that could not be performed during production were carried out around the clock. An additional aim of every turnaround was to unlock further opportunities for improvement. Supported the plant owners/operators in life-cycle projects and activities such as plant extensions. It is being said that the plant safety has

been not only taken care of but also help to maintain the value of the plant in the long term as the third-party service providers by this concern. (2 Photos).

49.14771

Improving process safety through better alarm management. JAYARAMAN (G), JAYARAMAN (K), (M/s. Essay Energy Business, No. : 251 Majors Path, Southampton, New York 11968, USA). (Chem. Wkly.; 59, 41; 2014, May, 20; 199-207).

Showcases the issues faced while moving towards better process control and safety through Process Alarm Management(PAM). (19 Ref.; 3 Tab.; 14 Fig.).

49.14772

Concentration and re-use of tannery dyeing-fatliquoring effluent by ultrafiltration. WANG (H), WANG (Y), LI (Y), LIU (X), (College of Resources and Environment, Shaanxi University of Science and Technology, University Zone of Wei Yang, Xi'an, Shaanxi Province, People's Republic of China). (J. Soc. Leather Technol. Chem.; 98, 3; 2014, May-Jun.; 108-12).

Spent dyeing-fatliquoring baths contain a large quantity of pollutants including polymers, dyestuffs, emulsified oils and additives. Concentrated and re-used the spent dyeing-fatliquoring bath in the dyeing-fatliquoring process in order to reduce the pollution. Evaluated the solutes in the bath in terms of COD(chemical oxygen demand), total nitrogen, total solid, ash and dyestuff. Investigated the effects of the volume reduction factor on permeate flux and solute retentions during the concentration. Measured the characteristics of concentrate and permeate, as well as the membrane regeneration during the re-use. The results show that a steady permeate flux of 41.9L/m^2h with retentions of above 91% of COD and above 9% dyestuffs can be obtained at 25°Centigrade under a trans-membrane pressure of 0.09MPa when the volume reduction factor reached 2.0. All the concentrate can be recycled in the dyeing-fatliquoring process and all of the permeate can be re-used in neutralizing process at this volume of reduction factor. No accumulation of solutes was found during the re-use of the concentrate stream. The concentration and re-use process has the good potential for industrial application. (10 Ref.; 4 Tab.; 5 Fig.).

LEATHER PRODUCTS

49.14773

Sustainability of Bangladeshi leather industry : An overview of recent environmental developments. PAUL (HL), ANTUNES (APM), COVINGTON (AD), EVANS (P), PHILLIPS (PS), (Institute for Creative Leather Technologies, School of Science and Technology, University of Northampton, Boughton Green Road, Northampton NN2 7AL, Northamptonshire, Wales, UK). (Leather Age; 36, 1; 2014, Jan.; 45-52&57).

The Government of Bangladesh has identified the leather sector as one with considerable growth and investment potential ranked fifth in the export earning sector. Currently Bangladesh produces and exports quality bovine and ovine(buffalo and cow; sheep and goat) leathers that have a good international reputation for the fine textured skins. However, the entire leather sector meets only 0.5% of the world's leather US $75 billion. There are about 113 tonnes in Bangladesh that produce 180 million square feet of hides and skins per year. In addition there are about 30 modern shoe manufacturing plants engaged in the production of high-quality footwear, with over 2,500 smaller footwear manufacturers also present in the sector. There are around 100 small-to-medium leathergoods manufacturers and a small number of niche larger manufacturer. The sector directly employs approximately 558,000 people. Most of the tanneries do not have proper effluent plants and there is generated 20,000 m^3 tannery effluent and 252 tonnes solid waste per day. Tannery liquid and solid wastes have pollution potential but also a potential value. Special technologies to convert waste are required. These vary from crude and simple to highly sophisticated and complex. A proposed new leather park is expected to bring a clear transformation in leather industry with a marked increase in production, product diversification and new predicted lines and increased sustainability of this sector. Sustainable and cleaner production will be a key issue for the development without placing negative burdens on environment. (18 Ref.; 7 Tab.; 4 Fig.).

FOOTWEAR

49.14774

Assessing toddler's footwear in India. MAHAJAN (S), BAIRAGI (N), (Department of Leather Design, National Institute of Fashion Technology(NIFT), NIFT Campus, Hauz Khas, Opposite Gulmohar Park, New Delhi-110 016, India). (J. Indian Leather Technol. Assoc.; 64, 4; 2014, Apr.; 392-403).

Footwear plays an important role in the formation of the foot in early childhood. Ill-fitting and improper shoes that can lead to physical deformities in infants and toddlers, when the foot is very vulnerable. Focused an assessment, of the toddler's footwear available in the retail sector in India and how it fails to address the health of the feet among toddlers. India is the second largest population in the world with diverse cultural differences and the difference in the feet size are evident as one moves from east to west and north to south in the country. The research shows that there is lack of technical specifications for children's footwear in the retail market. The organized and the unorganized sectors in retail, work with their own sizing systems and specifications adopted from the west due to the absence of indigenous sizing system. The socio-cultural variance across the country is not considered by the manufacturers who therefore work with only one last width. This results in retailing of ill-fitting footwear in the market. Since the market is price driven, the emphasis is mainly on providing aesthetically appealing footwear at a low cost, with least consideration of the technical aspects; and the harmful effects of the same(in the future years) are not being taken into account. Other challenges for the toddler's footwear include availability of

materials for the uppers and trims. The research also shows that many toddlers, in the urban environment are wearing, shoes that are either too big or small for their foot size. Parents, under the influence of fashion, are making toddlers wear shoes that are detrimental to the development of feet among toddlers. Population needs to be made aware of the harmful effects of using improper footwear. It is pertinent to educate the parents and encourage development of healthy feet that could support an individual for life. (18 Ref.; 2 Tab.; 8 Fig.).

49.14775

Slip hazards. BAJPAI (D), (M/s. Bureau Veritas Consumer Products Services(India) Private Limited, No. : C-19, Sector-7, Noida, Uttar Pradesh State, India). (Leather Age; 36, 4; 2014, Mar.; 29-35).

Briefly described the various causes, of accidents that quite convincingly pave the ways for slip falling. Briefly discussed about the importance in the growth of the slip resistance testing. It only grows in importance as governments introduce even more stringent product safety legislation and a 'compensation culture' spreads across the world. The key to slip accident prevention is a systematic and careful examination of things that could cause harm to people and an evaluation of whether the controls in place are sufficient to prevent harm. The characteristics of footwear and underfoot surfaces are important considerations to be taken into account. Briefly described also about the footwear analysis and listed the points, that should be kept in mind while analyzing the floorings. (16 Tab.).

49.14776

Hand made shoe industry should be focused. GANGULY (SN), (J. Indian Leather Technol. Assoc.; 64, 4; 2014, Apr.; 387-9).

Focused the importance and need, of developing the hand made shoe industry. (3 Photos).

SUBJECT INDEX

AUTHOR INDEX

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