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ANALYSIS AND RESEARCH OF SOME WASTES IN LEATHER INDUSTRY

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Abstract: In this article analyzed the amount of waste coming out from the leather and fur industry on a global scale, its impact on the environment and the possibilities of their reuse are studied. Furthermore, the fatty acids contained in fleshing have been researched in order to expand the reuse of fleshing, which is a waste of the leather industry.

Keywords: leather and fur industry, waste, fleshing, saturated and unsaturated fatty acids.

Nowadays, environmental protection, improvement of the sanitary and ecological situation in our country, as well as efficient use of waste are one of the main tasks. In order to systematize these issues and increase the ecological concern of our population, President Shavkat Mirziyoyev signed the decision PQ-4291 on April 17, 2019, which sets a number of tasks regarding the effective use of waste and their processing, and the strategy has been developed to intended the implementation of waste related works for 2019-2028 years [1].

As we all know, today one of the biggest problems for the whole world is the environmental damage caused by waste. According to information provided on the Internet [2], the amount of waste from high-income countries, which make up only 16% of the world's population, is 683 billion tons per year. This figure is 700,000 ton wastes per year in the Tashkent, and only 18% of it is processed [3].

Despite the fact that the leather and fur industry brings a lot of benefits to the country's economy, skins are processed which is the secondary product of meat factories, a number of wastes are released from this sector to the environment. The existence of these problems means that at present, systematic work on waste processing in industrial enterprises has not been established, and the work in this regard is still waiting for its solution.

According to statistics obtained on World statistical compendium for raw hides and skins, leather and leather footwear the amount of waste (tons/year) released during leather processing is analyzed by country [4], it is found that its amount has the following indicators (figure).

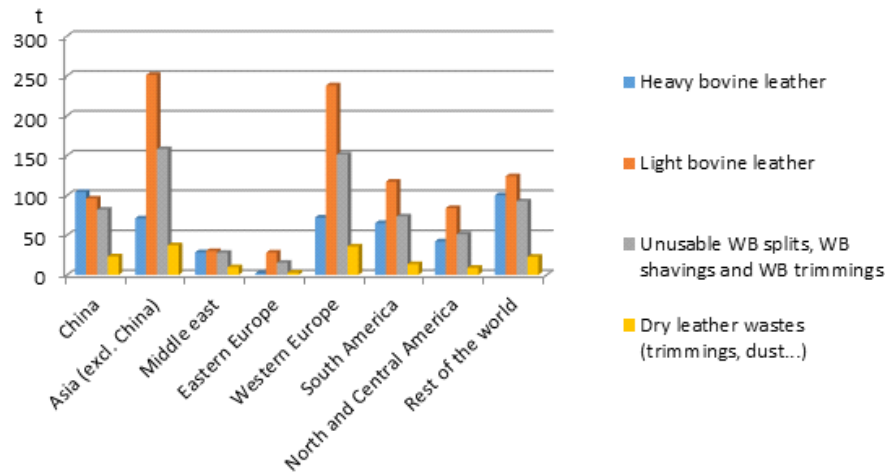


Figure. Provides a graphical repartition of the quantity of waste per geographical area (as of 2016)

According to the figure, China is the leader in terms of waste generated from the processing of heavy bovine leather, while Asian countries are the leaders in the waste generated from the processing of light bovine leather and wet blue as well as dry leather. It follows that the work has been done on waste processing and their wide use in the Asian country is not significant. This requires a careful consideration of the waste generated in the leather and fur industry and the possibilities of their reuse.

During the preparation of skin for tanning process, including in fleshing process, waste containing proteins and fats is generated. In particular, this flesh contains 10% fatty substances compared to the mass of fresh raw materials. Flesh oil consists of glycerides, fatty acids and glycerol and it can be used as a feedstock for biofuels in vehicles [5].

It is worth noting that fleshing contain 5-7% protein, 4-18% fat, 2-6% lime, 2-4% sulfide and other additives are considered a valuable waste as it consists of subcutaneous tissue and fat [6]. The amount of fatty substances contained in fleshing will definitely depend on the climate, the type of animal and its place of residence. Polish scientists [7] have studied the composition and amount of fatty acids in fleshing (table) from leather producing enterprises. We have studied our country leather industry, including heavy bovine hides from Angren city "ANGREN CHARM INVEST" LLC enterprise of Tashkent region (table) by chromatogram method and tabulated below:

Table.

Fatty acid composition of flesh fat (obtained from heavy bovine)

№	Name of fatty acids	Fatty acid content of flesh fat, %	
		Poland	Uzbekistan
1.	Caproic, 6:0	0,1	-
2.	Caprylic, 8:0	0,1	0,04
3.	Capric, 10:0	0,1	0,04
4.	Lauric, 12:0	0,4	0,05
5.	Tridecanoic, 13:0	-	0,05
6.	Miristic, 14:0	3,6	2,93
7.	Myristoleic, 14:1	-	0,95
8.	Pentadecanoic, 15:0	-	0,22
9.	Palmitic, 16:0	26,8	28,76
10.	Palmitoleic, 16:1	0,7	5,30
11.	Margarine, 17:0	-	0,79
12.	Margarine oleic, 17:1	-	0,60
13.	Stearic, 18:0	27,6	12,51
14.	Oleic, 18:1	36,5	43,98
15.	Elaidic, (trans- 9-octadecenoic acid) 18:1	-	0,68
16.	Linoleic, 18:2	1,8	1,14
17.	Linolenic, 18:3	0,5	1,32
18.	Arachidic, 20:0	0,4	0,14
19.	Eicosenoic, 20:1	0,3	0,46
20.	Behenic, 22:0	0,3	0,04
21.	Erucic, 22:1	0,5	-
22.	Lignoceric, 24:0	0,2	-
23.	Nervonic, 24:1	0,1	-

We can see from the table, the content of fat obtained from the flesh of heavy bovine hides differ from each other depending on the geographical location. Including the fact that the unsaturated fatty acids in the flesh, which is considered, as a waste of the leather industry in our country, is 14.03% more than compared analyze by Poland scientists. Then our examples mainly distinguished by the presence of fatty acids such as myristoleic, elaidic, margarine oleic. In addition, oleic fatty acids, which are the most abundant in fleshing oil, are 7.48% more and stearic fatty acid is 15.09% less than saturated fatty acids, indicating that this fleshing oil has a relatively high reactivity, which expands the possibilities of using this type of waste.

In conclusion, the recycling of leather and fur industry waste products is one of the types of waste products that can used not only to partially solve the environmental problems of the industry, but also to expand the range of production as a secondary

product.

References:

- 1.O'zbekiston Respublikasi Prezidentining 2019 yil 17 apreldagi "2019-2028 yillar davrida O'zbekiston Respublikasida qattiq maishiy chiqindilar bilan bog'liq ishlarni amalga oshirish strategiyasini tasdiqlash to'g'risida" PQ-4291-son Qarori.
- 2.https://www.vedomosti.ru/esg/protection_nature/columns/2023/03/16/966770-ozhidaetsya-chto-2050-godu-obem-othodov-mire-virastet-do-34-mlrd-tonn
- 3.<https://www.gazeta.uz/ru/2023/02/08/waste/>
- 4.United nations industrial development organization. Fourteenth Session of the LEATHER AND LEATHER PRODUCTS INDUSTRY PANEL. Zlin, Czech Republic, 13-15 December, 2000.
- 5.Dagne H, Karthikeyan R, Feleke S. Waste to Energy: Response surface methodology for optimization of Biodiesel Production from Leather Fleshing Waste. J Energy 2019; 2019:1-19. <http://dx.doi.org/10.1155/2019/7329269>.
- 6.M. A. Hashem, M. S. Nur-A-Tomall and B. K. Monda. Generation of fleshings at beamhouse in tannery and its environmental impact assessment: Bangladesh perspective. Bangladesh journal of scientific and industrial research, 2015. 50(3), 227-232.
- 7.D. Kurczy'nski, G. Weis'o, A. Le'sniak, M. Kozak and P. ?agowski. Production and Testing of Butyl and Methyl Esters as New Generation Biodiesels from fattywastes of the Leather Industry. Energies 2022, 15, 8744.

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