**OGÓLNOPOLSKA IZBA BRANŻY SKÓRZANEJ**

**Z SIEDZIBĄ W RADOMIU**

Recognition of the current situation with the wastes in the tanneries in Poland.

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The global volume of waste from the leather industry amounted to more than 800 million t per year, of which about 200 million t was generated in Europe. Approximately 210 million square meters of leather are produced per year in the European Union. About 3.5 million t of various chemical reagents and 8.4 million m3 of water are used for the production of such skins. This situation is one of the reason for settled the international consortium, consist from Pruf und ForschungInstitut, Pirmasens, Germany, Institute for Sustainable Technology, Poland, Radom, and Countrywide Chamber of Leather Industry, Poland, Radom.

This consortium started to work in the frame of CORNET project:

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| **New valorisation pathway for chromium tanned leather residues by a combination of protein extraction, chrome recovery** |

**biogas production.**

In one of the tasks was conduct an assessment of the actual situation in the tanneries taking into account the solid and liquid wastes. The information was evaluated through surveys analysis.

Two main types of wastes which was checked:

- solid tanned and not tanned -

- wastewater with sodium chloride, waste water with chromium (III) compounds and liquid wastes sludge forming."

In thisactivities in the frame of the project the actual situation with waste utilization in Polish tannery industry was investigated. The study was based on questionnaires given to the factories. The analyze was made after answers got from 53 tanneries, based in different regions in Poland.

**The tanneries are situated in 8 regions. They are small and medium enterprises.**

**Table 1.**

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| Region (Voivodeship) | The enterprises | | **Total** |
| small | medium |
| Kujawsko-pomorskie (Kuyavia-Pommerania) | 2 |  | 2 |
| Łódzkie (Lodzkie) |  | 2 | 2 |
| Małopolskie (Lesser Poland) | 9 | 12 | 21 |
| Mazowieckie (Masovia) | 4 | 18 | 22 |
| Podkarpackie (Subcarpathia) |  | 1 | 1 |
| Pomorskie (Pommerania) |  | 2 | 2 |
| Śląskie (Silesia) |  | 1 | 1 |
| Wielkopolskie (Grater Poland) |  | 2 | 2 |
| **Together** | **15** | **38** | **53** |

Generally, there are two regions in Poland, with the strong tannery industry. There is Mazowsze, specially around Radom, where are situated tanneries, working with cowhides, and Małopolska, specially around NowyTarg, where the sheepskins are tanned.

The biggest Polish tannery is located in Silesia Region. It is near 200 workers, even more then border 250 together with the outer parts, working together. This tannery working generally with cowhides.

The tanneries works with not only one raw materials in many cases. Depend on order and technical equipment it can be different types of hides. For statistic we takes the predominant raw materials during the year.

**Fig. 1 Kinds of tanned hides**

The tanneries in many cases prefers works from stages wet blue. It means, that specially the small factories have not the full process, but only finishing. The results, based on the answers on our inquiry are showed on figure 2.

**Fig. 2. The stages of tanning process**

**The wastes.**

**The results connecting the water treatment are showed below:**

The amount of water used in process, reported by inquired tanneries was different, and vary from 1,5 m3 up to 8 m3 per 1000 kg of hides. The average value was 2,7 m3.

So big differences are because of two reason:

first - different kinds of processed leathers, so it means also different amount of salt in themand, second - the different technical condition of installations. The older, used and worm out installations are not suitable for water sawing.

The actual way of waste water treatment

Most of the examined tanneries have not their own installation for waste water treatment.

But not all tanneries gave the feedback. Only 2 tanneries reported, that they have own installation for waste water collection and clarifier at the mechanical treatment plant. All others use the other, specialized firm for waste water collection. The costs of it is also very different. The feedback information showed the value from 25 up to 80 Euro/ m3 of waste water. The differences are because of the regions in Poland have the differences in local prices and from special conditions in agreements.

**Fig 3. The actual ways of waste water treatment.**

Only 6 from examined tanneries declared the water recycling. The amount of recycled water is up to 30% of fresh water. The main problem with water recycling is the contaminations and salts. The tanneries prefers using fresh water then cleaning, till now.

**The results connecting solid wastes.**

The amount of solid wastes, reported by inquired tanneries for 1000 kg of hides was different, and vary from 200 kg up to 600 kg per 1000 kg of hides. The average value was 350 kg. The differences are generally from different kinds of hides and their quality.

The proportions among solid wastes are showed on figure 4

**Trimmings 34**

**Splits 36**

**Shavings 18**

**Dust 12**

**Fig 4. The percentage of solid wastes contents**

Solid waste treatment

The main ways of solid waste treatment and utilization is cooperation with outer firm and relocation them from tannery. The own installations for treatment are not common.

**Fig 5. Actual ways of solid waste treatment**

Most of the examined tanneries have not their own installation for solid waste treatment.

Generally, the solid wastes are collecting by outer firm, after preparing by pressing and baling for volume reducing. Only 3 middle size tanneries have their own installation for solid waste treatment.

The costs of solid waste collecting is similar in all tanneries and vary from 90 up to 120 Euro / 1000kg of waste.

Generally, based on our questionnaire we found, that the main ways to waste (both, solid and water) treatment is removing them from tannery by outer, specialized firm.

But , the cost of it is rapidly growing.

**Fig.6 The costs changes of waste collecting (average)**

Mainly the costs but also the new look for the environment was the reason, that many of tanneries gave the comment on the end of the questionnaire - "the problem very important for the industry "

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