Materials of Conferences

ENVIRONMENTAL SECURITY – ONE OF THE PRIORITIES IN THE PULP AND PAPER INDUSTRY

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Pulp and paper industry refers to perspective sectors of Russian economy and introducing the cycle of enclosed water consumption is necessary to solve ecological problems on enterprises. It can be accomplished only with Total Chlor Free-bleaching (under a total absence of chlorous substances). Transition towards TCF-bleaching on the existing equipment is possible under the function of technological system with one stage of bleaching with chloric dioxide (soft ECF-bleaching) and its minimum consumption, for example, no more than 0,5 % of sulfate pulp (E.I. Fedorova, A.V. Kuzivanova Patent of RF № 2413046. A method of bleaching sulfate pulp). Implementation of monosaccharides besides oxidants is possible during TCF-bleaching of pulp (as they have a reducing impact on structures of residual lignine), one can use arabinose, considering high contents of arabinogalactane in larches that are used to receive arabinose. Studies of schemes of processing deciduous sulfate pulp that include oxygenic-neutrolizing procession (solidity 11,7 units of kappa) and high-temperature procession with acid have been carried out. The following stages include bleaching pulp: H2O2 under pH 10−10,2 with stabilizer (solidity 6 units of kappa, pulp whiteness 75 %), arabinose, and hydrogen peroxide. However, implementation of monosaccharides in bleaching pulp is limited by their impact over certain structures of residual lignine (O.V. Lepilova Foundation of enzymatic methods of regulated slitting of carbohydrate additives and delignification of linen sliver: author's abstract on dissertation of candidate of technical science, – Ivanovo, Institute of solutions' chemistry of Russian academy of science, 2007, 19 p.) Therefore, whiteness index for deciduous pulp in acid environment equaled only 83 % under viscosity index 740 ml/g that is acceptable in producing paper, when ecological factor plays the most important part. Besides, acid filtrates of bleaching sulfate pulp according to the developed scheme should be directed to areas of boiling in order to scour pulp, and then further to the system of alkali liquor regeneration. Absence of chloride ions in neutralizing filtrates of bleaching implies their secondary implementation after local cleaning with ozonation, and contents of phenols in them should be decreased down to 86 % and lower, depending on the continuity of this process.

The work is submitted to the International Scientific Conference «Ecology of industrial regions of Russia», Great Britain (London), 19-26 October 2013, came to the editorial office on 27.09.2013.

POSSIBLE SOLUTIONS TO THE ENVIRONMENTAL PROBLEMS OF THE IRKUTSK AIRPORT

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Nowadays a plane has become the fastest mean of transport for a modern person, it allows one to travel between continents in hours, and an airport is a «business card» of any country of city.

Along with the development of aerial transport many airport complexes have transformed into large enterprises and come close to city borders. Therefore, residential areas, districts of mass recreation, and suburban areas have been exposed to an intense impact of aviation noise.

Nowadays noise atmosphere around airports that are located in heavily inhabited districts, becomes an urgent problem not only in Europe, but also other parts of the world. A special anxiety among the population is defined by an increase in a number of flights and night sleep disturbance. The level of noise pressure in residential areas exceeds the allowed limit significantly under the impact of terraneous plane engine operation. Its maximum can have the same digital value as the amount of transport noise on main streets of a big city.

However, the problem of aviation noise is not solved for a number of Russian cities. It refers to the population of Irkutsk. Sources of noise can't be eliminated, by they can be isolated. Regarding the Irkutsk airport we can say that re-locating the airport further from city borders would be the most efficient method considering the ecological side of the problem and measures of increasing safety. The problem of a new airport will be discussed closer to 2016. Limiting noise levels around airports is a condition of further aviation development.

At the same time, modern airports operate round-the-clock and require a constant supply of high-quality illumination. Normal operation of an airport requires a complete adherence to strict international regulations. It also refers to illumination, as incorrespondence with certain requirements can lead to emergencies and death of people.

Illuminating aprons is an integral part of modern airports. Basic directions of improving complexes of light-signal equipment are: increase in reliability, ecological compatibility, operation

period, decrease in consumed energy and mass-overall characteristics.

Incandescence lamps and luminescent lamps are generally used as the basic light sources. However, these sources of light affect a person's health and the environment.

A significant part of an incandescence lamp radiation lies in a short-wave part of infrared spectrum, and such radiation, unlike its long-wave analogue, is hazardous for a person's organism, especially for his eyes.

All luminescent lamps contain quicksilver, and, if any destructions take place a lamp body, organisms of people will be exposed to the affection of quicksilver fumes that are accumulated in an organism and damage a person's health, therefore, special conditions of utilizing such lamps are required.

Besides, such lamps consume a significant amount of energy, produced by city heat power stations. All discharges that enter aerial pool from heat power stations are toxic substances that affect people's organisms and environmental ecology.

An increase in requirements towards reliability of light-signal equipment complexes and omnipresent introduction of energy-saving technologies define a necessity to replace the used light sources with more efficient and ecological analogues. Light-illuminating diodes possess the highest characteristics, their service period reaches 100 000 hours, and their luminous efficacy equals 170 lumen/Vt. In comparison, incandescence lamps of general purpose have 100 hours of service period with a luminous efficacy of 8–17 lumen/Vt. Considering the provided information, light-illuminating diodes can be used in construction of a new airport of Irkutsk, as they aren't only more ecological, but also energy-efficient and consume less energy from local heat power stations.

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The work is submitted to the International Scientific Conference «Ecology of industrial regions of Russia», Great Britain (London), 19-26 October 2013, came to the editorial office on 30.09.2013.