Technologies Of Disposal Of Industrial Waste With Harmful Chemicals

Karimova Feruza Sattarovna – Researcher	Uzbekistan, Jizzakh Polytechnic Institute
Khakberdiev Shukhrat Makhramovich - Associate Professor	Uzbekistan, Jizzakh Polytechnic Institute
Juraeva Umida Bakhodirovna - Student	Uzbekistan, Jizzakh Polytechnic Institute

ABSTRACT

The article deals with the problems of industrial waste disposal. It is noted that the problem of environmental protection is complex and global in nature. Long-term pollution of the natural environment by industrial waste leads to environmental degradation. Due to the numerous industries that supply waste to the external environment, there are some problems with the disposal of this waste. The aggravation of environmental problems against the background of the intensification of production processes requires a revision of approaches to managing processes in the field of waste management.

Keywords: Industrial Waste, Recycling, Secondary Raw Materials, Non-Waste Technology, Environment.

1. Introduction

Along with the growth of industry in cities, production and consumption waste will increase, which will lead to an increase in environmental pollution with waste. In such cases, it is possible to introduce waste-free environmentally friendly technologies to reduce environmental pollution with waste, reduce its pollution and mutation through the processing of any waste. [one].

Industrial waste is used for special processing technologies in order to obtain raw materials and materials for production or direct production of marketable products.

St. Petersburg State Marine Technical University (D.A. Barabanshchikov, F.A. Serdyukova) conducted research on industrial waste disposal and considered the issue of industrial waste disposal [2]. This article discusses ways to solve the problems of the oil industry. The authors substantiate the modernization of old and the construction of new oil refineries that pollute the environment.Environmental control is being studied at all stages of work in the oil industry. It is concluded that waste disposal, the implementation of recycling measures, the rational use of resources, the use of new energy-efficient methods will bring economic benefits to both the enterprise and the state. However, the ongoing work, the research process does not cover the technological processes of industrial waste disposal.

Environmental protection from production and consumption waste is inextricably linked with the problems of rational use of natural resources and the introduction of environmentally friendly technologies. For centuries, improper waste management has led to changes in natural resources, to unexpected changes in nature.

2. Materials And Methods.

2.1. The object of the survey.

The object of research for the production of ultramarine pigment of the joint venture SOFITEL LLC is located in the industrial zone of the city of Jizzakh.

The object of study is shown in Figure No. 1. The enterprise borders: from the northern part of Toshtepa Tekstil LLC, from the western side open fields, from the east by Irrigation Invest LLC, from the south by Roison LLC.

The occupied area of the enterprise is 4.4 hectares. The facility has the following workshops and departments: production workshop, crusher, storage warehouse for raw materials and additives; crushing department; site for grinding and preparation of raw materials; raw material mixing section; oven department; transport department and administrative buildings.

For the production of ultramarine pigment: SOFITEL LLC uses raw materials: calcium powder, quartz powder, kaolin (China), kaolin (Uzbekistan), sodium sulfite (charcoal), potassium chloride.

Figure #1. JV LLC "SOFITEL" production of ultramarine pigment

The climatic characteristic is given according to the observational data of the Dzhizaka meteorological station. The climate of the region is sharply continental. Summers are dry and long, winters are wet.

The average annual air temperature is 14.2 0C, which is much lower than in other more southern regions of the Republic.

The coldest month is January with an average monthly temperature of 0.2 0C, in summer it is quite hot in the region. The warmest months are July and August with temperatures of 25.5 0C and 23.5 0C. In the intra-annual context, the frequency of wind, this gradation has an almost constant frequency of 51-58%. Only in the winter months (November-December) does it increase to 61%. Winds with speeds of 2-3 m/s, which have a cleansing effect, have a frequency of almost 1.5-2.0 times less than weak winds. Winds with high speeds contribute to the removal of pollutants and their dispersion, and in dry periods blow dust off the surface of disturbed lands.

To assess the impact of the enterprise on the environment, the following tasks had to be solved: to assess the current state of the environment in the area where the enterprise

is located; conduct an environmental analysis of the design solution; assess the level of atmospheric air pollution by emissions from the main production; estimate the amount of production and consumption waste generated after the implementation of design solutions and consider their placement and disposal; evaluate emergency risks after the implementation of the design solution.

The design capacity of SOFITEL JV LLC for the production of ultramarine pigment is 11 tons / day, 330 tons / month, 4000 tons / year. Products are exported and competitive in domestic and foreign markets. The product is exported to Egypt and Turkey via China.

1.2. Sampling process.

The amount of the dust mixture was determined by weighing by the gravimetric method. The measurements were carried out with a steady motion of the dust flow; before determining the flow parameters, it was necessary to choose a place for sampling.

The reliability and efficiency of dust cleaning systems depend mainly on the physical and chemical properties of the dust mixture and the main parameters of dust flows. Data on the physicochemical properties of the dust mixture are used in the calculation of dust collectors, gas ducts, bunkers, fittings and auxiliary equipment, as well as to assess the economic efficiency of removing accumulated dust [4].

The velocity of the dust mixture emitted into the atmosphere through the pipe was determined using an MMN micromanometer, the amount of which was sucked off.

1. RESULTS AND DISCUSSION

Technological solutions. The sequence of the production process is carried out as follows. There are 4 grinding equipments, 2 grinding raw materials, 2 grinding the selected product. The number of tanks of 10 tons is 4. After the product is washed, cleaned and dried, it is transferred to the mill through the norm. Then he goes down to the elevator. Water tank 15 tons 1 pc. The crushed product is sent to 8 containers with water. It is pumped into the 2C vessels, boiled and fed into the E-1 press. The products are crushed in 3 barrels F-1, F-2, F-3 (1.5 tons), then dumped into 2 barrels of ED. Of these, C-3, C-4 get into the barrels, from where the boiling is sent to the E-2 press, from which it is pumped into 8 V-barrels. The next process is to rotate the product in 8 concrete barrels for 24 hours and send it to the E-3 press. Then he and fall into 4 X barrels. Cooked at 100 0C to form an E-4 press. Boil for 40 minutes and throw in the product warehouse. The following process is dried in 3 drying containers and crushed with crushing equipment and covered as a finished product. Contaminants generated in the workshop are cleaned by 3 RFG filter cyclones and released into the atmosphere.

As a result of the research, sources of pollutant emissions into the atmosphere, production and consumption wastes, their quantity, standards, toxicity class, recommendations for further disposal, assessment of the impact of installed equipment on surface and groundwater have been developed.

The limits of emissions into the atmosphere, the limit of waste disposal have been determined. Based on inventory results: Sources of atmospheric air pollution - 11. From: Organized resources - 7; Unorganized sources - 4; Dust cleaning equipment (ChSTU) - 3.

"SOFITEL" for the production of ultramarine pigments "there are 8 types of pollutants emitted from sources of air pollution, the total amount is 38.763615 tons / year, the composition is as follows:

- Inorganic dust - 6.55 tons/year, 16.897%;
- Elemental sulfur – 0.802 t/year, 2.069%;
- Sodium carbonate – 0.078 t/year, 0201%;
- Sodium sulfate - 0.067 t/year, 0.173;
- Carbon monoxide - 26.03 tons/year, 67.150%;
- Nitric oxide – 5,232 t/year, 13,497%;
- Benz(a)pyrene – 0.000515 t/year, 0.002%;
- Hydrocarbon 0.0041 t/year, 0.01%;

Of these: in the solid state - 6.55 tons / year, 16.897%; in gaseous and liquid form - 32.213315 tons / year, 83.103%; Waste sources at the enterprise - 9. Waste collection points - 13. The total amount of waste is 63,105 tons/year.

According to constant observations, the level of atmospheric air pollution is framed by the following indicators:

The average annual concentration of elemental sulfur is 0.006 mg/m3, which does not exceed the MPC (0.5 mg/m3). The maximum one-time is noted at 0.029 mg/m3, which also does not exceed the maximum allowable level. API = 0.12.

The average annual concentration of carbon oxide is 1.0 mg/m3, which does not exceed the MPC (5.0 mg/m3). The maximum one-time is noted at the level of 2.0 mg/m3, which also does not exceed the MPC. API = 0.36.

The average annual concentration of nitrogen oxide is 0.01 mg/m3, which does not exceed MPC (0.02 mg/m3). The maximum one-time is noted at the level of 0.01 mg/m3, which also does not exceed the MPC. API = 0.14.

Average annual concentrations of inorganic dust, sodium carbonate, sodium sulfate and hydrocarbons are 0.01, 0.004, 0.01, 0.03 mg/m3, respectively, which does not exceed MPC. The level of air pollution in the industrial zone of the city of Jizzakh and its environs is assessed as low.

CONCLUSIONS.

The results of the calculations of concentrations of harmful emissions into the atmosphere showed that at the enterprise's border in the zone of influence of the source, the concentrations of emissions in the surface layer of the atmosphere do not exceed the permissible norms according to the quotas established by it.

Industrial effluents are generated during the operation of the cooling tower. All industrial effluents are in the circulating water supply system. No stocks are generated.

Domestic sewage is discharged into a waterproofed reinforced concrete cesspool, from where, as it accumulates, it will be transported by special vehicles to the places indicated by the SES.

Special places are provided for temporary storage of waste on the territory of the enterprise. Waste belongs to 2, 3, 4 and 5 hazard classes, the conditions of their storage are such that the waste will not have a negative impact on the environment and the health of workers.

Therefore, from the foregoing, we can conclude that the operation of the facility, subject to the recommendations, safety regulations and the implementation of environmental measures, will not lead to irreversible environmental consequences.

There is no need for additional measures to reduce emissions; in order to maintain emissions at the current safe level, it is necessary to strictly monitor the serviceability of bag filters.

Water consumption at the enterprise is carried out from its own artesian well. Domestic sewage is discharged into a waterproofed reinforced concrete cesspool, from where, as the cesspool is filled, it is transported by special vehicles to the places indicated by the SES. Industrial effluents are located in the recycling water supply system.

Literature

1. Khoroshavin L.B., Belyakov V.A., Svalov E.A. Basic technologies for processing industrial and municipal solid waste. Tutorial. Ural Federal University named after the first President of Russia B.N. Eltsyn. Yekaterinburg publishing house of the Ural University 2016.
2. Drummers D.A., Serdyukova A.F. Utilization of industrial waste. Young scientist. International scientific journal. No. 25 (159)/2017. pp. 101-104.
3. Rakhmatov S. Uzbekiston Republican Oliy Majlis Konunchilik Chamber of Deputies. Chiqindi - horses zarar (kaita ishlansa, katta boylik). Atroph muhit holatining sharhi. 2009 October
4. GOST 12.1.014-84. System of labor safety standards. Work area air. Method for measuring concentrations of harmful substances with indicator tubes. - Input.

01/01/86. M.: Standartinform, 2010. - 14 p.
5. Valdberg, A. Yu. Theoretical foundations for the protection of atmospheric air from pollution by industrial aerosols [Text] / A. Yu. Valdberg, L. M. Isyanov, Yu. I. Yalamov. - St. Petersburg: MP "NIIOGAZ-Filtr", 1993. -235 p.
6. Ziganshin M.G., Kolesnik A.A., Posokhin V.N. Design of dust and gas cleaning devices. - M.: Ekopress-ZM, 1998. - 504 p.
7. Kirsh, A. A. Investigation of particle settling in a model filter during sediment accumulation [Text] / A. A. Kirsh // Theoret. Fundamentals of chem. technology. -1982. - T. XVI, No. 5. - S. 711-714.
8. Kushchev, L. A. Energy-saving devices for capturing the solid and liquid phases of aerosols [Text] / L. A. Kushchev. - Belgorod: Publishing Center "Logia", 2002. - 187 p.
9. Pozilov M. N., Karimova F. S., Kholmuminova D. A. Violation of natural processes of active water exchange in the Golodno-Steppe region and its impact on changing the rational use of groundwater resources. Universum: chemistry and biology. – 2022. – no. 2-1(92). - P. 5-9.
10. Karimova F. S., Azizova S. I. K. Atmosferaga tashlanadigan sanoat tashlamalarini ushlab qolish va utilization qilish technology //Academic research in educational sciences. - 2021. - Vol. 2. - No. 10. - S. 939-947.
11. Pozilov M. N., Karimova F. S., Zhuraeva U. B. K. Jizzakh viloyatida oqar suvlardan foydalanishning istiqbolli yollari //Academic research in educational sciences. - 2022. - Vol. 3. - No. 1. - S. 482-488.