

Підсумовуючи, електрокардіограф є важливим інструментом, який використовується в галузі медицини для дослідження діяльності серця. Він працює шляхом реєстрації електричної активності серця та створення візуального представлення діяльності серця. За допомогою електрокардіограми лікарі та медичні працівники можуть діагностувати та контролювати широкий спектр захворювань серця, таких як аритмії та інфаркти міокарда.

Електрокардіограма стала ключовим інструментом у діагностиці та лікуванні серцевих захворювань, і вона революціонізувала підхід медичних працівників до лікування серцевих захворювань. Технологія значно розвинулася з роками, сучасні електрокардіографи є дуже вдосконаленими та здатними надавати точнішу та детальнішу інформацію про діяльність серця.

Загалом електрокардіограма відіграла важливу роль у покращенні нашого розуміння фізіології серця та допомогла медичним працівникам розробити ефективніші методи лікування хвороб серця. Оскільки технологія продовжує розвиватися, цілком імовірно, що електрокардіограф продовжуватиме відігравати важливу роль у діагностиці та лікуванні захворювань серця ще багато років.

**Список використаних джерел:**

1. Робертс, Г. Едвард. «Електрокардіограф II». Радіоелектроніка

**UDC 574.24:553.3:614.75**

**CALCULATION OF PARAMETERS FOR THE  
MINING ENTERPRISE SANITARY PROTECTION ZONE**

**Maksym Tymchyshyn**

*National Aviation University, Kyiv*

*Supervisor – Tamara Dudar, Dr., Eng. Sc., professor*

Key words: sanitary protection zone, safety parameters of the enterprise, pollutants.

Introduction. It is difficult to overestimate the calculation of the parameters of the sanitary protection zone. It is the sanitary protection zone that determines the safety parameters of the enterprise. The safety parameters of the enterprise are determined to reduce emissions of pollutants into the atmosphere. The sanitary protection zone is intended for dispersion of impurities and pollutants in the territory around the enterprise. The sanitary protection zone is an important component for ensuring the health of the population and reducing the negative impact of the enterprise

on the human body and the environment. Without a sanitary protective zone around the enterprise, it is impossible to operate the enterprise. Just as it is forbidden to build residential accommodation near the enterprise without taking into account the sanitary protection zone, it is also forbidden to conduct economic activities around the sanitary protection zone. It is a driver of safety and is determined according to mathematical operations of determination, these mathematical operations are used in Environmental Impact Assessment reports, which are ordered by enterprises in order to obtain permits for their activities.

This research is relevant, data for 2019 from the report of the Ministry of Internal Affairs and Communications on the Dachnyi quarry (Smolinska mine) were used to determine the safety parameters of the enterprise and to determine the sanitary protection zone around the enterprise for certain pollutants such as soot, nitrogen dioxide, sulfur dioxide, CO<sub>2</sub> is one of the most common pollutants and certain substances in high concentrations such as nitrogen dioxide, sulfur dioxide, CO<sub>2</sub> are very dangerous, so establishing a sanitary protection zone for dispersing each substance around the enterprise is very important. The purpose of the work is to establish the concentration of pollutants at different distances from the source of emissions 100m, 200m, 300m, 400m and 500m, as well as to determine their dispersion distance for an acceptable level with MPC daily average. to calculate the parameters of the sanitary protection zone for the Dachny quarry.

The Smolin sand deposit is located in the Malovysk district of the Kirovohrad region at a distance of 5.0 km to the west of the urban-type village of Smolin. The boundaries of the sand quarry are located within the mining right-of-way, according to the Act dated 18.06.2001 No. 16 "On the granting of a mining right-of-way for the development of the Smolensk deposit of sand for hardening lining", issued by the Kirovohrad Regional State Administration. The sand quarry is located on the site between the existing industrial sites of the "Dopomizhna" mine, the deposit complex and the "Ventilyatsyna" mine, on land previously allocated for the enterprise. [1]

Table 1

Final calculations of the concentration of pollutants at different distances  
from the emission source, 200, 300, 400, 500 m.

Meter	C200m	C300m	C400m	C500m
C(soot)	0,053	0,026	0,016	0,010
C(nitrogen dioxide)	0,232	0,112	0,069	0,043
C(sulfur dioxide)	0,038	0,018	0,011	0,007
C(CO <sub>2</sub> )	0,419	0,202	0,124	0,078

Data for calculations were taken from the 2019 Environmental Impact Assessment report. Sources of pollutant emissions into the atmospheric air as a result of the implementation of planned activities. Calculated emissions for Scraper Trucks at a height of 5 meters. The calculation method

was taken from practical works [2]. Using the formulas for calculations from the practical works, the concentration at different distances from the source of emissions of substances such as: soot, nitrogen dioxide, sulfur dioxide, CO<sub>2</sub> was calculated in the final.

The final results are presented from the calculations of the concentration of pollutants at different distances from the emission source, namely 200, 300, 400, 500m. According to the results, it was determined that: To reduce the impact of soot emissions, a distance of 300 meters from the emission source is required. To reduce the impact of nitrogen dioxide emissions, a distance of 500 meters from the emission source is required. To reduce the impact of sulfur dioxide emissions, a distance of 200 meters from the emission source is required. To reduce the impact of carbon dioxide (CO<sub>2</sub>) emissions, a distance of 200 m from the emission source is required. These concentration values were compared with the daily average Maximum Permissible Concentrations.

Conclusions: When determining the security parameters of the enterprise, it is very important to calculate the sanitary protection zone. This research will be continued in the following scientific works.

#### References

1. Environmental Impact Assessment Report. SE "ShidGZK" Mine "Smolinska" Sand quarry. Finalization of stocks. – URL: <https://vostgok.com.ua/sites/default/files/pdf> (Retrieved 17 March 2023)
2. Practical Work 2. – URL: <https://geology.lnu.edu.ua/wp-content/uploads/2020/03/Praktychna-robota.doc> (Retrieved 17 March 2023)