

Environmental Monitoring Report

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July-December 2021
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Kyrgyz Republic: Osh-Plotina Water Treatment Plant Chlorine Neutralization Unit

Prepared by the Department of Drinking Water Supply and Sewerage Development under the State Agency of Architecture, Construction, Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic for the Asian Development Bank.

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Abbreviations

ADB	Asian Development Bank
DDDWSS	Department of Development of Drinking Water Supply and Sanitation
EA	Executive Agency
WTP	Water treatment plant
EMP	Environmental management plan
GKR	Government of the Kyrgyz Republic
IEA	Initial environmental assessment
VO	Vodokanal of Osh
PPKR	Permanent Representation in the Kyrgyz Republic
PPE	Personal protective equipment

1. INTRODUCTION

1.1. Preamble

1. In 2011, ADB approved the Emergency Reconstruction and Reconstruction Project. The project aimed to: (i) rebuild the country's financial capacity to meet the sharp increase in additional costs associated with the conflicts in April and June 2010; and (ii) rebuilding damaged houses and improving basic infrastructure.
2. One of the components of the Initial Project was the rehabilitation of the chlorination plant located at the Ozgorsk Wastewater Treatment Plant (WSP). The initial project started on February 14, 2011 and was completed on November 23, 2016 (actual completion date). Although the project completion report concludes that the project was successful, it raises issues related to the standards applied in the water sector in the Kyrgyz Republic in relation to current standards.. ADB and the Government agreed that the modernization of chlorine neutralization plants at the water treatment plant is a priority to meet the latest international standards and the highest levels of safety
3. Given its urgency, the government has requested the modernization of the chlorine neutralization unit at the Ozgor wastewater treatment plant.
4. This report is a Semi-Annual Environmental Monitoring Report (SAEMR) for the project « Osh-Plotina Water Treatment Plant Chlorine Neutralization Unit »
5. This is the second Semi-annual Environmental Monitoring Report on this project. It covers the activities of the project carried out from July 01, 2021 to December 31, 2021.

1.2. Brief information

6. Osh city is the second largest city in the Kyrgyz Republic. The number of subscribers who receive water supplied by the Osh municipal enterprise or Oshgorvodokanal (about 72,000 families (taking into account the number of 5 people per family)). Osh city is mainly supplied with surface water from the Ak-Bura river, treated at the Ozgur water treatment plant, producing about 180,000 m³ of water per day, equal to about 80 percent of the water supply. The rest of the water comes from wells and drainage galleries at four main locations. Ozgor AF was built in 1978 with 6 fast filters (line I) and expanded in 1991 to 10 new filters (line II). The design capacity of the two treatment lines is 50,000 m³ / day and 80,000 m³ / day, respectively (Figure 1-1). However, the plant's average daily capacity is 180,000 m³ / day, according to UWC, indicating that the plant is currently overloaded.
7. During a visit to the ADB mission in May 2018 to the recently rehabilitated Ozgur wastewater treatment plant, some safety concerns of the Chlorination Plant were identified. Currently, the chlorination shop of the Ozgor Air Force stores up to eight containers with liquid chlorine with a capacity of 800 to 1000 kg, located in one room. The only existing emergency solution in the event of a chlorine leak is a sarcophagus, which can isolate one

barrel of chlorine. There is a ventilation system that can draw in chlorine gas, but it will be dispersed directly into the environment through the ventilation pipe, which can adversely affect the environment. The proposed neutralization unit will help absorb and neutralize the leakage of gaseous chlorine before discharge, thereby ensuring the safe operation of the chlorination unit of Ozgor WTP



Cleaning line 50000m³/day

Figure 1-1 Water treatment plant Ozgor.



Cleaning line 80000m³/day.

2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1 Project Description

8. The aim of the project is to ensure the sustainability of the existing the Ozgur drinking water treatment plant in the city of Osh, located in the Osh region of the Kyrgyz Republic (Figure 2-1).
9. The proposed chlorine neutralization unit is located in the building of the existing chlorination water treatment plant "Ozgur" in the city of Osh. (Figure 2-2 and Figure2-3)



Figure 2-1. Map of the Kyrgyz Republic.



Figure 2-2. Location of the Ozgur water treatment plant



Figure 2-3. The building of the chlorination plant

10. The object is surrounded by the Ak-Bura river, about 300 m from it. Irrigation canal Uvam, about 40 m and the nearest households about 80 m from the house.

Chlorine Gas Scrubber System Technical Description

11. This scrubber system is designed to remove chlorine from the air and neutralize it in the event of a leak. The design decisions are based on the fact that the leak occurs at one damaged container with chlorine (1000 kg).

Principle of operation

12. In the event of an emergency, the gas detector automatically starts the neutralization device. An alarm from the gas detector triggers a circulation pump that pumps caustic to the top of the column and sprays it inside the neutralization towers. In addition, the alarm triggers a fan that draws contaminated air through the neutralization tower. After the caustic circulation starts, the fan blows the polluted air to the side suction of the installation, so that the flows of caustic and polluted air move towards each other.
13. The fan and circulation pump are made of polypropylene, resistant to liquid chemicals and gas mixtures. To obtain the area required for neutralization, the tower is filled with rings. This achieves maximum surface area with minimum volume, ensuring correct neutralization of contaminated air.
14. A mist collector at the top of the second column ensures that droplets are removed from the system. The heat generated by the reaction of caustic soda with chlorine gas is absorbed by the flushing liquid.

Ventilation system

15. One of the most important design criteria was the need to ensure the replacement of the air atmosphere in the storage tank 10 times per hour in the event of an emergency. For a working area of 100 m² and a room height of 4.5 m, the ventilation volume should be 4500 m³ / h. This rate of air exchange takes into account that during In the first minutes of a gas leak, the danger to health and life can be minimized through the appropriate distribution of gas from damaged containers. The first 3-5 minutes are most important as over time the tank temperature drops significantly and the leakage rate drops.
16. Therefore, it is very important that the fans start running as early as possible after a leak occurs. The longer the leak occurs, the colder the container and the lower the leak rate. After the first minutes, the released liquefied chlorine must be removed and evaporated in 35-50 minutes. When the maximum concentration of 1 g / m³ is reached at the end of the absorption process, the circulation system switches to ventilation to the atmosphere.

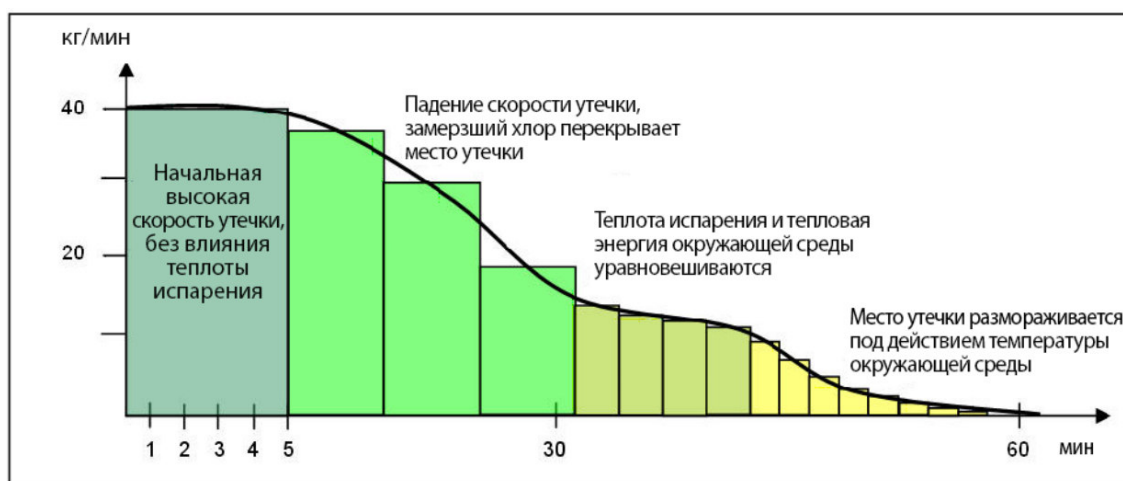


Figure 2-5 Dependence of chlorine concentration on time

2.2. Project Contracts and Management

17. A list of the main organizations and specialists involved in the project and related to environmental protection measures is given in Table 2- 1

Employer	Department for the Development of Drinking Water Supply and Sanitation (DDWSS) under the State Agency for Architecture, Construction, Housing and Utilities under the Government of the Kyrgyz Republic.		
Contracting organization	Company «CIC»:	Contacts	Function
Contracting organization	Kwon N.G	+996777995518 cic_project@mail.ru	Ensures the implementation of environmental protection measures in full, carries out an inspection of the facility, ensures the effective implementation of the EMP.
Project Manager	Madanbekov M.	+996778 866 684	
Technical / Supervisory Personnel Senior Engineer	Karimova M.T	+996770220882	
Occupational health and safety engineer	Madanbekov M.	+996778 866 684	

Table 2-1 Environmental protection measures

18. The following specialists will be responsible for environmental monitoring and/or supervision during construction:
- Customer representatives
Madanbekov Manas - Engineer for supervision of the Department of Development of Drinking Water Supply and Sanitation
- Implements ADB's Security Policy and national legislation.

- Plans environmental strategies to achieve goals and promote best practices.
- Plans the best tools and systems for monitoring the effectiveness and implementation of strategies.

b. Environmental contractor managers and/or specialist responsible for environmental protection and safety

Malika Karimova - Occupational Health and Safety Engineer (OT and TB) under the project of the company "CIC"

19. The contractor's managers and engineers, namely the Director of the company, Mr. Kwon NG, as well as Ms. Karimova and Mr. Madanbekov, are responsible for the implementation of environmental protection measures and perform all tasks related to the environment in accordance with the ADB Safety Policy and national legislation. Their activity consists in supervision, directly, at the site of installation work. If necessary, instructing on the installation work within the framework of the measures provided for in the EMP.
20. In addition, the contractor's occupational health and safety specialist will:
 - ensure that the construction methods are satisfactory with respect to the technical requirements of the ADB Environmental Management.
 - conduct periodic review and compile reports on the implementation of the EMP.
 - carry out inspections of construction equipment, work safety, property, personnel and the public; and recommendations of the EMP.
 - to monitor the implementation of any necessary measures to mitigate the impact on the environment, and in the event of any unexpected impacts on the environment, coordinate actions to take measures to mitigate the impact.

2.3. Project Activities During Current Reporting Period

21. During the reporting period, no design and construction work was carried out. Construction work was completed in June 2021.

2.4. Description of Any Changes to Project Design

22. No design work was carried out during the reporting period.

2.5 Description of Any Changes to Agreed Construction methods

23. No changes have been made to the approved construction methods

3. ENVIRONMENTAL SAFEGUARD ACTIVITIES

3.1 General Description of Environmental Safeguard Activities

24. Due to the fact that the project was completed in June 2021, no environmental measures were carried out during the reporting period.

3.2 Site Audits

25. Due to the completion of the project, audits of construction sites were not carried out.

3.3. Issues Tracking (Based on Non-Conformance Notices)

26. During the construction work, no notifications of non-compliance were issued

3.4. Trends

27. After the completion of construction works and the completion of the project, no notifications of nonconformity were issued, no trend monitoring was carried out.

3.5. Unanticipated Environmental Impacts or Risks

28. After the completion of the construction work, there were no unforeseen environmental impacts.

4. RESULTS OF ENVIRONMENTAL MONITORING

4.1. Overview of Monitoring Conducted during Current Period

29. During the reporting period, no monitoring was carried out due to the completion of construction and installation works..

4.2 Trends

30. In connection with the completion of construction work, no inconsistencies have been identified.

4.3 Summary of Monitoring Outcomes

31. Monitoring was not carried out.

4.4. Material Resources Utilisation

32. During the reporting period, the contractor did not monitor the use of material resources due to the completion of construction work.

4.5. Waste Management

33. During the reporting period, no waste was generated because there was no activity.

4.6. Health and Safety

34. There were no incidents during the reporting period due to the fact that no work was carried out.

4.7. Training

35. No trainings were conducted during the reporting period.

5. FUNCTIONING OF THE SEMP

5.1. SEMP Review

36. The works were completed within the deadline set by the work schedule in June 2021. And at the beginning of the reporting period, they have already been completed..

6. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

6.1. Good Practice

36. Installation of this unit will significantly increase the safety of the OZGUR WTP, as well as minimize the negative impact on the environment in the event of a chlorine leak

6.2. Opportunities for Improvement

37. It is required to pay more attention to the training of personnel in safety precautions in the conditions of Covid-19, as well as to improve the qualifications of workers servicing the chlorine neutralization plant.

7. SUMMARY AND RECOMMENDATIONS

7.1 Summary

38. No work was carried out during the reporting period.

7.2. Recommendations

39. When operating the installation, it is recommended to observe safety regulations.

APPLICATION

Appendix 1. Certificate of acceptance and delivery of the chlorine neutralization plant

АКТ ввода оборудования в эксплуатацию

г. Ош

2 июня 2021 г.

Комиссия в составе:

Представителя Поставщика ОсОО «СИС» в лице директора Квон Н.Г. и

Представителя Заказчика в лице:

1. Председателя комиссии заведующим южным региональным отделом ДРПВ Ташкулов И.
2. Старшего мастера Ошгорводоканал Токомбаева Ш.
3. Инженера по техническому надзору Маданбекова М.

Государственная Инспекция по экологической и технической безопасности при правительстве Кыргызской Республики не входит в состав комиссии в связи с положением.

Ознакомившись с установкой нейтрализации хлора (включая все оборудование, необходимое для правильной эксплуатации и технического обслуживания Блока, в частности: трубопроводы, кабели, соединения, электрические соединения основание, пульт(ы) смонтированной по адресу: Питьевая Водоочистная станция Озгур, улица Исанова, г. Ош, Кыргызская Республика и рассмотрев техническую документацию, представленную заводом изготовителем Grundfos, сертификаты о проверке оборудования от 19.03.2021 а также по итогам пуско-наладочных работ в период с "31" мая 2021 г. по 2 июня 2021 г., установила:

1. Установка нейтрализации хлора соответствует заявленным требованиям
2. Установка, монтаж, пуско-наладочные работы выполнены в соответствии с контрактом и с соблюдением Правил техники безопасности.
3. Оборудование соответствует требованиям промышленной, пожарной и экологической безопасности.
4. Установка нейтрализации хлора выдержала испытания и может быть введена в эксплуатацию

Приложения:

1. Акт приемки пуско-наладочных работ
2. Письмо от ГЭИТПБ при ПКР.

Председатель комиссии заведующим южным региональным отделом ДРПВ Ташкулов И. _____

Члены комиссии :

Старший мастер Ошгорводоканал Токомбаева Ш. _____

Инженер по техническому надзору Маданбекову М. _____

Представитель Поставщика ОсОО «СИС» Квон Н.Г. _____

