Project ISTC - K-1240p

"Post-containment Management and Monitoring of Mercury Pollution in Site of Former PO "Khimprom" and Assessment of Environmental Risk Posed by Contamination of Groundwater and Adjacent Water Bodies of the Northern Industrial Area of Pavlodar"

Quarterly technical report

on the work performed from 1 April 2008 - to 30 June 2008

Quarter 11

Non-profit JSC "Almaty Institute of Power Engineering and Telecommunication", BG Chair of Environmental Technology

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20.07.2008

Signature / Data

1. Summary of Technical Progress

1.1. Current Technical Status

Task Subtask	Start (quarter)	End (quarter)	Status / Comments
1.1.	1	4	Has postponed till 12 quarter as a result of replacement of Participant Institution PCP by Participant Institution Kaustik in the project.
1.2.	4	8	Completed.
1.3.	1	12	Suspension of works in 11th quarter
2.1.	1	2	Completed
2.2.	3	4	Completed
2.3.	5	6	Completed
2.4.	7	12	Completed
2.5.	10	12	Completed/according to the new model the risk of mercury contamination of water-supply wells in Pavlodarskoye village and the Irtysh River floodplain is minimal.
2.6.	8	8	Has postponed till the 12th quarters as a result of replacement of Participant Institution PCP by Participant Institution Kaustik in the project.
2.7.	8	8	Has postponed till the 12th quarter as a result of replacement of Participant Institution PCP by Participant Institution Kaustik in the project.
2.8.	9	10	Has postponed till the 12th quarter as a result of replacement of Participant Institution PCP by Participant Institution Kaustik in the project.
2.9.	9	10	Completed
3.1.	1	2	Has postponed till the 12th quarter as a result of replacement of Participant Institution PCP by Participant Institution Kaustik in the project.
3.2.	4	6	Suspension of works in 11th quarter
3.3.	8	8	Has postponed till the 12th quarter as a result of replacement of Participant Institution PCP by Participant Institution Kaustik in the project.
3.4.	8	8	Has postponed till the 12th quarter as a result of replacement of Participant Institution PCP by Participant Institution Kaustik in the project.
3.5.	9	11	Has postponed till the 12th quarter as a result of replacement of Participant Institution PCP by Participant Institution Kaustik in the project.
3.6.	11	12	
4.1.	1	2	Completed
4.2.	2	10	Completed
4.3.	3	11	Completed
4.4.	4	8	Completed
4.5.	4	9	Completed/Chemical and analytical works have been conducted with biota samples taken from the wastewater storage pond Balkyldak.
4.6.	10	12	Implementing/Estimation of mercury transport on food chains is being conducted.
5.1.	1	12	Suspension of works in 11th quarter
5.2.	1	12	Implementing /The presentations have been done at three international conferences.

1.2 Tasks of the work plan

Task 2: Assessment of possibility for mercury-polluted groundwater flow to change its direction; study of interaction of contaminated groundwater with bearing strata and underlying aquifers: Subtask 2.5: To assess the risk posed by mercury pollution for the network of operating boreholes in Pavlodarskoye village and river Irtysh floodplain.

- **State / Situation at the beginning of the current quarter**

On the standardized computer model the prognosis of the plum of groundwater mercury contamination spread for 30 years (2007 – 2037). At that the anti-filtration barrier so called cut-off wall round the derelict building 31 and 6th wastewater pumping station has been delineated while solving the prognosis task. The hydro-geological conditions as of 2007 were assumed not to be changed till the end of 2037.

- **Fulfilled work**

Coincidence of the results of groundwater post-demercurization monitoring (2005-2007) with the prognosis of the plum of groundwater mercury contamination spread for 30 years has been estimated. Spread of groundwater mercury contamination to the west reaching the boreholes 73-02 and 79-02 is shown to result from both continuation of the plume of contamination movement in the north-north-west direction and widening in its middle part in accordance with the prognosis. Such direction of the contaminated groundwater movement poses no threat of mercury pollution to both the Irtysh River and water-supply wells of Pavlodarskoye village.

At the same time comparison of the prognosis and factual data as well as their analysis has shown that at present there is no predicted shrinking of the area of the contamination spread as a result of construction of the anti-filtration barrier, so called cut-off wall at the industrial site of the former chlorine production. Decrease in mercury concentration in the boreholes P-8, 86-02 and B-13 is supposed to result from flanking intrusion of non contaminated water into the plum of contamination due to leak from the plant water-supply network.

- **Results by the end of the current quarter**

There is no any threat of mercury pollution to both the Irtysh River and water-supply wells of Pavlodarskoye village in the nearest 30 years. At the same time it is impossible to estimate effectiveness of containment of the main source of mercury contamination at the place of the demolished workshop No.31 because of ingress of soluble mercury compounds to the groundwater from the mercury contaminated topsoil around the industrial site of chlorine production.

- **Personnel Commitments**

Name	Category	Work days
IHH		
Panichkin Vladimir Yurievich	2	40
Miroshnichenko Oxana Leonidovna	2	40
Trushel' Lyudmila Yurievna	2	16
Zakharova Nonna Maximovna	2	14
AIPET		
Kuzmenko Larissa Vitalievna	1	23

Task 4: Assessment of possibility to contain the risk posed by mercury pollution of lake Balkyldak including the fish within it:
Subtask 4.5: To conduct chemical analysis (including the determination of total mercury content) and morphological studies of the taken samples of biota.

- **State / Situation at the beginning of the current quarter**

The data obtained on total mercury content in the bottom sediments samples have been recorded to "Summary Table 08.2007" and on there basis a vector map of the wastewater storage pond Balkyldak bottom sediments mercury pollution has been produced. The data obtained on mercury content in biota samples (including fish ones) are being recorded to "Summary Table 09.2007" and "Summary Table 10.2007".

- **Fulfilled work**

Chemical and analytical works have been conducted on total mercury content determination in biota samples taken from the wastewater storage pond Balkyldak.

- **Results by the end of the current quarter**

The data obtained on total mercury content in the biota samples (including fish ones) have been recorded to "Summary Table 09.2007" and "Summary Table 10.2007"

- **Personnel Commitments**

Name	Category	Work days
PSU		
Malkov Igor Viktorovich	1	11
Kuzmin Valery Sergeevich	1	25
Pastukh Viktor Petrovich	1	25
Bazarbekov Kairbai Urazambekovich	2	6
Kalieva Aida Akhmetbekovna	2	28
AIPET		
Uskov Grigoriy Aleksandrovich	2	55
Zyryanova Natalya Aleksandrovna	2	55
Stepanov Vladimir Aleksandrovich	3	27
BMP		
Smirnova Svetlana Yurievna	1	19
Prikhodko Tatyana Vladimirovna	1	16
Kolysheva Olga Ivanovna	1	11
Kirplyuk Eduard Valentinovich	1	12
Starodubova Valentina Fedorovna	1	14
Zhulikova Xeniya Sergeevna	2	11
Mukanov Kassym Kassenovich	2	11
Abeldenov Sailau Kassenovich	2	11
Balpanov Darkhan Serikovich	2	9
Volkov Oleg Efimovich	2	19

Task 4: Assessment of possibility to contain the risk posed by mercury pollution of lake Balkyldak including the fish within it:
Subtask 4.6: To identify the pathways of Hg bioaccumulation and to develop the possible solutions to break these pathways.

- **State / Situation at the beginning of the current quarter**

The data have been obtained on total mercury content in biota samples (including fish ones).

- **Fulfilled work**

Analysis of fish growth rate depending on fish's age and mercury content in them has been carried out. Analysis of dependence of morphological characteristics of the fish on mercury content in them has been conducted.

- **Results by the end of the current quarter**

Analysis of possible food chains and mercury accumulation there has been carried out.

- **Personnel Commitments**

Name	Category	Work days
Caustic		
Akhmetov Arthur Darazhatovich	1	24
Karimov Sharapat Sattarovich	1	40
Merenkova Lyudmila Borisovna	1	30
Sedlekaya Natalia Ivanovna	1	20
Kosyashnikova Ol'ga Mikhailovna	1	20
Tskhay Aleksandra Ivanovna	1	30
Epifantseva Tat'yana Mikhailovna	1	29
Solov'eva Nadezhda Vassilievna	1	28
Kalinkina Yelena Aleksandrovna	1	20
Putikova Lyudmila Yurievna	1	20
Shelkoplyas Lidiya Vassilievna	1	20
Zhumabekova Matsa Toleubekovna	1	20

Task 5: To draw up and discuss with local stakeholders the recommendations for the 2nd stage of demercurization and other remediation activities in the area of the former PO "Khimprom" (Northern industrial area of Pavlodar), including the recommendation for abolishment or further safe use of the wastewater storage pond – lake Balkyldak:
Subtask 5.2: To hold the workshops, press-conferences and presentation in order to discuss the interim results.

- **State / Situation at the beginning of the current quarter**

Presentations and abstracts were prepared for two international conferences.

- **Fulfilled work**

Following presentation have been done at three international conferences:
1. V.Yu. Panichkin, O.L. Miroshnichenko, M.A.Ilyushchenko, T.W.Tanton, P.M.Randall.

"Groundwater modeling of mercury pollution at a former mercury cell chlor alkali facility in Pavlodar City, Kazakhstan. The Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, (May 19-22, 2008) Monterey , CA, USA

2. M. Ilyushchenko, R. Kamberov, L.Yakovleva, T. Tanton , S. Ullrich , P. Randall, Monitoring the Effectiveness of Remedial Measures to Contain the Primary Sources of Mercury Pollution on the Site of a Former Chlor-Alkali Plant in Kazakhstan. The Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, (May 19-22, 2008) Monterey, CA, USA

3. M.A.Ilyushchenko. "Overview of Environmental Remediation Needs in the Republic of Kazakhstan". The 11th International Chemical Weapons Demilitarisation Conference, CWD 2008 (May 18-22, 2008) Interlaken City, Switzerland.

4. M.A.Ilyushchenko, P.M.Randall, T.W.Tanton, R.I.Kamberov, L.V.Yakovleva. "Demercurization and Post-Demercurization Monitoring in the Area of an Industrial Site of a Derelict Chlor-Alkali Facility in Pavlodar City, Northern Kazakhstan". The 10-th International UFZ-Deltares/TNO Conference on Soil-Water Systems, ConSoil 2008 (June 3-6, 2008) Milano, Italy.

- **Results by the end of the current quarter**

The results obtained on ISTC K-1240p project have been presented at three international conferences

- **Personnel Commitments**

Name	Category	Work days
AIPET		
Ilyushchenko Mikhail Alexeevich	1	10
Yakovleva Lyudmila Vassilievna	2	10

Task 0.: Project Management

- **Fulfilled work**

The 11th quarterly report has been prepared.

- **Personnel Commitments**

Name	Category	Work days
AIPET		
Ilyushchenko Mikhail Alexeevich	1	45
Yakovleva Lyudmila Vassilievna	2	45
Kamberov Rustam Irkenovich	2	55
Ibraeva Alma Abylkasymovna	3	15

2. Summary of Personnel Commitments

	Number of persons	Total days	Total grants (US$)
Category I	22	512	11845
Category II	15	425	12492
Category III	2	42	705
Category IV			
Total:	39	979	25042

2.1. Change in the project personnel

no

3. Preparation of reports and publications

1. The Report for Quarter XI has been prepared

2. M.A.Ilyushchenko, P.M.Randall, T.W.Tanton, R.I.Kamberov, L.V.Yakovleva. "Demercurization and Post-Demercurization Monitoring in the Area of an Industrial Site of a Derelict Chlor-Alkali Facility in Pavlodar City, Northern Kazakhstan". The 10-th International UFZ-Deltares/TNO Conference on Soil-Water Systems, ConSoil 2008 (June 3-6, 2008) Milano, Italy

4. Significant Travel and Meetings

4.1. Travel and meetings inside CIS

1. no

4.2. Travel and meetings outside CIS

1. M.A.Ilyushchenko, L.V. Yakovleva, A.D. Akhmetov. 16-24 May 2008, Interlaken, Swetzerland. Participation in 11th International Chemical Weapons Demilitarisation Conference, CWD 2008 (not from the budget of ISTC K-1240p project).

2. M.A.Ilyushchenko, L.V. Yakovleva. 2-8 June 2008. Milan, Italy. Participation in 10-th International UFZ-Deltares/TNO Conference on Soil-Water Systems, ConSoil 2008 (not from the budget of ISTC K-1240p project).

5. Cooperation with foreign collaborators

no

6. Procurement

Number in accordance with Work Plan	Name	Status
	no	

7. Questions, suggestions

(Including plans for the next quarter(s), if initial Work Plan has been changed significantly).