The environmental and sanitary culture of Akmolinsk city in 1958

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Abstract. The article draws attention to the relevant and poorly studied topic of ecological and sanitary condition of Akmolinsk city in 1958. Analysis of the documents shows that the city began to change in the environmental and sanitary condition under the influence of socio-economic modernization processes. The authors drew attention to the sanitary condition of the city as a set of criteria characterizing the practices of water supply and waste disposal, pollution of urban industrial enterprises, educational organizations and utilities. The authors concluded that Akmolinsk was characterized by problems of contamination of the urban territory and state enterprises, which had a significant impact on the environmental and sanitary culture of the city. The authors note the efforts of city authorities and health services to educate the population about the environment and to address issues related to creating a clean urban environment.

1 Introduction

An environmental and sanitary culture of the population is one of the main components of the process of human life activity. As an understudied topic, it has become particularly important in recent years. Compliance with environmental and sanitary norms, the general state of cities of Kazakhstan, the role and participation of residents in maintaining an environmental culture play an important role in people's daily lives.

In the second half of the twentieth century, the urban infrastructure of northern Kazakhstan underwent significant changes due to socio-economic and demographic processes. During these years the small town Akmolinsk became a center for the development of virgin and fallow lands. The rapid urbanization and overcrowding of Akmolinsk has contributed to pollution, the deterioration of the sanitary and environmental degradation. Akmolinsk has become the scene of epidemic and other diseases. The city authorities were responsible for public amenities and environmental safety, and were also called upon to supervise sanitation services [1–11].

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2 Materials and methods

The authors used a set of interdisciplinary historical-medical methods, which together enabled to meet objectives and achieve scientific goal. The authors were guided by the principles of objectivity and scientific accuracy, the verification of facts and documents, which involve a critical analysis of historical events and statistical material. While studying the material, the authors were guided by the principles of applicability, systematicity and reliability.

3 Discussion of the results

3.1 General problems of the environmental and sanitary service in Akmolinsk

There were 376 facilities under sanitary supervision of the city sanitary and epidemiological station of Akmolinsk in 1958 [12]. Sanitary supervision of the city sanitary station was carried out by three profiles: communal sanitation, food sanitation and school (pre-school) sanitation.

Industrial surveillance was not carried out due to a lack of medical staff. Sanitary inspections were carried out according to a schedule and were carried out only by paramedics under the direct supervision of the chief doctor of the city sanitary and epidemiological station. In its reports the city health department drew attention to the understaffing of the sanitary and epidemiological station of the city in 1958. For example, there were three doctors on the staff out of the 12 on the 1959 list. The city station did not have an industrial laboratory. The pharmacy was not supplying the city station with the necessary chemicals for which applications have been submitted in the previous 3 years. Because of this, there were no tests for vitamins, heavy metals in foodstuffs, full water analyses, etc.

Low water consumption by the urban population and insufficient bathing capacity was reflected in the sanitary culture of the city. A parasitic skin disease (pediculosis) has been detected among the population in schools [13].

For the comprehensive control of pediculosis, the sanitary and epidemiological service needed a disinfection station. As far back as 1956 a plot of land was allocated for its construction, but the regional sanitary and epidemiological station was not involved in its construction. At the end of 1958, union disinfection department merged with the city sanitary-epidemiological station, which greatly improved the anti-epidemic orientation of the city sanitary-epidemiological station.

3.2 Communal sanitation

Communal supervision was carried out by two nurses. The water supply of the city was provided by artesian wells, which had a local water distribution network. The city did not have a central water supply at that time. All the wells were fed from an aquifer ridge, which was a thick layer of fractured limestone covered from the surface by a watertight layer of clayey rock. The water-bearing ridge was located on 5 kilometers from the north-eastern part of the city, as well as in a north-eastern to south-western direction and ran through the central part of the city. In some places, the surface watertight layer has thinned and limestone has come out. The possibility of contamination of the water layer was not excluded, as the aquifer opened up in residential areas of the city. The protection zones of water sources were observed in the newly drilled wells. All people working on the water supply were subjected to compulsory medical check-ups. There were 16 artesian wells in

the city, with a combined capacity of 214.5 m³ per hour. There were no chlorinators in the water supply network. The chemical analysis of the water was constant and had a coli titer of 333. There was a departmental local sewerage system of the Kazakh Railway branch. Sewage water after treatment (two-chamber septic tank) was discharged to a filtration field at a distance of 300 m from the last residential building in the city [14].

A spring flood of the Ishim River washed away all the filth, a meat-packing plant located downstream. The city sanitary station repeatedly raised the issue with the city council of designating a new site for the sewage discharge, but the issue was not resolved because of lack of funds in 1958.

The city cleaning was carried out by public utility vehicles of the city, which had 18 lorries and 2 sewage trucks, 6 supply trucks and 1 refuse collection vehicle. The cleaning office did not have an equipped place to wash and decontaminate vehicles. Transport of the cleaning office did not provide timely requests and mainly served closed institutions. The issues of increasing the capacity of the cleaning office were not resolved, which had a direct impact on the sanitary state of the city. Only communal households were regularly cleaned. In other cases, the removal of sewage was done on an ad hoc basis mostly during the cleaning month in the city. At this time, the city council decided to mobilize the transport of enterprises and institutions. Due to the lack of access roads to the designated plough fields, unauthorized landfills formed around the city. Although they were ploughed over with the onset of warm days, this had a direct impact on the incidence of infectious diseases in these districts.

A great deal of attention was paid to workers' hostels in 1958. The city sanitary and epidemiological station was supervised by 16 dormitories and 80 visiting courtyards. All dormitories had pit latrines and rubbish bins in 1958. Every ten days all the residents bathed in the bathhouse and their linen and bedding was changed.

There were two baths with a total capacity of 150 people per hour in the city. The bathhouses were dirty due to the heavy workload and there was a sanitary passageway with a camera (drying room) for 10 sets [15].

The communal households lacked 240 cesspits, 73 rubbish bins and the latrines were in a dilapidated state. For several years, measures to remedy these sanitary breaches have been included in the planned measures of the city, but because of lack of funds for building materials, they have not been implemented.

3.3 School (pre-school) sanitation

There were 14 city schools with 7,489 students in Akmolinsk. There are 6 secondary schools: 1, 2, 3, 4, 6, 8; initial medium: 5, 7, 10, 11, 15 and initial 9, 13, 14. Of 14 schools 1, 2, 4, 6, 8 were housed in purpose-built buildings, the rest in adapted premises.

The new model school no. 4 with a capacity of 280 pupils was opened in 1958. All schools were overloaded and classes were mostly held in three shifts in the upper grades. Overcrowding of children in one place led to an increase in infectious and other diseases [16]. See Table 1.

Table 1. Infectious diseases in children's institutions.

Name of institutions	Number of cases			
	Measles	**Whooping cough**	**Diphtheria**	**Scarlet fever**
Crèche	167	4	2	22
Kindergartens	171	6	4	31
Schools	183	6	10	72
Children's home	–	–	–	–
Total	521	16	16	125

The situation was similarly difficult with regard to the incidence of gastrointestinal infections. See Table 2.

Table 2. Incidence of gastrointestinal infections in children's institutions.

Name of institutions	Acute dysentery	Toxic dyspepsia	Simple dyspepsia	Chronic dysentery
Nursery	59	2	32	8
Crèche	3	–	–	–
Kindergartens	11	–	–	–
Schools	8	2	9	1
Children's home	81	4	41	9
Total	81	4	41	9

The marking of the desks has not been carried out in schools. After the intervention of the Health Inspectorate the local industry began to produce desks of all sizes in the 1950s. Artificial lighting and natural lighting were insufficient in all schools housed in adapted buildings. The Sanitary and Epidemiological Station did not carry out full health activities among schoolchildren before 1958, as in-depth examinations in schools were carried out poorly, mainly by middle-level medical workers. Knowing this, the city and provincial health departments had no influence on the children's joint hospital.

The entire school contingent was fully covered by preventive vaccinations and the teaching and technical staff of the schools were subjected to medical examinations. Supervision by the city sanitary and epidemiological station in schools was carried out by paramedics due to a lack of medical staff. It should be noted that there are frequent cases of head lice among students in urban schools. Among other things, the problem of pediculosis has been caused by a shortage of disinfectants [17]. See Table 3.

Table 3. Flow of disinfectants by Akmola City Sanitary and Epidemiological Station for 1958.

Name of desinfecting products	Measurement unit	Balance for 1958	Parish	Consumption	Balance for 1959
Chlorine lime	kg	525	2000.0	525.0	2000.0
Dust DDT	kg	700.0	–	685.0	15.0
Dust hexochloran	kg	285.0	–	225.0	60.0
Chloramine	kg	–	96.0	96.0	–
DDT soap	piece	–	120.0	120.0	–
Soap K	kg	–	15.0	15.0	–

The issue was so acute that it was heard more than once in the city council with all the school heads. The Sanitary and Epidemiological Service together with the children's hospital carried out a set of measures to control head lice. Children with head lice were suspended from school and sanitized in a bathhouse. In the case of chronic head lice, the flats were disinfected. The health workers of the city attended parents' meetings providing health education. The following specialized secondary schools were supervised by the city sanitary and epidemiological station: mechanical engineering, construction, cooperative, zoo veterinary technical schools, a medical school, a teacher training college and a music school. Sanitary supervision was limited to monitoring and implementation of toilet sanitation in these educational institutions [18].

The music school, housed in the basement, was relocated to new sanitary premises after closure, as suggested by the health authorities.

The sanitary and epidemiological station of the city supervises eight kindergartens and four nurseries, a children's home and a women's boarding school. Kindergartens No. 4, 7, 8 were housed in purpose-built premises, others No. 1, 2, 3, 5, 9 in adapted premises. Of the four nurseries, only one was housed in a purpose-built room, the rest in adapted ones. This situation was one of the reasons for the high incidence of disease among children. See Table 4.

Table 4. Comparative data on infectious child morbidity for 1958–1960 for Akmolinsk.

Name of the disease	Number of cases			
	1958 y.	Per 100 children	1960 y.	Per 100 children
Acute dysentery	178	0.9	290	1.2
Toxic dyspepsia	59	3.2	41	0.1
Simple dyspepsia	445	2.4	435	1.8
Epidemic hepatitis	130	0.6	134	0.5
Measles	858	4.2	1581	6.7
Diphtheria	117	0.5	49	0.2
Whooping cough	501	2.5	154	0.6
Scarlet fever	165	0.8	299	1.2

The overcrowding and unfitness of kindergartens and nurseries had a direct impact on the epidemic. Closed institutions for children did not have proper medical supervision. The daily ration of calories and vitamins was not fully reflected in the menus in kindergartens and nursery schools. In 1958 sanitary and epidemiological station of the city did 14 tests for daily caloric intake and vitamin C determinations in food. In cases in which the daily ration was found to be inadequate, claims were made against the administration of the children's institutions. There have been no repeated cases of inadequate products. The poor work of the sanitary and epidemiological services of the city led to a high incidence of disease among children in crèches [19]. See Table 5.

Table 5. Illnesses of children in nursery schools.

Children's nurseries	Number of cases								
	measles	scarlet fever	diphtheria	whooping cough	dysentery	Dysentery Chronic	Simple dyspepsia	Toxic dyspepsia	Focal pneumonia
№ 1	15	–	–	–	5	1	8	–	–
№ 2	10	5	1	–	6	–	5	–	–
№ 3	45	–	–	1	15	4	4	1	3
№ 4	23	1	–	–	6	1	4	–	1
№ 5	7	7	–	–	2	–	7	1	–
№ 6	33	4	–	–	12	2	3	–	6
№ 7	33	5	–	3	13	–	1	–	–
Total	157	22	1	4	59	8	32	2	10

Bacteriological washing of equipment and supplies was carried out in all closed children's institutions, as well as monitoring of the personal hygiene of workers. The results of the bacteriological tests were worked out with the service staff.

3.4 City Dairy plant

As the population in the city grew, the dairy plant was expanded in 1958. There were running water and a local sewerage system. Sewage water was discharged into a 50 m^3 pit. There was a sewage truck for the removal of sewage. Over 1000 m^3 of water was discharged per day during the summer, the new dishwasher installed discharging over 50 m^3 of water [20].

Sewage water often flooded the adjacent street and factory grounds. In April, the factory was shut down for failing to meet sanitation requirements, after which the matter was debated in the city council. The factory director received a severe reprimand. Products were often of poor quality during the summer. Not all shops had refrigeration and freezers. In all cases where inferior products were found, the latter were returned to the factory for recycling. The main suppliers of milk were state and collective farms located 70 km from the city. Milk was transported by tanker truck. The milk came to the factory dirty and over-acidic. The issue of supplying closed institutions for children with milk from nearby collective farms had not been resolved until 1958.

3.5 Meat processing plant

It was a slaughterhouse which had three shops: a sausage shop, an oil shop and a pie shop. The meat-packing plant did not have a refrigerator. The sanitary condition of the slaughterhouse was difficult to maintain. There was a local water supply and a rudimentary local sewage system.

The bakery was located in the adapted premises of a former garage. The capacity of the bakery was 25 tonnes of baked goods per day. There were running water and sewerage, a shower room where sanitary conditions were maintained and products of good quality were produced.

3.6 Artel Red Pischevik

There were three shops: a pasta shop, a gingerbread shop and a fruit water shop. There was a water supply, a sewage system and sanitary conditions were maintained.

3.7 Collective Farmers' Market

The city services and sanitary inspectors paid particular attention to various types of catering establishments, collective farmers' markets, shops, etc. The collective farm market had three pavilions (closed) for the sale of milk, meat and flour, and covered stalls for the sale of vegetables. There was a water supply in the market area. Food insanitation caused an upsurge in a variety of infectious diseases. The trend has been to sell expired goods at underpriced prices at the collective farm market. The existing small retail outlets were in an unsanitary condition (the kiosks were old and dilapidated) [14].

3.8 Industrial sanitation

There was no supervision due to a lack of medical staff, The assistant medical officer only paid attention to toilet sanitation when visiting industrial plants. There were two laboratories at the sanitary-epidemiological station: a bacteriological laboratory and a chemical laboratory.

The laboratories were staffed. There were 2 bacteriologists, 2 lab technicians, a nurse and a watchman at the bacteriology department and there were 2 lab technicians and a nurse at the chemistry department. Both laboratories lacked sufficient equipment. The bacteriological laboratory was run on paraffin thermostats. The chemistry laboratory was on the state budget [13].

The laboratory needed measuring utensils, evaporation cups and crucibles. Due to a lack of the necessary chemicals, no tests were done for vitamins, heavy metals, water tests, etc.

4 Conclusion

Thus, the processes taking place in Akmolinsk at the end of the 1950s created a complex ecological and sanitary situation in the city. The city authorities and the sanitation service have made some efforts to improve the sanitary situation in the urban environment through preventive and other measures. In many ways, the sanitation service made the city area safer for the citizens. In the framework of improving sanitary conditions and reducing the threat of intestinal and infectious diseases among the local and visiting population, activities have been organized to detect various kinds of irregularities. However, a permanent influx of people, overcrowding, a shortage of medical personnel and other unresolved problems did not allow for a rapid resolution of the city's emerging environmental and health problems.

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