

# Introduction to Chemical Armament in the War Against People (the Russian's tragic experience)

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## VOLUME I. A LONG WAY TO CHEMICAL WAR

### Chapter 1. Chemistry As The Weapon Of Revolutionary Army

*The Soviet enthusiasts of chemical war avoided light of a stage. However today there are all opportunities to try to restore real history of preparation of the Soviet country to offensive chemical war. It is a question of an opportunity of wide attraction of available documents. Concerning history of the Soviet chemical arms between two world wars now it is possible to use thousand the archival documents concerning all parties of a problem. It is a question of judgment of military-chemical art as those<sup>59-73</sup>, and about creation of complete system of a chemical attack<sup>74-119</sup>, about formation and development of a military-chemical infrastructure (military-chemical service<sup>120-137</sup>, chemical troops<sup>138-144</sup>, laboratories, institutes and ranges<sup>145-179</sup>), about creation and test of various kinds chemical warfare agents<sup>180-210</sup> and in general the chemical weapon (a land-forces<sup>211-218</sup>, artillery<sup>219-225</sup>, aircraft<sup>226-271</sup>, the general requirements to the chemical weapon of<sup>272-286</sup> and other generalizing materials<sup>287-293</sup>), about training to details of a chemical attack and in general conducting offensive chemical war<sup>294-366</sup>, about creation and functioning of the industry of a chemical attack<sup>367-456</sup>, about accumulation<sup>457-482</sup> and use of tons of the chemical weapon<sup>483-514</sup>, about medical<sup>515-607</sup> and ecological<sup>608-666</sup> aspects of a problem of involving in a turn of set chemical warfare agents. There are documents on details of the Soviet military-chemical friendship with the different countries<sup>667-682</sup> and about intelligence<sup>683-696</sup> and counterintelligence<sup>697-706</sup> activities of the Soviet authority by preparation for chemical war.*

#### 1.1. FIRST WORLD WAR

Visionary Zhjul Vern has died in 1905, for 10 years prior to the beginning of a chemical warfare, and not having predicted it. Very much that idea was incredible. Meanwhile weeding battles of the First World War 1914-1918 became serious range on application of a chemical weapon as means of settlement of military-political disputes. On those fields the chemical warfare has been realized for the first time in serious scales<sup>7-10</sup>.

For historians non-persistent chemical warfare agent in the World War I events on the 22th of April 1915 near to Ypres (Belgium) are considered as the first effective fighting application. In that put army of Germany used as means of an attack 168 t the **chlorine** which has been let out from approximately 6 thousand gas cylinders on a site in the extent of 6-7 km. Meteorological conditions and features of a relief favoured to plans attacking: the wind blew aside positions of France, and lowlands and ravines created pockets where the cloud of gas collected.

Soon on change to pure chlorine send its mixtures with others chemical warfare agents. Attack such has happened on the 31th of May 1915 when the German army has applied as non-persistent choking gas 264 tonnes mixture of chlorine with **phosgene**. The chemical weapon that day has been used against armies of Russia, whose positions settled down near Warsaw. Has suffered nearby 9000 person (above 1000 - with a fatal outcome). In December of that year the German army has applied phosgene in winter conditions which promoted "efficiency" of fighting use of this highly flying chemical warfare agent.

The priority in application **diphosgene** - non-persistent choking gas - belongs to Germany. It happens in June 1916 near Verdun. That fact, that diphosgene less flying in comparison with phosgene, promoted "efficiency" of chemical attack, despite of conditions of summer. The next basic step in chemical war belonged to France, whose army for the first time has applied on the 1th of July 1916 **hydrogen cyanide**. Carry new non-persistent generally toxic agent (it was applied in artillery chemical shells in a mix with arsenic trichloride; it referred to as a mixture vincennite) from a conditions of life when a target were only separate individuals, on fields of battles has given serious "effect"<sup>6</sup>.

The Army of Russia has entered offensive chemical warfare on last among its leaders. In August 1916 it has applied to the fighting purposes **chloropicrin** - new non-persistent agent suffocating and irritating action. In July 1917 when the Russian army had more important problems, than chemical warfare, the next basic steps were made by Germany. On the 10th of July 1917 the German army has carried out

artillery bombardment in which has been used **diphenylchloroarsine** - chemical warfare agent irritating action.

The present turn in the organization of chemical warfare has occurred, however, at night from 12 to 13 of July 1917 when the first fighting application by German armies of yperite (**mustard gas**) took place. This persistent vesicant agent has been used in fights near Ypres. In that chemical attack it has been let out 50 thousand artillery chemical shells, contained 125 tonnes mustard gas.

Let's bring some chemical results. It is considered, that from both belligerent then it has been applied about 125 thousand tonnes various chemical warfare agents. It has been used not less than 45 chemical warfare agents, including 4 vesicant agents, 14 - choking gases and not less than 27 - irritating agents. In total in that war derivative arsenic has been used over 20 derivative chlorines and a lot of. Losses from the chemical weapon have made about 1,3 million person, including about 100 thousand person - with the fatal end<sup>7</sup>. The most part of these mass losses is necessary for the period since summer 1917 till the autumn 1918 when the army of Russia did not participate in chemical warfare any more, - it had other problems.

## **1.2. THE CHEMICAL HERITAGE OF THE RUSSIAN EMPIRE**

Events which have been connected with acceptance chemical warfare agents on arms of army of pre-revolutionary Russia and with preparation for their application, were reflection of events on fronts of the World War I. We shall designate some marks.

The unusual death of set the soldier of Russian army from scale German chemical (phosgene) attack in area of Warsaw, happened on the 31th of May 1915, has made the big impression upon a management of Russian Army. Already on the 1th of July 1915 artillery department has ordered to Company of mechanical products (Ivanovo-Voznesensk) manufacture of 600 poods of liquid phosgene, as has been executed by the 16th of July 1916. To an idea, that with chemical threat it is impossible to manage only by own strength, gunners send not at once. Counting of work of the first special chemical body of army of Russia - the Commissions on research and preparation choking gases and incendiary means - has begun on the 23th of December 1915. The created body has soon enough managed to solve the first problem of chemical warfare - mobilization of the private industry on maintenance of paramount needs of army in the chemical weapon. To one of results of activity of the Commission became attention to manufacture of chlorine at factories in Lisichansk and Slavyansk. As a result of it within the World War I in warehouses of the Russian army in a front strip it was from time to time stored in one place up to 12 thousand greater gas cylinders with chlorine. And chlorine was actively applied in the offensive purposes.

Before the end of war in Russia it has been sharply expanded also production of phosgene at plants of Moscow (plant "Phosgene" № 1, Triumphal square, the head - professor E.I. Spitalskij, capacity - 120 poods per day; plant "Phosgene" № 3, highway of Enthusiasts) and Tambov (plant "Phosgene" № 2). Plant on highway of Enthusiasts produced vincennite (capacity - 120 poods per day), and also cyanogen chloride (1 pood per day). On the same plant there was also the filling of liquid chemical warfare agents into hand grenades (capacity - 4-5 thousand pieces per day). On many chemical plants it has been adjusted production of chloropicrin. It was carried out also production of salts of hydrogen cyanide (natrium cyanide and potassium cyanide). All this has allowed army to create a stock hydrogen cyanide (for equipment artillery chemical shells), and also chloropicrin<sup>367</sup>.

Up to mustard gas in that war in army of Russia business is not has reached.

The problem of application of the new weapon have demanded an organizational reinforcement. And on the 7th of April 1916 in the Russian army the Chemical committee as body of a management military-chemical art has been founded. Its basis was made by gunners. Has headed committee great Russian scientific academician-chemist V.N. Ipatieff who carried out communication of army with a science and the industry<sup>59</sup>. It is possible to regret only, that as a result of clumsy actions of a management of Soviet Union V.N. Ipatieff has been squeezed out in 1927 from the country and for long years it is forgotten in the homeland. All most powerful talent V.N. Ipatieff has turned on development of the chemical industry of the USA where it began to live from 1930.

The Chemical committee operated actively. In particular, its gas department has been borrowed by research new toxic chemicals, test artillery chemical shells, and also laying-in for army chemical warfare agents and shells. Those months in army for carrying out gas-cylinder attacks it has been generated 14 chemical company. In everyone company it was necessary to have 3000 gas cylinders with toxic gas (all about 5250 poods of gas)<sup>120</sup>. Saved up in warehouses artillery chemical shells were dated February-May 1916.

Since summer 1917 when in the West especially serious chemical fights were developed, the army of Russia has distracted on absolutely other business. Nevertheless the basic reasons, concerned maintenance of fighting operations with use of the chemical weapon, have been formulated in Chief Artillery Directorate in October 1917 - in days when bolsheviks prepared for seizure of power in Petrograd. Meaning

"a huge role of chemical shells in wars", in Chief Artillery Directorate the need of artillery of army of Russia in chemical shells has been established: 60 shells on everyone easy and mountain gun calibre of 76 mm and on everyone of 122 mm a howitzer, and also 40 shells on everyone of 152 mm a howitzer. In translation into the complete set which is available at everyone artillery battery, it made on one 76 mm gun about 35%, for 122 mm - about 50% and for 152 mm - about 60% (on the average on everyone gun without dependence from calibre - about 50%). Besides it, every month it was planned to provide laying-in artillery chemical shells in half against specified quantity<sup>120</sup>.

### **1.3. AFTER BOLSHEVIST COUP D'ETAT**

After critical 1917 has come following. And within the limits of logic of political strike, since 1918, the chemical weapon of Russia has found other purposes. From the decision of external military problems it has been turned on internal - the chemical weapon has passed in again created Red Army where has continued the fighting service. To military-chemical problems, including to inventory of the inherited stocks of the chemical weapon, the army has addressed at once after the organization in the beginning 1918. However, by virtue of military circumstances, activity of this service has begun not under the expected script as position on fronts was desperate.

Those days it became clear, that again created Red Army cannot manage military-chemical body. And on the 16th of May 1918 the National commissariat on military affairs has approved the decision on disbandment of two bodies of military-chemical service of old army of Russia - Chemical committee and Commissions on research and preparation choking gases and incendiary means. Instead of them one body - IX (chemical) department of Artillery committee Chief Artillery Directorate new, Red Army has been formed<sup>122</sup>. However, at preservation in army only an artillery part military-chemical art the industrial party of work on chemical arms has not been forgotten. This activity was carried out within the limits of new economic body - Supreme council national economy where the representatives who have remained on the places old Chemical committee at the civil enterprises have continued the activity. And at scientific-technical department of Supreme council national economy the special Commission on gas and anti-gas art subsequently has been created. Tasks a chemical department included, among other, supervision over safe preservation of stocks artillery chemical shells and toxic chemicals, a choice of samples of means of chemical warfare and their preparation, preparation for the industry of mobilization plans with the purpose of supply of army means of conducting chemical war<sup>122</sup>. As to managements of again formed controls of military-chemical affairs innovations do not happen. Though the army was new, chemical art for it was newer. Therefore basic changes in the staff of the formed service has not occurred, and by the head of a chemical department of Artillery committee has been appointed professor A.A. Dzerzhkovich - the colonel of the Russian army and the professional engineer-gunner.

**So day the 16th of May 1918 became birthday of military-chemical service and Chemical Troops of the Red Army.** And to be engaged this service has begun first of all a choice and preparation of means of conducting chemical warfare, and not just the account and storage of the military-chemical property which has remained from old army as propagandists usually write<sup>32</sup>.

Among the first affairs we shall specify a report taken place on the 10th of August 1918 head Chief Artillery Directorate of the Red Army about a state of affairs in the field of gas struggle<sup>120</sup>. It has been connected with the decision people's commissar for war those days E.M.Skljanskii about restoration and development of activity of technical artillery institutions. Among other to the young commissar, which else began the six-years way of monitoring military-chemical art, data on a real state of affairs have been reported. Was considered, that for that moment on artillery depots it was stored nearly 270 thousand chemical shells in Moscow and 125 thousand in Tambov, and on branch Central depot toxic chemicals in Ochakovo (then it there were vicinities of Moscow) was available approximately 57 thousand poods chemical warfare agents in 32726 gas cylinders<sup>120</sup>. However, the chemical department of Artillery committee Chief Artillery Directorate was not limited only to inventory of an military-chemical heritage, and has started to carry out the active practical actions, concerning tests of the new chemical weapon and the organization in new army of all military-chemical service<sup>145,294,459</sup>.

In September 1918 chemical department of Artillery committee has decided to organize in area of village Kuzminki (near to Moscow) the first proving ground for carrying out of field tests of the chemical weapons - **Gas proving ground** of the Red Army. A task - carrying out "experiments of field character with the purpose of test and studying of the poisonous and suffocating substances applied to release from gas cylinders and for filling of chemical shells". There were also other tasks - "practical acquaintance of students of instructor courses with methods of gas struggle", and also "fumigation military units". The decision of the vice-chairman of the Revolutionary military council of Republic E.M.Skljanskii from the 28th of November 1918 it has got force of the law<sup>145</sup>.

Meanwhile need in military-chemical range any more was not - on the 11th of November 1918 the German delegation has signed capitulation, and World War I ("chemical") war has ended. But in Chief

Artillery Directorate of the Red Army on the 13th of November 1918 it has been organized under order Revolutionary military council of Republic special military-chemical service which, however, down to 1920 has not started to work<sup>32</sup>. A little bit later, on the 5th of December 1918, have been opened **Moscow courses military gas-technique** - the military-chemical school of the Red Army intended a professional training for chemical warfare. And already in the end of March, 1919 courses have asked the sanction to the organization of exercises with the gas battery which should end emission chlorine from 4 gas cylinders. For the employment they have chosen Hodynskoe-field near Moscow near to the largest artillery depot. The sanction has been given with that only specification, that gas cylinders should be established not so close to powder cellars<sup>294</sup>. Those gas attacks not too long proceeded - on the 9-12th of May 1920 artillery depot has completely burned down. In January 1920 courses have been transformed in Higher military-chemical school<sup>151</sup>, and after 1924 - in Chemical advanced training courses officers. Around of them the experts specialized on preparation for offensive chemical war began to gather.

In the meantime there should be a question how in general to concern to a chemical attack and whether it is necessary to consider the chemical weapon as natural means of the armed struggle. In February 1919 chemical department Artillery committee has once again analysed distribution chemical warfare agents on the country to have more precise representation about a problem "in case of renewal of activity of factories with the purpose of supply of front". It was found out, that besides thousand gas cylinders with toxic chemical on depot in Ochakovo, they were stored in other points. In particular, in Moscow oblast gas cylinders filled with chemical warfare agents were stored at factories Bekkel, Vatreme and Rabenek (the future Shchelkovo chemical plant), and in area of middle Volga - factory at Bondiuga, factory Singele (Simbirsk province) and the Kazan phosgene factory. Then ordering storage on artillery depots the chemical munitions has begun. In table 1.1 are named artillery depots those years which have existed not for long and have been liquidated in 1920s and in which those years were stored chemical munitions. The others depots will be considered below.

**Table 1.1. Old depots of artillery chemical munitions**

Settlement	Region	Number of depot	Date	
			Formation	Liquidation
Arkhangelsk				1922
Balezino	Udmurt Republic			1920s
Vladivostok		42		1922
Georgievsk	Stavropol kray			1925
Glazov	Udmurt Republic			1920s
Dnepropetrovsk	Ukraina			1925
Ekaterinburg				1925
Ivanovo			1918	1925
Kazan-Yudino		43		1926
Kirzhach	Vladimir oblast			1926
Kirov (Viatka)			1918	1923
Kovrov	Vladimir oblast	69	1918	1928
Kostroma			1918	1925
Kupjansk	Ukraina			1925
Likhoslavl	Tver oblast		1918	1923
Morshansk	Tambov oblast		1918	1920s
Moscow-Lefortovo		47	1918	1927
Murom	Vladimir oblast			1926
Orel			1918	1922
Orsha	Belarus			1923
Sofrino	Moscow oblast		1918	1922
Stalingrad (Volgograd)		61		1928
Tambov		35	1918	1928
Tula			1918	1926
Cheljabinsk		58	1918	1927
Shilovo	Rjazan oblast		1918	1922
Shuya	Ivanovo oblast		1918	1925

On the 16th of April 1919 chemical department of Artillery committee discussed "an admissibility of storage of suffocating gases in gas cylinders on depots"<sup>459</sup>. There were also other events. As a whole in the spring-summer of 1919 it has been solved: to a chemical attack - to be. Arrival to that decision have carried out in a number of stages, by bureaucratic rules of those years<sup>458,483</sup>. And it is difficult to tell, who exactly

has given the basic push - the idea of chemical warfare was in the air.

On May, 8th, 1919 the chief of supply of the Red Army has asked at vice-chairman Revolutionary military council of Republic E.M.Skljanskii the instruction, whether "it is necessary to consider suffocating means as the fighting weapon and to apply it in Red Army" therefore as in case of the positive answer it should fill up stocks chemical warfare agents<sup>121</sup>. The additional impulse has set on the 19th of May 1919 inquiry from front Y.M. Sheideman - the inspector of artillery of the Field staff of the Red Army and the former general of army of Russia. On a question, what factories could make chemical warfare agents and with what productivity, it has received the immediate and exhaustive answer from chief Chief Artillery Directorate. In the answer it was spoken, that at factories of the chemical weapon which have been transferred in May 1918 in management Supreme council national economy, "renewal of three groups of manufactures is possible: chlorine, chloropicrin, phosgene". Daily productivity of factories at the moment of a stop production: at Simbirsk - 40 poods, at Saratov - 20, at Bondiuga - 60, Afanasiev - 100 (chloropicrin), Kochetkov - 30 (chloropicrin), Zhilevskii - 40 (chloropicrin), Uljatovskii - 15 (chloropicrin), Ralle - 50 (chloropicrin), Shustov - 100 (phosgene), Gandurin - 20, Kazan - 20. These figures have been named on memory by those who was engaged in manufacture chemical warfare agents even in the previous war<sup>367</sup>.

Concrete questions Were discussed also. On the 22th of May the chief of the Field staff of Revolutionary military council of Republic F.V.Kostjaev has informed an administrative office, that "cases of application of release of gases... Are possible... For those only sites of fronts where operations are characterized trench warfare". As to quantity chemical warfare agents it has been specified on "necessity to have them has reserved approximately 20000 poods". Undesirability of renewal of manufacture of poisonous gases in Slavyansk and Lisichansk because of a finding of these places of pre-revolutionary manufacture of chlorine in front-line area has been in passing specified<sup>121</sup>. On the 17th of June experts from "the Commissions on application of suffocating means at the front", created vice-chairman Revolutionary military council of Republic, in the document have specified, that, besides fighting start-up of poisonous gases from gas cylinders, there is other way of conducting chemical warfare - gun-fire by chemical shells. The commission ascertained actual presence in army of the chemical weapon: 28 thousand poods of gases in 16 thousand gas cylinders, and also equipped artillery chemical shells - 8911 pieces calibre 3 dm and 8249 pieces calibre 6 dm. It has been decided to not renew yet manufacture artillery chemical shells as calibre 3 dm and 6 dm should suffice an available stock of shells for a year of conducting chemical war<sup>60</sup>. And in July 1919 has been created an "Instruction for storage gas cylinders with suffocating gases in peace and in a wartime"<sup>483</sup>.

And further the supreme military authority (Revolutionary military council of Republic) has made a decision. First at the session which is taken place on the 26th of July 1919, Revolutionary military council of Republic has discussed a question "About application of suffocating gases". It was entrusted to Field staff to prepare the report<sup>61</sup>. And commission Chief Artillery Directorate "has recognized quite possible application gun-fire by chemical shells"<sup>458</sup>. Further, at the session which is taken place on the 11th of August 1919 Revolutionary military council of Republic has decided to have constantly in army for the fighting purposes 20 thousand poods chemical warfare agents (actually there were 18250 poods and new receipts from the destroyed industry it was not expected yet)<sup>61</sup>. The general need of the Red Army in artillery chemical shells was defined in quantity 40 thousand pieces for a month of conducting chemical warfare. It is necessary to emphasize, that this chemical property supposed to operate as a reserve of the Main command<sup>121</sup>.

**So the country has followed a way of active preparation for chemical warfare.**

From that memorable discussion at session Revolutionary military council of Republic<sup>61</sup> chemical weapon, alongside with other forms of the armed struggle, became an obligatory element of any strategic doctrine of the Red Army and, besides, was ready to application against any "enemies of the Soviet power" - external and internal. And in such direction activity of army developed.

We shall specify practical arts of those days.

On the 8th of September 1919 Artillery committee has considered a problem of suitability artillery chemical shells which were stored on numerous depots the Moscow and Yaroslavl military districts. Measures by definition of suitable chemical shells and a discharge unusable have been certain. Work was supposed to be executed in military laboratory Moscow artillery depot in Lefortovo<sup>458</sup>.

In May, 1920 Artillery committee has received the task to offer measures "preparatory character for possible application of means of gas struggle". That assignment has coincided with May operation of the Western front within the limits of the Soviet-Polish war under direction of M.N. Tukhachevskij. Besides other, at execution of the task quantities "suitable for the fighting purposes" chemical shells and gas cylinders with chemical warfare agents have been found out.

Preparation for chemical warfare has demanded creation of the workshop necessary for filling gas cylinders and artillery chemical shells with toxic chemicals from transport tanks. On the 26th of June 1920 Artillery committee has chosen a place of accommodation of this workshop - on Central depot chemical warfare agents in Ochakovo near Moscow. However, M.N. Tukhachevskij that time had no time for "chemistry" - war with Poles has appeared too maneuverable and not most for it successful.

Nevertheless preparatory measures proceeded.

The most important decision of that period took place on the 12th of October 1920, shortly before the beginning of final operation of Civil War. It was decision Revolutionary military council of Republic (chairman - L.D. Trotskij) by which in the Red Army the military-chemical service as the general system was established, and also affirmed "Statute about the organization military-chemical art in the Red Army"<sup>62</sup>. Now all military-chemical art has been incorporated in rather complete system, still, within the limits of artillery. The management was transferred Y.M. Sheideman. To help it should Chief chemical struggle of Republic (the name of a post of the head of military-chemical service was those).

#### **1.4. A POISON - TO ENEMIES SOVIET POWER**

The period of Civil War knows some attempts of application of the chemical weapon. We shall emphasize, that from the Soviet leaders to affairs of chemical warfare interest two - L.D. Trotskij and J.V. Stalin really showed. Other persons were in essence puppets in hands developed in due course powerful and enough impudent Soviet Military-chemical complex.

During discussions in Revolutionary military council of Republic in July-August of 1919 "about suffocating gases"<sup>61</sup> it was a question of a basic admissibility of application of the chemical weapon. And participants of discussions operated only with two systems of concepts from area of ground operations: trench and mobile warfare; the expired and present war. They basically did not use socially more focused system of concepts - "war with the external enemy" and "civil war with the citizens". Both external and internal enemies were then in one camp (are there were enemies of that group of persons which called itself Soviet power). We shall result, further, examples of how the chemical aspect of some events in the end of Civil War and after its termination looked.

As it was already mentioned, reform military-chemical art, lead in October, 1920<sup>62</sup>, has actually been aimed at "chemical maintenance" forthcoming final operations of the Civil War, which have ended with replacement of armies of general P.N. Wrangel from Crimea. We mean the organization offensive Southern front about which ordered M.V. Frunze, in Northern Tavria (on the 28th of October - the 3rd of November 1920) and Perekop-Chongar operations of this front (on the 7-17th of November 1920). The Field staff of the Red Army has lead necessary preparation. The main artillery chief of Field staff Revolutionary military council of Republic Y.M. Sheideman - the expert on a problem of application of the chemical weapon within World War I - has directed to Moscow a series of orders on preparation to "a chemical component" to operation on Southern front which outcome was difficult for predicting (anyway it was expected trench its stage in the area Perekop, favorable for application of chemical means of an attack). Orders about quantities chemical warfare agents and chemical munitions which it was necessary to direct quickly on Southern front have been given, in particular. The separate order it was offered to equip with a chemical ammunition six again formed armored trains. And chemical department of Artillery committee it was offered to formulate tactics of application of the chemical weapon. The command has been accepted Soviet Chief Artillery Directorate to execution<sup>295</sup>.

The lot requested artillery chemical shells calibre 76 mm and 152 mm it has been picked up on artillery depots in Sofrino (Moscow oblast) and Shilovo (Ryazan oblast). "Quality" of shells with phosgene and chloropicrin has been checked up during gun-fire on the Principal artillery proving ground in Petrograd. The necessary quantity of gas cylinders with chemical warfare agents has been picked up on depot Ochakovo (Moscow oblast), and they have been tested on chemical proving ground at Kuzminki (Moscow oblast). For fighting application gas cylinders with chemical warfare agents in Higher military-chemical school (Moscow) has been generated chemical company. Upon termination of preparation all this chemical armada has been sent on front<sup>295</sup>.

On the 13th of November "the chemical echelon" has proceeded through Serpukhov on the south<sup>295</sup>, however from the point of view of the big policy it any more had no value. The Red Army has not had time to use the chemical weapon because the trench stage of war has already ended on November, 12th with break of positions of white armies on Perekop, and that echelon to it has not kept up. The maneuverable stage of war developed quickly: on the 13th of November 1920 the Red Army has entered Simferopol. On the 17th of November Yalta has been borrowed, and it was last day operations of red forces against the Russian armies of white color. In general all war has come to the end more quickly, than the Red Army has had time to be prepared for its military-chemical component. By the way, "the chemical echelon" all the same has been sent to Crimea most likely not vainly. Anyway the press of the West subsequently pictured in details application by ordering Southern front M.V. Frunze of the chemical weapon, meaning days **after** capture of Crimea when there was a question on destiny of captured white officers. As to P.N. Wrangel it was not possible to avoid "chemistry" and to it. It was lost in 1928 in Bruxelles of a poisoning as it is considered, connected with "chemical special action" of Soviet Cheka.

Certainly, the country about the chemical party of that war did not know anything.

Coming back to Y.M. Sheideman, we shall note, that in the summer of 1921 it has personally carried out necessary actions on maintenance of effective application of chemical weapon by M.N.

Tukhachevskij at suppression of the risen peasants of the Tambov province<sup>41,53,708</sup>. M.N. Tukhachevskij has been appointed by the commander "the Tambov army on struggle against gangsterism" on a final phase of the tightened conflict - on the 7th of May 1921. Insurgents applied guerrilla tactics: to avoid reprisals against settlements, they send away in woods and made therefrom attacks. And then M.N. Tukhachevskij has ordered to the retaliatory army to begin application of the chemical weapon against insurgents, including against settlements. Were planned against insurgents discharges of toxic chemicals from gas cylinders, and also bombardment artillery chemical shells. For execution of the decision use chemical regiment, and also several chemical detachments with full equipment planned<sup>41,708</sup>. It has been received 250 gas cylinders with chlorine. On the 24th of June M.N. Tukhachevskij has received from subordinates the report as will be distributed received in two carriages 2000 artillery chemical shells. After that "fighting" work has begun. After two months has come it is time reports, and one head of the bottom military part has informed on application, among other, 79 artillery chemical shells, another - 85, the third - 50. And so proceeded till the autumn<sup>708</sup>.

After the termination of events in the Tambov province plans of the Red Army on use chemical warfare agents against own citizens have not disappeared, and this theme has remained actual for long years. Anyway by way of work of Chemical committee Revolutionary military council on 1924-1925 it is possible to find such theme: "Development of a question on an opportunity of application of gases for struggle against gangsterism and designing of corresponding devices"<sup>67</sup>. The life of those years gave to army chemists of an opportunity for test of theoretical development in practice, and they have not been missed.

As an example of chemical warfare of local value we shall specify the events connected with military-chemical expedition which has been equipped Military Chemical Directorate of the Red Army in June-July of 1929 to Central Asia. For expedition have been laid down the following aims: 1) tests for struggle with locust of some chemical warfare agents, made at plants of USSR; 2) studying of behaviour persistent chemical warfare (mustard gas) in conditions of Central Asia; 3) tests of action mustard gas on gangs of basmatches at its dispersion from planes. After the arrival to Central Asia it was found out, that because of absence basmatches the third problem of expedition is executed cannot be and thus first two were solved. That time basmatches which operated in Turkmenistan in area of Kushka, has carried - anger Soviet power has been readdressed on locust. However the in itself quoted purposes unequivocally characterize mood of heads of the country and army of those years<sup>303</sup>.

The red Army was ready to apply chemical warfare agents on any ground - in the own country and in other countries. Anyway the Soviet military chemists, among other, have paid the attention to the next Afghanistan. About a "chemical" component of the first intervention Soviet power in the Afghani problems it is possible to learn from old correspondence of 1929. We mean letters which directed to Moscow from Afghanistan Ragib-bey, under whose name the hero of Civil War V.M.Primakov was hidden. Apparently, real application of the chemical weapon against citizens of Afghanistan that time did not take place<sup>41</sup>. There was no real application of the chemical weapon and against Finland in the winter of 1939-1940 though have prepared for chemical warfare very carefully<sup>357,358</sup>. And here in later years there were also real events. In particular, in April 1989 in Tbilisi the Soviet Army with success has used the chemical weapon for dispersal of own citizens-demonstrators<sup>709</sup>. And the next years no changes in an orientation of policy of application by authority of the chemical weapon against the citizens have occurred. During regrettable events of August 1991 in Moscow the army was ready to use chemical warfare agents against citizens and would apply, if the order would act. And in 1993, already in the new state, was supposed application of the chemical weapon for the decision of problems of the civil conflict. And here in 2002 the chemical weapon has been applied against not privy citizens<sup>710</sup>.

We shall emphasize, that in all these cases the chemical weapon acted as means of mass defeat of people.

## **1.5. CREATION OF MILITARY-CHEMICAL ORGANIZATION**

With the termination of Civil War in the Red Army work on creation of a military-chemical infrastructure has begun.

In January 1921 Artillery committee has addressed to a management of army with idea of the organization experimental plant of chemical warfare which should include the filling station, experimental manufacture chemical warfare agents, chemical laboratory, and also anti-gas a department. In June 1921 Artillery committee petitioned for the announcement of competition on the project of the battery of gas mortars. Became more active and experimental works on test of the chemical weapon. In June 1922 Artillery committee discussed "the program of the experiments which are a subject to statement in the current summer on Artillery gas range" studying gas mortar clouds, test of group release of gases, studying of action of chemical shells, including fragmental action, etc.)<sup>145</sup>.

Within the limits of this process on the 24th September of 1921 vice-president Revolutionary military

council of Republic E.M.Skljanskii has approved new regulations about chemical proving ground which three years operated in area of village Kuzminki near to Moscow. The range intended for experiments "with the purpose of research and studying of the suffocating and poisonous means applied to the fighting purposes"<sup>145</sup>. The Same document had been stipulated also other function proving ground which has led to greater ecological troubles - carrying out on range of liquidation chemical warfare agents. In other words, so **for the first time it has been legalized burying of the chemical weapon on range at Kuzminki**. In another way the chemical weapon up to 1938 practically was not liquidated.

To 1922 the Red Army has ripened for reforming a management by all military-chemical art. The initiator became the chief of artillery Y.M. Sheideman. In February chemical department of Artillery committee has received the task "to develop... actions on statement in republic of gas art". And in the document from the 22th of March 1922 reasons on this account have been stated. Into number of offered actions entered: creation of workshop for filling of chemical warfare agents on depot at Ochakovo near Moscow, the beginning of real tests of the chemical weapon on chemical proving ground in Kuzminki, creation of the battery of gas mortars, the organization plants on production of chemical warfare agents and even mobilization military intelligence of the Red Army on information support military-chemical art "by getting the necessary data from abroad"<sup>63</sup>.

On the 8th April of 1922 the chief of artillery Y.M. Sheideman has directed to the Commander-in-chief armed forces of the Red Army S.S. Kamenev the basic document "About necessity of acceptance of measures on statement military-chemical art in the Red Army". The initial message was obvious - "it is possible to expect in the future fighting application of chemical means in greater scale", than in World War I. Among the offers brought Y.M. Sheideman, were, in particular, such - to accelerate the equipment of munition filling station on depot at Ochakovo, and also to accelerate the equipment artillery gas proving ground in Kuzminki. Besides it was offered to organize on chemical plants production of mustard gas and diphenylchloroarsine for "experiments on equipment and fighting application of these substances". The basic organizational decision was offered also: "With a view of the further researches and investigations in the field of fighting application of chemical means and scientific development of these questions to found at Artillery committee the special Commission consisting of the most visible scientists and experts"<sup>63</sup>.

That demarche has given a push to reforming and expansion of preparation of the Red Army to offensive chemical warfare. On the 15th June of 1922 Y.M. Sheideman has called meeting of colleagues "concerning the organization and statement gas art" on which has discussed the report for the higher authorities of the country prepared by it. Then has been created the commission concerning chemical means of struggle under presidency of the chief of the Staff of the Red Army P.P.Lebedev which was engaged in preparation of offers<sup>63</sup>.

One of the important decisions of those months - a concentration in army of both branches of preparation for chemical warfare. In 1922 at Chief Artillery Directorate of the Red Army has been created military-chemical body - Constant meeting concerning chemical means for struggle. It has replaced the Commission on gas and anti-gas art which was weaker and has been in essence torn off from army. First session Constant meeting concerning chemical means for struggle took place on the 23th of November. Its chairman again became the person who was the motor military-chemical art till October of 1917 - a member of Presidium Supreme council national economy the USSR, the great scientist, the chemist, academician V.N. Ipatieff. The assistant became professor A.A. Dzerzhkovich, the head chemical department of Artillery committee Chief Artillery Directorate. Both the head have continued business in which were engaged up to October coup d'etat. In "Stutute..." about new body obvious problems have been written down: studying and test of opening and the inventions made in the field of chemical warfare agents, research new chemical warfare agents, studying of their properties and opportunities of application, development of methods of application chemical warfare agents, improvement of ways of manufacturing chemical warfare agents, etc. And for maintenance of a practical orientation of again created army body of chemical war, have been transferred to it, among other, military-chemical range, a station for filling of chemical warfare agents and laboratory Higher military-chemical school<sup>123</sup>.

Meanwhile in armies new and new offers were born all. So, ordering armies of the Western front M.N. Tukhachevskij, recently finished chemical warfare against the Tambov insurgents, has sent the Commander-in-chief of the Red Army S.S. Kamenev the initiative letter dated the 16th of December 1922 about necessity of preparation for the future chemical wars in a peace time<sup>61</sup>. And ordering armed forces on Ukraina and Crimea M.V. Frunze in the report addressed to L.D. Trotskij has written on the 9th of November 1922, that "it is necessary or to recognize finally military-chemical art in the Red Army and to pay to it necessary attention or at all from it to be released"<sup>63</sup>.

By virtue of logic of events, military-chemical art could not remain in narrow frameworks of artillery. Has not passed also half a year after the beginning of work Constant meeting concerning chemical means for struggle as after corresponding decision Revolutionary military council in the name of this body the word "interdepartmental" has been included. So the tendency on branch Constant meeting, and also all military-chemical problematics from gunners with gradual giving of the all-army status by it has been legalized. Since the 14th of April 1923 this body of a military-chemical management began to refer to

Interdepartmental meeting on chemical means of struggle<sup>64</sup>. All spectrum of obvious problems has been included in a circle of its activity - both offensive, and defensive. It was offered to it to be engaged in all - beginning from research new chemical warfare agents and finishing researches and development of measures and means of protection against the chemical weapon.

First decision Interdepartmental meeting on chemical means of struggle became formation of the commission for a choice of a place for the Experimental plant chemical warfare agents at Moscow. The second decision had the same basic character: the technical commission have been allocated money for preparation of the project of station for filling of chemical warfare agents on munitions, provided to accommodation on artillery chemical depot at Ochakovo (the future chemical depot № 136). Then the list chemical warfare agents, recommended for equipment in artillery chemical shells, has been formulated. In it have been included mustard gas, lewisite, tear gases on the basis of arsenic, chloroacetophenone, bromobenzyl cyanide. Also offers on attraction Higher military-chemical school and laboratories Artillery committee to works on creation new chemical warfare agents have been discussed<sup>64</sup>.

Founders of military-chemical service also did not forget the direct purpose - offensive chemical warfare. Anyway in the summer of 1923 its head V.N. Batashev has informed the employees reasons on norms of the charge of means of a chemical attack<sup>127</sup>.

The Powerful push to development military-chemical art was given by chairman Revolutionary military council L.D. Trotskij. In November of 1923 it has charged to commander-in-chief S.S. Kamenev "to prepare the plan of long regular campaign" concerning chemical warfare, including to call meeting for definition of a position on this problem. On the 28th of November 1923 L.D. Trotskij has collected wide meeting concerning chemical war in which, besides the maximum chiefs of army, representatives of a science and the industry (V.N. Ipatieff, E.I. Spitalskij, N.A.Soshestvensky) and military-chemical art (Y.M. Sheideman, A.A. Dzerzhkovich, V.N. Batashev) participated also<sup>59,65</sup>.

In the basic report at that meeting academician V.N. Ipatieff has considered three problems. First, it has given the general picture in connection with application of the chemical weapon during World War I. Secondly, it has defined priorities in kinds chemical warfare agents in which it is necessary to be engaged: first of all is **mustard gas** ("this substance should lay down in a basis of our future manufacture of suffocating means") and diphosgene, the basic difficulties in which manufacturing have been overcome; in the second turn is diphenylchloroarsine, lewisite and ethyldichloroarsine. It has been specified also, that all should begin with creation of capacities on production of chlorine and phosgene without which it is impossible production of the rest. Thirdly, it has formulated numerous scientifically-practical problems of preparation for chemical warfare: Statement in Petrograd and Moscow active laboratory researches on development of "know-how" chemical warfare agents, the decision of a problem of raw material for these manufactures, creation of capacities for production of chemical warfare agents, development of ways of equipment of shells and creation of a workshop for filling of chemical warfare agents, research of ways of stabilization chemical warfare agents, studying of ways of dispersion chemical warfare agents, carrying out of intensive toxicological tests, etc. General conclusion V.N. Ipatieff was optimistical: "Comparing with work in the West that is done at us, we come to conclusion, that we work perfectly"<sup>65</sup>.

As a whole L.D. Trotskij has been satisfied by a condition of military-chemical affairs. And in the further Revolutionary military council of the USSR which it then headed, was engaged in these affairs very actively. It is necessary to add, that at that time the countries of the world have been borrowed by the work obviously alien to participants of that meeting at chairman Revolutionary military council of the USSR. Anyway it is fast enough, on the 17th of June 1925, 38 countries have signed in Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare<sup>55</sup>. Nothing has changed this event in mood of heads of the Soviet Union which has already involved the country in active preparation for offensive chemical warfare (at that time - together with Germany)<sup>686</sup>. Formally having joined that Protocol<sup>55</sup>, the USSR has accompanied with the certificate of connection by clauses because of what the certificate of connection lost sense. These clauses allowed not only to prepare the next years for offensive chemical war, but also to use the chemical weapon always and everywhere. So proceeded all XX century. Final refusal of Russia both of clauses, and from the lethal chemical weapon as weapon of mass defeat has occurred only in the end 2000<sup>56</sup>.

After meeting at L.D. Trotskij business have gone quickly. On the 20th of February 1924 Interdepartmental meeting on chemical means of struggle has been subordinated directly Revolutionary military council and became all-army body. And in March-April of 1924 Interdepartmental meeting on chemical means of struggle has discussed a condition of works on creation in the country of complete system of preparation for chemical warfare. Thought then widely, and for achievement enough the pragmatic purpose - maintenance of readiness for chemical war - has been planned very much diverse system of actions<sup>66</sup>.

As an example for imitation Interdepartmental meeting on chemical means of struggle has selected Edgewood military chemical arsenal of the USA. As of 1924, this arsenal have been located in the isolated deserted district in 20 miles from Baltimore. In it basic elements of system have been concentrated all: factories on manufacture chemical warfare agents (mustard gas, phosgene, chloropicrin, chlorine), stations

for filling of chemical warfare agents in all kinds of the chemical munitions, manufacture of respirators, scientific divisions (chemical, medical, pathological), chemical regiment, military-chemical school. Even Management of military-chemical service has been placed those years far away from capital - too on Edgewood chemical arsenal<sup>66</sup>.

The real life developed in those years, however, under other scripts. After acceptance in June of 1925 of Geneva Protocol<sup>55</sup> the Soviet offensive military-chemical plans have gone underground<sup>66</sup>, and these plans have moved to confidential sphere for ever. In a reality between world wars as Soviet Edgewood Arsenal there was a capital of Soviet Union - Moscow. With the nearest vicinities. Moscow managed honour to be the carrier of the created infrastructure of chemical warfare - chemical proving ground, central depot the chemical weapon, four plants on production of chemical warfare agents, two head scientific institutes of chemical warfare (military and industrial), military-chemical management, medical services, etc.

Soon there was a question on specification of status Interdepartmental meeting on chemical means of struggle. On the 13th of June 1924 Revolutionary military council has transformed it in Chemical committee at Revolutionary military council. Chemical committee should become the highest scientific and technical body military-chemical art not only in the Red Army, but also in all country<sup>67</sup>. There was a return to the pre-revolutionary organization of military-chemical art. Head Revolutionary military council of the USSR was then L.D. Trotskij, therefore chairman Chemical committee there was academician V.N. Ipatieff. And already on the 19th of June 1924 at meeting at S.S. Kamenev practical problems of chemical arms (improvement artillery chemical shells, creation aviation chemical bombs and regimental gas projectors) were discussed<sup>74</sup>. And on the 30th of August **in Moscow there has been begun industrial production of mustard gas**. It has provided professor old Russian chemical school E.I. Spitalskij<sup>370</sup>.

Regulations about Chemical committee, approved in September of 1924, have expanded its functions and the rights<sup>67</sup>. In that document such purposes appeared, for example: research new chemical warfare agents, studying of their properties and opportunities of military application; test of opening and inventions in the field of military-chemical art; development of ways of storage and transportation of chemical warfare agents; manufacturing of experimental batches of chemical warfare agents; participation in creation of samples of chemical equipment; creation of methods of industrial manufacturing of means of "chemical defense". Simultaneously Revolutionary military council of the USSR has attended also to the military party of military-chemical art. In the end of November 1924 it has been decided to create independent Inspection for chemical preparedness. And after formation of Military Chemical Directorate the Inspection became its part, it has occurred in the summer 1927<sup>127</sup>.

The end of 1924 has been marked by two events, important for military-chemical art. On the one hand, those days from a post of chairman Revolutionary military council of the USSR have been removed L.D. Trotskij. On the other hand, last day that year, namely on the 31st of December two chiefs of the Red Army (the chief of war supplies and the chief of artillery) have addressed in Revolutionary military council for money for realization of concrete military-chemical plans. It has been specified: *"Initially it is necessary to get the following chemical warfare agents for filling of chemical shells: with mustard gas - 7500 poods; diphosgene - 3000 poods; chloropicrin - 3260 poods. Specified chemical warfare agents intend for filling of chemical shells, cases for which are available and expected: 3-inch mustard gas shells - 153000 pieces, 3-inch diphosgene shells - 97000 pieces, 48-linear mustard gas shells - 10000 pieces, 48-linear diphosgene shells - 10000 pieces, 6-inch mustard gas shells - 20000 pieces"*.

The first results of work Chemical committee have been brought at session Revolutionary military council the USSR on the 2nd of February 1925<sup>67</sup>. Presided over it new people's commissar for defense M.V. Frunze. Reporting on activity Chemical committee during 1923-1924, V.N. Ipatieff has informed on achievement in the field of chemical warfare agents "significant results". For production of mustard gas the plant with capacity of 5 poods per day has been started (Experimental plant in the center of Moscow). Other experimental plant for production of phosgene with a capacity of 6 poods per day was close to start-up (Olgin plant on suburb of Moscow). Other achievements have been specified also: toxicity of some new chemical warfare agents has been investigated, three types of 76 mm artillery chemical shells, some types gas projectors, two types portable devices for creation of veils of a poisonous smoke have been designed, have been created multi-purpose respirator, protecting from new chemical warfare agents, smokes and fogs<sup>67</sup>. Among the major decisions there was a recognition "absolutely necessary to allocate for works Chemical committee an experimental plant with transfer of those to conducting Central administrative board of a war industry". It has been decided also "to take all measures to the prompt termination of works on gas range on a construction of an armored hole and other planned constructions".

On the 11th of August 1925 at session Revolutionary military council of the USSR it has been decided to create in the Red Army new body - Military Chemical Directorate of the Red Army<sup>124</sup>. Structurally this new supervising body has been formed on the basis of two available divisions - Chemical department of Artillery management and Chemical committee at Revolutionary military council of the Red Army. That session conducted personally M.V. Frunze, and academician V.N. Ipatieff was not invited to it. It have simply informed, that Chemical committee at Revolutionary military council the USSR is transformed to

Scientific-Technical committee - the body of the again created Military Chemical Directorate.

By first chief Military Chemical Directorate has been appointed I.M. Fishman. "Chemist" I.M. Fishman, the graduate of the Neapolitan university, is known for manufacturing of that bomb by means of which on the 6th of July 1918 security officer J.G.Bljumkin has killed the German ambassador in Moscow. Within 1921-1925 I.M. Fishman worked in military intelligence of the Red Army. For this time it has worked on different posts - as the representative of the Soviet department of an agriculture at the International ecological commission in Rome, and on a post of the Soviet military attache in Germany. However everywhere it was engaged in one business - gathering of the information in the field of the weapon (chemical and any other)<sup>683</sup>.

The formed management began to be engaged in creation and application of nonconventional kinds of the weapon - chemical and biological (in text-substantiation I.M. Fishman it sounded so: "in small term it is necessary to create a nonexistent sort of the weapon"). About the chemical weapon among the major problems the following have been specified: "Military-chemical preparation of armed forces of the USSR as a whole, that is supply by all necessary means of a chemical attack and chemical defense... The organization of chemical defense of civilians". In practice a problem of protection of civilians from possible enemy chemical attack Military Chemical Directorate has soon shifted on others and did not begin to be responsible for this business seriously. Military Chemical Directorate and all its successors were engaged only in preparation for offensive chemical warfare, and also for protection of army (instead of the population of the country) from the chemical weapon of other armies.

The First report on activity Military Chemical Directorate has been demanded soon.

On the 5th of October 1925 I.M. Fishman has given the report for Revolutionary military council of the USSR "On needs of the Red Army for chemical means of an attack and defense" in connection with formation of the three-year plan of preparation of the Soviet economy to war. Calculations of quantity of means of the chemical attack necessary on conducting of war within year have been informed. It is specified, that "by places, the most expedient for an arrangement plants chemical warfare agents, Volga is first of all". As an immediate task for Olgin plant chemical warfare agents (Moscow) creation within a year half-industrial installations for manufacture of all existing chemical warfare agents has been specified. Among other, in the report it has been informed, that the constructed station for filling of chemical warfare agents on depot № 136 at Ochakovo (near Moscow) is capable to equip for 6 hour 900 artillery chemical shells calibre 76 mm or 300 chemical shells calibre 152 mm. The termination of the equipment military-chemical proving ground in Kuzminki and creation, besides military-chemical depot at Ochakovo, new depots on all country has been stipulated also<sup>74</sup>.

Second report I.M. Fishman has executed on the 4th of February 1926 at session Revolutionary military council<sup>75</sup>. Discussion has finished new people's commissar for war K.I. Voroshilov, and Revolutionary military council of the USSR has approved a direction and the plan of work Military Chemical Directorate. That decision it was recommended to military chemists to bring to a focus to aerochemical ways of an attack and defense and application of poisonous fogs. For success of works presence "the isolated gas range, the central chemical laboratory and experimental plants" has been once again recognized necessary. Same document Revolutionary military council the decision was accepted also rather exotic at first sight - is decided "to provide the right of Military-chemical management **to influence a direction of a developing peace chemical industry** with a view of its mobilization preparation and **the full control over manufacture** of military-chemical production". This decision - in broad form - remains in force long decades, with heavy consequences for the chemical industry of the country.

In same days of February 1926 Revolutionary military council has summed up chemical preparation of the Red Army for the expired year<sup>297</sup>. Last days of 1926 one more report on work Military Chemical Directorate has been prepared<sup>76</sup>. Among knowledge which military chemists have seized, we shall specify such. I.M. Fishman has informed, for example, to your head I.S.Unshliht, that "the comparative estimation of action mustard gas and lewisite on a leather of the peoples is made and the toxic doze of each of them is established". It was reported also on the first tests artillery chemical shell with an intermediate bottom - a prototype of the future binary chemical munitions<sup>223</sup>.

Not surprisingly, what exactly in the end of the same 1926 the Soviet military-chemical experts "have gone to school": on military-chemical proving grounds the USSR have begun long-term tests of the newest samples of the chemical weapon of Germany, in particular, aircraft spray tanks (VAPs)<sup>669</sup>. Chemical land mines, artillery chemical shells, aviation chemical bombs, and also ground means contamination were tested also. Business was mutually advantageous as in exchange for a powerful push in development Soviet military-chemical art the USSR has helped Germany to develop the military-chemical art, around of interdictions of the Treaty of Versailles from the 28th of June 1919 and Geneva Protocol (1925)<sup>55</sup>. The first Soviet-German tests of the chemical weapon of 1926 have been executed on proving grounds in Kuzminki (near Moscow)<sup>669</sup>, next year they have been transferred to area of Orenburg<sup>673</sup>, and per 1928 and down to 1933 joint Soviet-German activity was based on proving grounds in area Volsk<sup>674,677,678</sup>.

Organizational transformations have begun also. In August of 1927 Revolutionary military council has collected together both military-chemical services: Inspection for chemical preparedness it has been

included in structure Military Chemical Directorate. By Same decision Military Chemical Directorate have been subordinated Chemical advanced training courses officers and chemical regiment<sup>125,127</sup>. Then, per 1926-1927, there were instructions on the order storing gas cylinders with chemical warfare agents<sup>487</sup> and artillery chemical shells<sup>488</sup> on depots and in military units. And in the autumn of 1927 expansion of the first chemical military units which have begun Chemical Troops of land-forces. And in September of 1928, according to decision Revolutionary military council<sup>69</sup>, they already participated in all-Union maneuvers in area of Kiev where have passed the first school of interaction with other arms of the service<sup>301</sup>.

By then it was time to get the head "scientific" center. On the 7th of April 1928 Revolutionary military council has created Institute of Chemical Defense of the Red Army<sup>153</sup>, subsequently renamed in Chemical Scientific Research Institute. The Main task of the new secret institute which has collected under the roof many laboratories Military Chemical Directorate, was preparation of the country for offensive chemical warfare<sup>153</sup>. Firstly it should use data intelligence service. The decision from the 2nd of February 1929 Revolutionary military council has approved a place of accommodation big chemical proving ground of the Red Army - near Volsk in area Shikhany (Saratov oblast)<sup>79</sup>. There per 1928 the first Soviet-German military-chemical tests have been lead<sup>674</sup>. In May of 1929 Military Chemical Directorate has collected meeting of commanding structure of chemical service of the Red Army and has made review of the forces. Have not forgotten also about place Chemical committee in this construction<sup>128</sup>.

### 1.6. MILITARY CHEMISTRY AND SOVIET ECONOMY

The further military-chemical events are inseparable from a context of events in the country. In 1929 Soviet Union has started to carry out the first five years' plan and as if has solved its problems (construction of the base of socialist economy) for 4 years. And per 1933-1937 the second five years' plan within the limits of which as if the socialist society has been constructed was carried out. Those years contrast between a heavy life of ordinary citizens and activity in a military-chemical underground was showed especially boldly. And if firstly needs of military chemists were not so serious (for 1925-1926 5000 poods mustard gas, 3000 poods phosgene, 250 poods chloroacetophenone, etc. were necessary for them) soon their plans have grown up to napoleonic. We shall result for an example of representation I.M. Fishman about dynamics of development of capacities of the Soviet industry on mustard gas and diphosgene (from october till october and not in poods, and already in tons)<sup>376</sup>:

	1.X.1928	1.X.1929	1.X.1930	1.X.1931	1.X.1932
Mustard gas, t	5000	8000	15000	18000	22000
Diphosgene, t	100	300	1600	1650	1850

The important event was accepted in July of 1929 of the Political bureau of Central Committee Communist Party of the Soviet Union the decision "About defense". It provided not only preservation of parity with neighbouring countries on number mobilization army, but also attempt of maintenance of the superiority over them in "two-three solving kinds of arms". It is not surprising, that military chemists very much tried to appear among those "two-three solving". And work went in all directions. Representation about that activity gives only transfer of large tests of the chemical weapon on proving grounds the country, and also outside of proving grounds which Military Chemical Directorate has lead only in 1929-1931<sup>305,312,535</sup>.

\* March-April of 1929 - army tests aviation chemical bombs AKh-8, AKh-16 and AKh-32 in filling of mustard gas (artillery proving ground, Luga, Leningrad oblast)<sup>302</sup>;

\* June-July of 1929 - military-chemical expedition to Central Asia (Turkmenistan, Uzbekistan) for use chemical warfare agents against basmatches and locust<sup>303</sup>;

\* August of 1929 - tests aviation chemical bombs AKh-8, AKh-16 and AKh-32 in filling of mustard gas (artillery proving ground, Dretun, Vitebsk oblast)<sup>306</sup>;

\* February-March of 1930 - winter tests of various kinds of the chemical weapon, including chemical fragmentary-chemical artillery shells and toxic smoke candles (artillery proving ground, Luga)<sup>308</sup>;

\* March of 1930 - winter army tests aviation chemical bombs AKh-8, AKh-16 and AKh-32 in filling of mustard gas (artillery proving ground, Dretun)<sup>306</sup>;

\* March of 1930 - research of penetration aerosols chemical warfare agents in railway carriages various types, contamination and decontamination permanent way and railway constructions (station Shueretskaya, Kareliya)<sup>307</sup>;

\* August of 1930 - experimental bombardment artillery chemical shells calibre 76 mm, 122 mm and 152 mm in filling of non-persistent chemical warfare agents - phosgene and diphosgene (chemical proving ground, Frolishchi, Nizhny Novgorod oblast)<sup>305,310</sup>;

\* September of 1930 - studying of fighting efficiency poisonous-smoky (adamsite and chloroacetophenone) and gas (phosgene and mixture phosgene with chlorine) waves in field conditions (area of Astrakhan)<sup>305,311</sup>;

\* September-October of 1930 - wide army tests on fighting application VAP-4 from heights up to 1000 m (the regulations about proving ground allowed pouring out OB only from heights below 500) (chemical proving ground, Shikhany, Saratov oblast)<sup>228,305</sup>;

\* March of 1931 - studying of fighting efficiency poisonous-smoky (adamsite and chloroacetophenone) and gas (phosgene, chlorine and mixture phosgene with chlorine) waves in field conditions (area Novo-Orsk, Orenburg oblast)<sup>313</sup>;

\* The 1st of August - the 15th of September 1931 - greater tactical-technical tests of the chemical weapon. Check of means of a chemical attack before their statement on arms (mortar Stoks, battle chemical vehicles, chemical land mines, toxic smoke candles) (chemical proving ground, Frolishchi, Nizhniy Novgorod oblast)<sup>312</sup>;

\* The 27th of November 1931 - demonstration to members Revolutionary military council the USSR new means of a chemical attack (chemical proving ground, Kuzminki, Moscow)<sup>535</sup>.

Activity Military Chemical Directorate of 1931 on convocation of meetings and conferences where changes in a new formed military-chemical bureaucracy were fixed was so important also<sup>70</sup>. A series of conferences of army took place in April of 1931 with numerous civil institutes and universities, and from them assistance in performance of problems Military Chemical Directorate (synthesis new chemical warfare agents, toxicology, etc.) was required<sup>70</sup>. Then (on the 3-6th of April 1931) in Military Chemical Directorate there has passed conference on mustard gas, summed up works on production of it chemical warfare agent, to equipment it of shells, concerning storing mustard gas and to formation of plans for the future<sup>180</sup> (the previous conference on mustard gas took place in December of 1929). Hardly after on the 12-16th of May Military Chemical Directorate has lead conference on poisonous smokes - to manufacture, fighting application, toxicology. And on the 3-7th of June conference on toxicology chemical warfare agents and to medical-sanitary problems of preparation for chemical warfare took place called Military Chemical Directorate and Military Sanitary Directorate of the Red Army<sup>539</sup>.

To understand mood of leaders military-chemical art those years, it is enough to familiarize with the text of one of messages of last conference: "With a view of studying sensitivity of a leather of the rabbit and the person to mustard gas solutions of it chemical warfare agents in acetone were put... Experiment was made on a forearm of the person, a back, belly and an ear of the rabbit... Drawing was made on the area of 1 square centimeter... Experiments have shown, that the leather of the rabbit is more sensitive to mustard gas, than a leather of the person... On small dozes the leather of swarty people reacts more intensively, than a light leather. At large dozes the leather red and blondes in most cases gives stronger reaction... Women with any painting a leather give reaction faster and intensive, than men. Teenagers of both floors react even more strongly, than women"<sup>539</sup>.

The achievements and plans I.M. Fishman has stated in the special report where has been summed up to its successes as of April, 1st, 1931. It has told, as all end of 1920s Military Chemical Directorate tried to excel simultaneously on all directions of preparation for offensive chemical warfare - in production of many chemical warfare agents, in development of all type of possible samples artillery chemical shells and aviation chemical bombs, in creation of means of ground and air dispersion chemical warfare agents, in designing chemical land mines, in development gas projectors and chemical mortars, etc.<sup>70</sup>. Such total approach, without allocation of priorities and definition of sequence of the decision of problems was obviously erroneous. And it is not surprising, that its "results" have received a severe estimation at check of activity Military Chemical Directorate in August of 1930 by military inspection, and also at subsequent session Revolutionary military council of the USSR. As inspection is inseparable from struggle passed in the country against "wreckers"<sup>394</sup>.

However, despite of a severe estimation of activity Military Chemical Directorate (Revolutionary military council the USSR in the decision from the 22nd of February 1931 specified, that "military-chemical art in the Red Army continues to be the most backward in every respect"<sup>131</sup>), its chief I.M. Fishman has avoided the responsibility for obvious absence of achievements, except for rout of "wreckers". Those years it still belonged to a clan of those who had an opportunity to pay off with others.

The Next organizational decisions in military-chemical service have been connected with the high status which it has found by then. On the 13th of May 1932 by order Revolutionary military council of the USSR it has been created Military-chemical Academy of the Red Army. The military-chemical school in Tver (Kalinin) which within war has got over to Kostroma has been the same year generated. Then the school has found the status of military-chemical institute. And now it has received the next increase in connection with carry from Moscow to Volga on the Kostroma base of Military-chemical university - successor Military-chemical Academy. There were changes also in the brain center of military chemistry. In order Revolutionary military council from the 8th of July 1932 the name of post I.M. Fishman has been essentially changed. Now it began to refer to as chief Military Chemical Directorate and Chemical Troops of the Red Army.

The major event became declared on the 21st of April 1933 order Revolutionary military council of the USSR the plan army exercises on 1932/1933<sup>314</sup>. Basic feature of that order - **exercises** should be spent henceforth **with real chemical warfare agents**. So the chemical weapon has left on wide open spaces of

fighting army practice. The order was signed by the enthusiast of chemical warfare M.N. Tukhachevskij. We shall note, that works with real chemical warfare agents on all country proceeded down to the war<sup>351,359</sup>.

Remarkable activity I.M. Fishman has led to that the chemical weapon very much interested the country leaders. So, in October of 1933 chemical proving ground in Kuzminki near Moscow has visited all Plenum Revolutionary military council the USSR to which means of chemical arms of the Red Army in operation have been shown all. And soon chemical attack with application of tanks has been shown already to members of the Soviet government led by J.V. Stalin. And the leader even has allowed advice - to create hastily chemical tank as a gift to the future congress of communist party. In the spring of 1934 the first tests chemical tank BT took place<sup>146</sup>. Moreover, in July of 1934 the same proving ground was visited by two people's commissars - K.I. Voroshilov and G.K. Ordzhonikidze, and at their presence has been tested new chemical warfare agent, amazed people not through bodies of breath, but only through a leather<sup>199</sup>.

"Covering" the Soviet border from Baikal up to Vladivostok was considered as the serious general-political problem of those years<sup>304</sup>. Among other, this problem arose in communication by the conflict on China-East railway, which has passed in the chronic form. On this background it should appear on a place also I.M. Fishman with the dream of creation in the country of a reserve mustard gas in 1000 tonnes and in general with dream of "chemical covering" east border. That adventure has begun with decision Council of work and defense of the USSR (the 11th of July 1933) by which on the National commissariat of the heavy industry of the USSR construction of special capacities on 1000 tonnes mustard gas has been assigned. They should be in area of action of Far East Army, but in structure of a mobilization reserve of the country. In following year capacities have been created and there was a problem about their filling<sup>103</sup>. Within the limits of that activity per 1933-1934 by decision Revolutionary military council in Transbaikalian military district, Far East Army and on Pacific fleet have been created special military-chemical depots which intended for "covering" extensive borders in Asia - № 140 (Khabarovsk), № 147 (Lesnaja, Chita oblast), № 148 (Svobodnyi, Amur oblast), № 150 (Sunguch, Primorye krai), № 300 (Knorring, Primorye krai), № 301 (Vozdvizhenskii, Primorye krai). For the 1st of March 1934 in Detached Far East Army already was stored 609 tonnes mustard gas, and by the 1st of January 1935 it was supposed to have already 2000 tonnes (1000 tonnes - on line Military Chemical Directorate and 1000 tonnes on line of Committee of reserves)<sup>472</sup>.

In table 1.2 data whenever possible about all depots chemical warfare agents and in general chemical arms which have been generated in pre-war years are collected.

**Table 1.2 Pre-war specialized depots storing chemical warfare agents and chemical arms**

Settlement	Region	Number	Formation	Power (carriages)
<b>West</b>				
Baranovichi	Brest oblast	840	1937	640
Belozherje	Chrkassy oblast	396		
Lida	Grodno oblast	833		
Lvov	Bryansk oblast	587	1932	
Rzhanitsa		137		
Seleshino		Poltava oblast		
<b>East</b>				
Berdsk	Novosibirsk oblast	626	1934	289
Vozdvizhenskii	Primorye krai	301		
Knorring	Primorye krai	300		
Lesnaja	Chita oblast	147		
Omsk		25		
Svobodnyi	Amur oblast	148		
Sunguch	Primorye krai	150		
Khabarovsk		140		
Chita-II		139	1932	273
				200
<b>Central, district and other depots</b>				
Arys	Kazahstan	415	1936	700
Gornyi	Saratov oblast			
Iljino	Nizhniy Novgorod oblast	405	1936	
Kuzminki	Moscow			
Novocherkassk	Rostov oblast	692		
Ochakovo	Moscow	136	1917	
Revda	Sverdlovsk oblast	691	1938	
Rostov-Yaroslavskii	Yaroslav oblast	141 (51)	1918	
Peterburg-Gatchina	Leningrad oblast	302	1934	

Tbilisi-Navtlig	Gruzia	693		
Tver (Kalinin)		138	1926	300
Chapaevsk-Pokrovka	Samara oblast	433	1918	
Shikhany	Saratov oblast	303	1933	186

In general in the April-May of 1934 in shock rate the first party in 1000 tonnes mustard gas has been made. That was operation within the limits of which mobilization readiness of the country for offensive chemical warfare has been checked up and in which many ministries and departments participated. Operation was so scale, however and secret. The Beginning of "mustard watch" has put decision Council of work and defense of the USSR from the 4th of April 1934, it was offered to make by the 1st of May a party mustard gas - 400 t on plant at Chapaevsk and 600 t on plant at Stalingrad. Further, the army should provide acceptance mustard gas at plants, and National commissariat of means of communication - to generate a route of 50-ton tanks and to deliver it from plant at Stalingrad to the Far East (in Chapaevsk mustard gas should fill flanks). There were business and to other departments: National commissariat of the heavy industry should provide readiness of storehouses in 5 items to reception mustard gas, National commissariat of means of communication - to finish construction to them of access roads, and Military Chemical Directorate - protection<sup>397,398</sup>.

All this shock work has really been executed within April-May. However it should acquire tragical details. The price high-speed production of 1000 tonnes of mustard gas for covering restless border has appeared even for those severe times unreasonable. Officially referred to, that on chemical plant in Chapaevsk has suffered more than 87% of participants of shock watch (director plant wrote, however, that the staff "is universal have failed", and one of participants of watch was lost). On plant in Stalingrad "100% worked have been amazed almost". Last words belong I.M. Fishman and they in the accounting letter have been written to the assistant people's commissar for war M.N. Tukhachevskij. And a wreath of the letter became ascertaining: "Performance of the task... with full evidence has revealed absence of mobilization readiness of plants". By the way, in Chapaevsk during that shock watch, namely on the 29th of April 1934, there was a fire with participation of mustard gas<sup>397</sup>.

More than obvious unavailability of military-industrial system of the country to work with such difficult chemical warfare agent as mustard gas, nobody has stopped. In 1935 "shock" production of parties mustard gas for updating a strategic reserve has proceeded. To 1936 at the country has appeared already "two centers of military danger. The first center is in the Far East, in a zone of Japan. The second center is nowadays in Germany " (J.V. Stalin, "Truth", the 5th of March 1936) . Thus, "to look in both" in 1936 it was necessary not only on the East where imperialistic Japan managed, but also on the West where bad nazi Germany planned and actively fascist Italy used the chemical weapon in Ethiopia. Nevertheless interest to east direction remained paramount, and on it all state machinery worked. Table1.3 gives some representation about this process. We shall note, by what exactly from the beginning of 1930s the idea to have emergency ration (ER) on a line of the chemical weapon was materialized in the country for long decades.

**Table 1.3 The charge of military-chemical property in the Red Army in the 1929-1934<sup>414</sup>**

Years	Mustard gas, tonnes		Toxic smoke candles, pieces		Chemical land mines	
	Studies	ER	Studies	ER	Studies	ER
<b>1929</b>	12	-	3800	-	-	-
<b>1930</b>	12	-	13000	-	-	-
<b>1931</b>	30	30	10000	-	-	-
<b>1932</b>	100	312	130000	86000	10000	-
<b>1933</b>	250	485	85000	101000	-	-
<b>1934</b>	320	680	95000	125000	2500	17500

By the way, in the middle of 1930s years Military Chemical Directorate has got also higher status in army. It has been fixed by the decision of the supreme bodies of legislative and executive authority of the USSR which in November of 1934 have approved "Regulations about the National Commissariat of defense of the USSR". It has been established, that "Chemical management of the Red Army is the Central body of the National commissariat of defense of USSR on maintenance of the Red Army with chemical property and a management of chemical preparation"<sup>132</sup>. Management Chemical Directorate which has come in the stead Military Chemical Directorate, people's commissar for defense from the 7th of December 1934 has been assigned by the order to the second assistant people's commissar for defense M.N. Tukhachevskij. Position of military-chemical service and Chemical Troops and a level of problems solved by them which have developed to the middle of 1930s, are visible from the order people's commissar for defense K.I. Voroshilov

"About results of combat training of the Red Army for 1935 and problems for 1936", published on the 28th of December 1935. It was ordered to one of the major problems of chemical preparation of the Red Army to consider "methods of massed use in fight of chemical means of an attack by means of aircraft, artillery and special machines".

The Military-chemical house which has built I.M. Fishman, has appeared not what academician V.N. Ipatieff within World War I has started to erect. With accession in military-chemical department I.M. Fishman the spirit of founders of military science-chemical (pre-revolutionary intellectuals-gunners) therefrom has disappeared. But, since I.M. Fishman, and finishing "the winner of the Lenin premium" sample of 1991 general S.V. Petrov heads of the inflated and self-sufficient military-chemical corporation have not avoided usual for a similar sort of structures of illness - illness of supervising arrogance. On the 12th of August academician V.N. Ipatieff has submitted to resignation, and per 1927 has left from the country.

In post-war years in process of comprehension of new problems military-chemical service in the Soviet Army gradually evolved. However, irrespective of names and volume of solved problems, this military organization always was and remained "offensive", having own armies, depots, test and training grounds and educational institutions. Only on a boundary of millenia the name of a chemical part of our army has found a "protective" shade. Nowadays it is called as armies radiating, chemical and biological protection. Actual refusal of Russia of offensive purpose Chemical Troops took place only in 2000, when the chemical weapon was - formally - is appointed to destruction within the limits of civil department<sup>715</sup>.

\* \* \*

*So, within between world wars the chemical weapon has affirmed in the USSR as an indispensable element of the armed struggle. In the country by the big pressure of forces under a kind of industrialization it has been created powerful the industries of a chemical attack. And in the Red Army the most powerful system of preparation and conducting offensive chemical warfare has been organized.*

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