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POLISH CHEMICAL BRIGADES – ORGANISATION, CONCEPT OF OPERATION AND COMBAT CAPABILITIES

Zbigniew ZIELONKA*

* Faculty of National Security, the General Tadeusz Kościuszko Military Academy of Land Forces
e-mail: zbigniewwojciech.zielonka@gmail.com

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Abstract:

The beginning of the Cold War as well as the recognition of nuclear weapons as new and decisive combat measures opened a new stage in the history of Polish chemical corps. In the face of another world war, this time with using weapon of mass destruction on both sides, chemical forces were not only restored but also intensely expanded and trained. The emergence of divisions' and military districts' chemical companies in the 1950s and independent battalions in the next decade resulted in several times increase in the number of manpower of these specialized troops, larger organizational structures and the adaption of the concept for their usage in the changing requirements of the battlefield. As a result, at the turn of 1960s and 1970s chemical forces achieved the biggest combat capabilities in their history, as they had four trained and fully manned chemical regiments at disposal, that after further mobilization development to Chemical Brigades supported the levels of two Armies and the Front.

The main purpose of this article is to present secret until recently organizational structures of Chemical Brigades of the Army and the Front, their combat capabilities and the concept of operation. The article includes mainly collections of Archives of the Ministry of National Defense and sparsely occurring works and articles, which, moreover, present the issue of Polish chemicals troops only in an outline or a fragmented way.

Keywords:

Polish chemical troops, NBC, CBRN, Weapon of Mass Destruction, the Cold War

INTRODUCTION

Polish Chemical Brigades (*Polish abbrev.* BChem) as tactical units of chemicals troops formed for a war time at the level of the Front and the Army were intended for reconnaissance and decontamination for tactical units, general military units, specialized forces, as well as elements of the rear formations. Their creation at the turn of the 1960s and 1970s was associated with the completion of the intensive and lasting more than two decades quantitative development of chemical forces, as well as the implementation of the concept of the Polish Front and the requirements of the Command of the Unified Armed Forces of the Warsaw Pact (WAPA).

1. ORGANISATION OF CHEMICAL BRIGADES

The development of chemical troops, which was begun in the last year of the war decade¹, was caused by the outbreak of the Cold War and the fact that the Soviet Union recognized nuclear weapon as an essential means of warfare.² As a consequence, launching the nuclear arms race between East and West contributed to the increased importance of this kind of troops, the organizational development of which was not hampered even in the second half of the 1950s, i.e. in the period of the general reduction of all armed forces.³ Its intensity unprecedented on the scale of the Polish Army

¹ The army's peaceful reorganization carried out after the war affected mostly the chemical forces. As a result of the significant reduction, their number was cut by 82%, of 1.302 soldiers in May 1945 to 232 soldiers in June 1948. Of three independent battalions there was only one left - the 2nd Flamethrowers Battalion. In addition, all chemical companies in the divisions and chemical platoons in infantry regiments were dissolved. The decision was justified by the fact that nerves gases were not used during World War II and in the early post-war period there were not any external threats. However, progressive worsening of the international situation at the turn of the 1940s and 1950s opened up a new phase in the history of weapon of this type. Chemical corps were not only restored, but also extensively expanded and trained. This process was initiated in 1949 by taking into account the establishment of chemical defense companies in the structures of newly formed tactical units and contamination reconnaissance platoons in general military units. At the beginning of the next decade there were formed independent chemical companies in military districts, which in later years became the core of chemical defense battalions developed on their basis, more: Z. Zielonka, *Polskie wojska chemiczne w latach 1945-1991. Organizacja, koncepcje użycia i możliwości bojowe*, Wrocław 2015.

² The first materials and studies on the Soviet experiences with nuclear were made available for the Polish Army in 1954, i.e. five years after the USSR had broken the US nuclear monopoly. This fact was reflected in the combat regulations and the combat training system, which assumed conducting operations in conditions of mutual and widespread use of weapons of mass destruction, with nuclear weapons to the fore, see: L. Grot, T. Konecki, E. Nalepa, *Pokojowe dzieje Wojska Polskiego*, Warszawa 1988, p. 162; Z. Gołąb, *Podstawy i kierunki rozwoju sztuki wojennej ludowego Wojska Polskiego*, „Myśl Wojskowa” (MW), 1978, No. 10, p. 10.

³ In the years 1955-1958 the Polish Army underwent four reductions, as a result of which the numbers of armed forces were reduced by 200 thousand soldiers, see: P. Piotrowski, *Śląski Okręg Wojskowy. Przekształcenia organizacyjne 1945-1956*, Warszawa 2003, p. 87-88; L. Grot, T. Konecki, E. Nalepa, *op. cit.*, p. 69-71. Chemical forces were the only type of troops the size of which was increased in this period.

may be evidenced by the fact that over only ten years six battalions of various types⁴ replaced two chemical defense companies (*Polish abbrev.* kopchem) of the Pomeranian and Silesian Military Districts, (*abbrev.* respectively the PMD and the SMD), thus increasing more than six times the numbers of such troops. The last and at the same time ultimate step influencing the order of battle was the formation of four chemical regiments⁵. This fact caused that in the early 1970s the chemical forces reached the highest numbers and combat potential in the post-war history of the Polish Army.

In 1971, the chemical forces amounted to 0.6% of the land forces and counted as many as 1855 soldiers in independent units. It was assumed that this number would increase almost fourfold in time of war due to the development of chemical regiments into brigades at the levels of the Army and the Front.⁶ According to the mobilization plans the

⁴ These were: the 26th and the 7th Areas and Uniforms Decontamination Battalions, the 2nd Fumigation and Flamethrowers Battalion, as well as the 4th and 5th Special Treatments and CBRN Reconnaissance Battalions, see: Z. Zielonka, *op. cit.*, p. 157.

⁵ The first chemical unit in the Polish Army, which protected actions at the operational level, was developed at the turn of 1966 and 1967 in the Silesian Military District. It was the 1st Chemical Regiment in Zgorzelec, formed on the basis of the 1st Special Treatment and CBRN Reconnaissance Battalion as well as the manpower and equipment of the disbanded 7th Areas and Uniforms Decontamination Battalion; the Military Archives in Oleśnica (*Polish abbrev.* AWO), the Ordinance No.7, 016246/3/70, k. 9-10, the Order of the Chief of the General Staff No. 0160 / ORG of 20th December 1966 on the liquidation of the 7th Territorial Defense Battalion and transforming the 1st Special Treatments and CBRN Reconnaissance Battalion into the 1st Chemical Regiment with the use of the 7th Battalion's manpower and material bases. In May 1967 on the grounds of the 4th Special Treatments and CBRN Reconnaissance Battalion there was developed another one in the Polish Army – the 4th Chemical Regiment. The unit stationed in Brodnica (the PMD); the Archives of the Ministry of Defense (*Polish abbrev.* AMON), 1704/00/91, k. 58, the Archive, the Order of the Chief of the General Staff No. 062 / ORG of 11 V 1967 on the formation the 4th Chemical Regiment on the grounds of the 4th Battalion. At the beginning of 1968 the 2nd Chemical Regiment was established. The manpower and the equipment of the 2nd Special Treatments and CBRN Reconnaissance Battalion and the 26th Areas and Uniforms Decontamination Battalion were used for its creation. Orzysz in the Warsaw Military District (*abbrev.* the WMD) was designated the place of its stationing, AMON, 1704/00/91, k. 103, the Archive, the Order of the Chief of the General Staff No. 037 / ORG of 26 II 1968 concerning the formation of the 2nd Chemical Regiment according to the establishment No. 12/40 and changes in the establishment of the Special Treatments and CBRN Reconnaissance Battalion. Two years later in the WMD, the liquidated 3rd Special Treatments and CBRN Reconnaissance Battalion in Biskupiec, together with the Chemical Forces Non-Commissioned Officers Training Centre were replaced by the 3rd Chemical Regiment, AMON, 1704/00/91, k. 57, the Archive, the Order of the Chief of the General Staff No. 043 / ORG of 25th August 1971 on the liquidation of the Chemical Forces Training Centre (*Polish abbrev.* OSPWChem), the 3rd Special Treatments and CBRN Reconnaissance Battalion, and the formation of the 3rd Chemical Regiment.

⁶ In 1969 the manning of the 1st Chemical Regiment in peacetime accounted for 25% of the brigade being developed. In 1978 the ratio of the peacetime establishment 'PE' to the wartime establishment 'WE' of the Regiment (the Army Chemical Brigade) was: in the officers corps - 25%, in the non-commissioned officers and privates corps - 15.9%. While, in the 4th Chemical Regiment the completion of time 'PE' was only 21% of the time 'WE', see: AWO, the Headquarters of Chemical Forces, 2954/84/11, k. 671-672, *Zagadnienia osiągnięcia gotowości bojowej przez Armijną Brygadę Chemiczną*, the SMD Chemical Forces Headquarters, Wrocław 1969 *ibid*, 2952/84/38, k. 243-244, the Letter of the Commander of the 1st Chemical Regiment to the Chief of the SMD Chemical Forces of 25 V 1978 on detachment of the advance party; the Military Archives in Torun (*Polish abbrev.* AWT),

1st Chemical Brigade was to be developed on the basis of the 1st Chemical Regiment and form part of the 2nd Army, while the 2nd Chemical Brigade was to be formed on the basis of 2nd Chemical Regiment and be part of the 1st Army. The units of the 4th Army in terms of chemical defense were to secure the 3rd Chemical Regiment in Biskupiec.⁷ The 4th Chemical Brigade developed from the 4th Chemical Regiment was to constitute the strategic reserve of the Polish Front⁸.

680/77/20, k. 35, the Report to the Commander of the 4th Chemical Regiment, date of receipt: 10th April 1974.

- ⁷ The 4th Army issued by the Warsaw Military District, unlike the Armies issued by Western districts, was the II reserve army and much worse armed. A chemical brigade was not developed there, but the Chemical Regiment for the war establishment – the statement by Col. Dipl. Stanisław Poprawski, a graduate of the Higher Military School of Chemical Forces (*Polish abbrev.* OSWChem) in Kraków (1967), the Commander of the CBRN Reconnaissance platoon (chemical platoon) in the 29th Armored Regiment and the 3rd Armored Regiment of the 11th Dresden Armored Division in Żagań (1967-1969), the Chief of chemical security of the 3rd Armored Regiment (1969-1971), a graduate of the General Staff Academy (*Polish abbrev.* ASG) in Warsaw (1974.), the assistant of the Chief of chemical security of the 11th Armored Division (1974-1975), the senior assistant manager of the Contamination Analysis Centre (OAS) in the Headquarters of the 11th Armored Division, and then the Head of the SMD Contamination Analysis Centre (1975-1979), a graduate of the tactical and operational course at the Chemical Defense Academy (*Polish abbrev.* AOPChem) in Moscow (1979), a senior officer and senior specialist of Chemical Services in the SMD (1979-1984), a graduate of the higher academic course at the AOPChem in Moscow (1985), a senior specialist of the Chemical Services in the SMD (1985-1988), a graduate of the tactical and operational course at the ASG (1988), a senior specialist of Chemical Services in the SMD (1988-1993), the Chief of the Operational and Reconnaissance Department in the SMD (1993-1996), the Chief of the Chemical Defense Forces in the SMD (1996-2002), retired since 2002.
- ⁸ The General Staff of the Polish Armed Forces began to work on the concept of the Polish Front in 1954. That resulted in the Development Plan of the Armed Forces of PRL in the years 1955-1965 assuming the number of 1.150.000 soldiers in the Polish Armed Forces at the time 'WE' in 1960 and the organization of the front detached from the PRL Armed Forces to the Unified Armed Forces of the Warsaw Pact. The mobilization plan of 1958 determined the amount of the front forces (441 026 soldiers), while for the Territory Defense Forces (*Polish abbrev.* OTK) - 314 068 soldiers. In total, the Armed Forces on a war footing were to reach 759 036 soldiers. From 1957 the Front consisted of three general military armies (1st A. – the PMD, 2nd A. – the SMD, 4th A. – the WMD), and 3rd Air Force Army. In the early 1970s the front's power consisted of three general military armies (made up of 15 general military divisions), the Air Force Army (3 divisions of combat air forces), the Airborne Division (*Polish abbrev.* DPD) and the division of coastal defense (*Polish abbrev.* DOW), and military units of various types of forces and services of the Front and the Army, see: P. Piotrowski, *Koncepcje „Frontu Polskiego” w okresie powojennym*, „Zeszyty Naukowe WSO im. Tadeusza Kościuszki”, 2000, No. 3, p. 114; J. Kajetanowicz, *Koncepcja użycia polskich wojsk operacyjnych w latach 1945-1975*, (in:) *Polska myśl wojskowa na przestrzeni dziejów*, ed. by W. Łacha, Olsztyn 2008, p. 646-647; F. Puchała, *Sekrety Sztabu Generalnego pojałtańskiej Polski*, Warszawa 2011, p. 178-179.

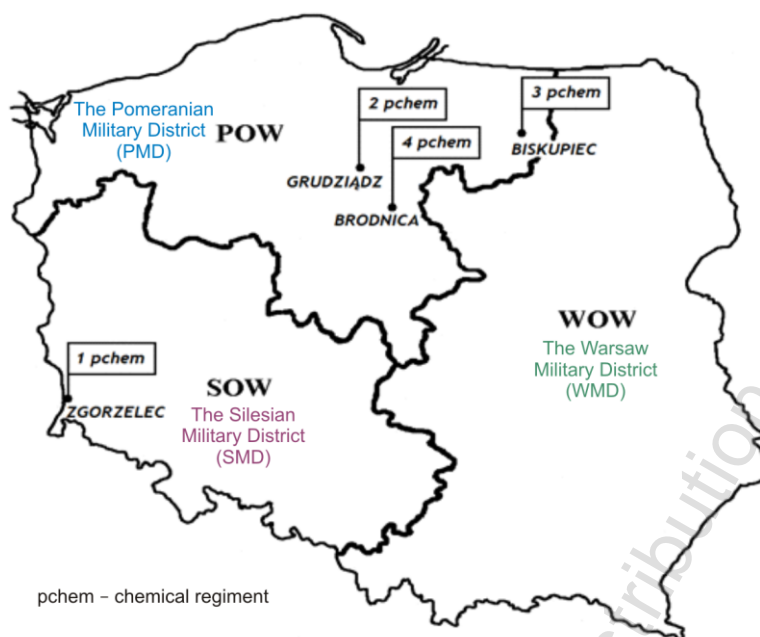


Fig. 1. The deployment of chemical forces in 1975

Source: Z. Zielonka, *Polskie wojska chemiczne w latach 1945-1991. Organizacja, koncepcje użycia i możliwości bojowe*, Wrocław 2015, p. 254

The war-time establishment of the newly formed Chemical Regiments / Chemical Brigades of the Army / included:

- *The Command; the Staff; departments: political, Military Internal Service (Polish abbrev. WSW) and technical; quartermaster; the military post office; the National Bank of Poland (Polish abbrev. NBP) Fund and the command company* directly subordinated to the Brigade Headquarters.
- *The CBRN Reconnaissance Company* (3 reconnaissance platoons and the dosimetry control platoon, together 95 soldiers).
- *Three special treatments battalions* with 386 soldiers in each, and three special treatments companies and the vehicle maintenance, transportation-support and medical aid platoons.
- *The Uniforms Decontamination Battalion* amounting to 274 soldiers consisted of two uniforms decontamination companies, and vehicle maintenance, transportation-support and medical aid platoons.
- *The Supply and Service Battalion* numbering 260 soldiers consisted of three companies: medical, supply and maintenance ones, as well as a field bakery, a water filters team and shoemaking and sewing workshops.⁹

In accordance with the establishment, the Chemical Brigade at the Army level consisted of 1.969 soldiers (216 officers, 330 non-commissioned officers, and 1.423 privates)

⁹ AWO, SzWChem, 2954/84/11, k. 671-672, *Zagadnienia osiągnięcia gotowości bojowej...*

and was equipped with 112 filling car installations IRS (ARS), 8 disinfecting and bathing installations DDA, 18 teams of pumps ZP-800 (three M-800 in each), 1 installation for disinfecting uniforms AGW-3 and 14 BU, 36 devices to deactivate uniforms UDU and 36 heating devices UG. In total, the Brigade had 443 vehicles of various types and 147 transport and special trailers.¹⁰

In the early 1970s, new peacetime establishment positions were introduced into chemical regiments and, moreover, the search for better organizational of wartime structures units was begun.¹¹ While drawing them up the findings adopted in the development plan for chemical troops were taken into account. They included:

- equipping the contamination detection system with automatic stations to detect nuclear explosions (the years 1976-1980);
- equipping CBRN reconnaissance subunits with armored vehicles of BRDM / FUG type (from the year 1974);
- shortening the duration of special treatments, which due to the need for a rapid restoration of struck troops' combat capability at tactical levels was not to exceed: in an infantry battalion – 60 minutes, in a mechanized regiment (tanks) – 2 hours, in a mechanized division (armored) – 3-4 hours;
- introducing high-efficient devices of TMS¹² type in order to enhance the possibilities of carrying out special treatments (also in winter conditions) (from the year 1977);
- replacing the BU and DDA uniforms decontamination installation with water laundries and dryers.¹³

¹⁰ At the end of the 1970s, after some corrections made to the establishment, the Chemical Brigade of the Army disposed of: 13 Combat Reconnaissance / Patrol Vehicles BRDM-2 RS, 126 filling installations IRS, 36 special treatments installations, 27 uniforms decontamination and deactivation installations, as well as 6 thermal special treatments devices WUS, see: *Właściwości i organizacja zabezpieczenia chemicznego pierwszej operacji zaczepnej armii*, „Biuletyn Informacyjny Sztabu Generalnego” (BI), 1979, No.1, p. 156.

¹¹ In 1973, the Headquarters of Chemical Forces of the SMD ordered the Commander of the 1st Chemical Regiment to develop proposals for an optimal organizational structure of a chemical brigade, a chemical company and a chemical platoon, AWO, ZA No. 507, 03445/76/14, k. 39-42, Guidance by the Head of Chemical Forces of the SMD for the Commander of the 1st Chemical Regiment of 4th April 1973 on the development of proposals on needs and the optimal organizational structure of a chemical brigade, a chemical company and a chemical platoon.

¹² The highly efficient special device of Soviet production using exhaust gas energy of the MIG-17 turbojet mounted on the Ural vehicle. The purpose of TMS was the removal of contaminants of heavy combat equipment, engineering stationary objects, roads and hardened squares and runways. In addition, TMS could be used to put up smoke screens and extinguish burning objects.

¹³ AWO, the Ordinance No. 507, 03445/76/14, k. 39-42, Guidelines of the Chief of Chemical Forces of the SMD for the Commander of the 1st Chemical Regiment of 4th April 1973 on the development of proposals on needs and the optimal organizational structure of the Chemical Brigades, chemical companies and chemical platoons. The development plan of chemical troops was almost fully executed. The only exception was the implementation of high-performance special equipment WUS of Polish production in place of the Soviet TMS. The use of WUS allowed the elimination of manual work during decontamination and deactivation, equalized possibilities for decontamination in sum-

As a result, in 1976 minor corrections were introduced to the wartime establishments of Chemical Regiments, which had arisen mainly from the need to adjust the structures of individual subunits to the technical and tactical capabilities of the new specialized equipment¹⁴. These changes did not affect the overall organization of Brigades at the Army level (**Figure 2**), which were developed on the basis of the 1st and 2nd Chemical Regiments, and had in their structures: the command, the staff, the command company, three special treatments battalions, a uniforms decontamination battalion, a CBRN Reconnaissance company, a chemical-radiometric laboratory and a supply and service battalion composed of maintenance, supply and medical companies.¹⁵

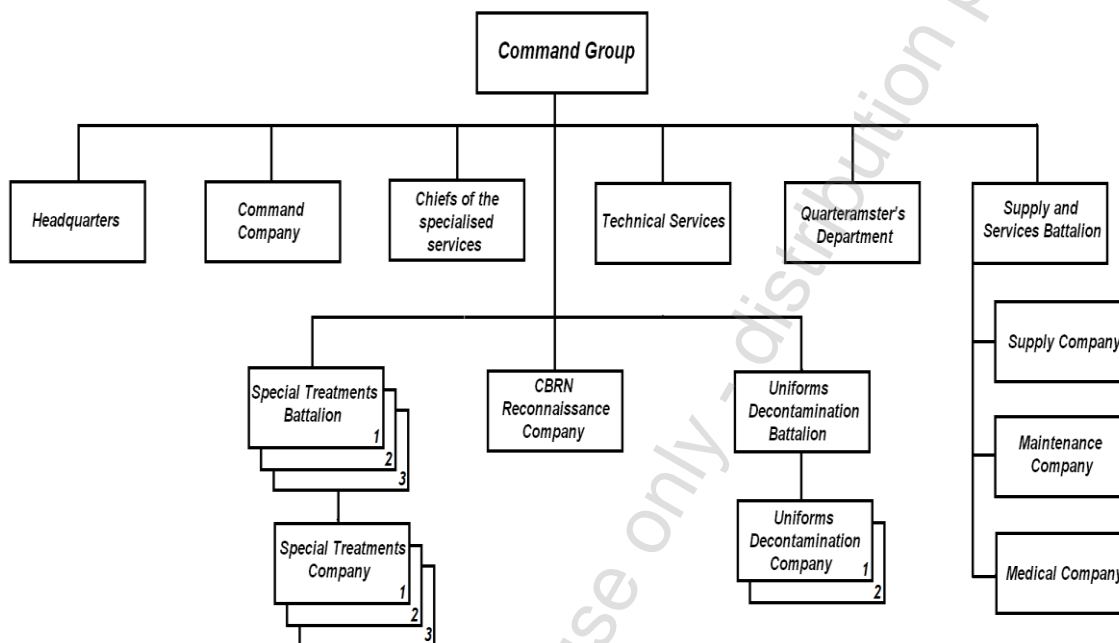


Fig. 2. The organizational structure of the Chemical Brigade at Army level (the 1970s)

Source: Own study based on: AWO, the Ordinance No. 507, 03445/76/14, k. 50-69, *Proposals for the establishment for special treatments, uniforms decontamination and CBRN Reconnaissance subunits of the Chemical Brigade of 26th June 1973*; AMON, 1704/00/96, k. 83, *the Archive, Appendix No. 25: The organization of a chemical regiment in the 1970s*

mer and winter conditions, as well as reduced workload and maintenance after equipment decontamination.

¹⁴ More: Z. Zielonka, *op. cit.*, p. 254-256.

¹⁵ AMON, 786/93/100, k. 32, *Stan i kierunki rozwoju wojsk chemicznych. Materiał na posiedzenie Kolegium GZSiB WP*, Appendix No. 2, *The organizational structure of chemical troops, the proposed changes*, Warsaw 1989; The relation of Lt. Col. Andrzej Leosz, a graduate of the Higher Military School of Chemical Forces (*Polish abbrev. OSWChem*) in Kraków (1975), the training platoon commander in the 3rd Chemical Regiment (1975-1977), the Head of the Educational Process Support Department, the senior instructor and lecturer at WSOWChem (1977-1989), the lecturer at WSOWI, WSOIW and the Tadeusz Kościuszko Military Academy (WSO-TK) Wrocław (1989-1996), the senior officer at the Department of Training in the Directorate of Chemical Defense Forces SMD (1996-2002), retired since 2002.

The Chemical Brigade of the Front developed on the basis of the 4th Chemical Regiment had a slightly different organizational structure (**Figure 3**). These differences in the organization resulted from the fact that the Regiment in Brodnica became a wartime unit of the central level and was the Supreme Headquarters reserve. This fact explains why in the Front Brigade there was not a company but a CBRN Reconnaissance battalion considerably enhancing possibilities in this respect. What is more, contrary to regiments developing Army brigades during the war, a uniforms decontamination company was to be reorganized into an independent battalion, which after being detached from the structures of the brigade was to be subordinate to the commander of the Front.¹⁶

In accordance with the establishment No. 37/019 applicable in the 1970s, the Brigade Chemical of the Front included: *the Command, the Staff, the political section, the finance section, the quartermaster's department, the infirmary, technical services, heads of services, the command company, three special treatments battalions, a uniforms decontamination company, a CBRN Reconnaissance battalion* (three companies) and *a supply and services battalion* composed of a maintenance company, a supply company, a medical company, a field bakery and a shoemaking-sewing workshop. In addition, the Brigade had: a financial and banking department, a WSW department, an organizational and mobilization group, a SOAS communication company and a military postal station.¹⁷

¹⁶ The relation of Col. Dipl. Tadeusz Rokicki, a graduate of WSOWChem in Kraków (1973), the platoon and company commander in the 1st Special Treatments Battalion (*Polish abbrev.* BZS) in the 4th Chemical Regiment (1973-1974), the Chief of the Staff and the commander of the 1st Special Treatments Battalion (*Polish abbrev.* BZS) (1975-1977), a graduate of AOPChem in Moscow (1980), the operations officer in the Staff of the 4th Chemical Regiment (1980-1983), the Chief of the Staff of the 4th Chemical Regiment (1983-1987), the Commander of the 4th Chemical Regiment (1987-1991), the Commander of the Commission of Military Completion (*Polish abbrev.* WKU) in Brodnica (1991-2002), retired since 2002.

¹⁷ AMON, 1704/00/96, k. 81, *the Archive*, Appendix No. 23: The organization of the Front Chemical Regiment / Brigade in the 1970s; *Ogólne zasady i właściwości organizacji obrony wojsk frontu przed BMR*, „Myśl Wojskowa Tajna”, 1989, No. 3, p. 24.

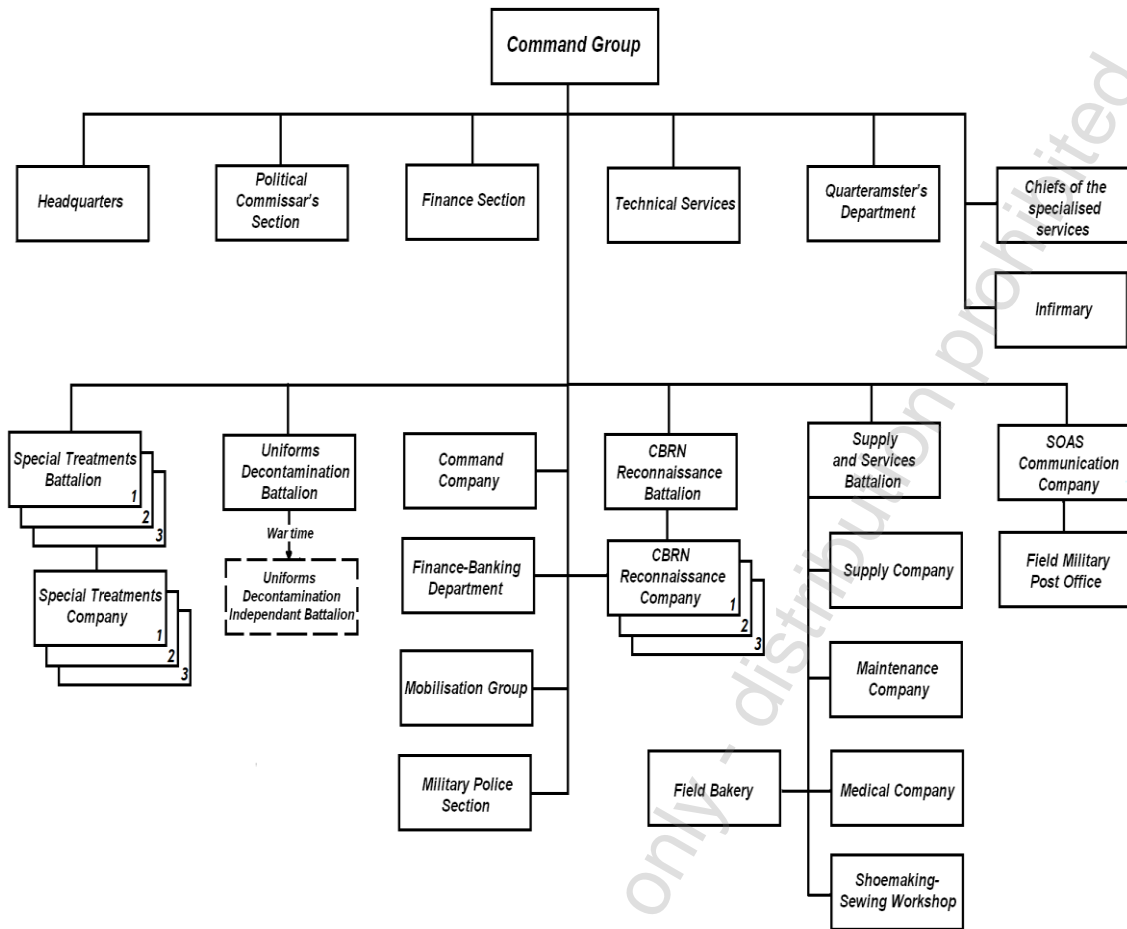


Fig. 3. The organizational structure of the Front Chemical Brigade / the Chemical Regiment / in accordance with the establishment No. 37/019 (in the 1970s)

Source: Own study based on: AMON, 1704/00/96, k. 81, *the Archive*, Appendix No. 23: *The organization of the Front Chemical Regiment / Brigade in the 1970s*

The Regiment in Brodnica in peacetime counted 480 soldiers, while in the event of a war, after the development to the Brigade – 2.352 soldiers.¹⁸ According to the peacetime establishment 'PE' the Regiment was equipped with: 13 radio stations, 13 contamination identification technical units mounted on BRDM-2RS vehicles, 38 filling installations IRS, 5 uniforms decontamination installations, 1 installation DDA-53, 1 installation AGW and BU, 1 chemical-radiometric laboratory, 2 power stations, 1 chemical equipment maintenance workshop, 156 vehicles and 27 transport and special trailers.¹⁹ As per wartime establishment 'WE' the Front Chemical Brigade was to dispose

¹⁸ AWT, 680/77/20, k. 35, The report to the Commander of the 4th Chemical Regiment, date of receipt: 10 IV 1974.

¹⁹ AMON, 1704/00/96, k. 81, *the Archive*, Appendix No. 23: The organization of the Front Chemical Regiment / Brigade in the 1970s, the relation of Col. Dipl. Tadeusz Rokicki.

of: 40 BRDM-2RS vehicles, 108 installations ARS /IRS/, 36 sanitary treatments sets and 36 uniforms deactivation devices.²⁰

In the 1980s, despite immense difficulties²¹ the capabilities of chemical troops continued to expand. There were formed new specialized subunits and improved the organizational structures of those already existing.²² However, all this did not involve the change in the manning of peacetime 'PE'.

In 1983, the Nuclear Explosions Detection Battalion²³ was formed within the 3rd Chemical Regiment. In the event of war it was to have 24 hours to develop itself into a centrally subordinated independent unit. In organizational terms it reported to the commander of the 3rd Chemical Regiment, while in operational ones - directly to the Head of the Chemical Forces of the Polish Armed Forces. The battalion was the most specialized component of the contamination detection system (*Polish abbrev.* SWS) of the operational land forces. Five years later it was transformed into the Nuclear Explosions Detection and CBRN Reconnaissance Battalion, which replaced the CBRN Reconnaissance Battalion within the 4th Chemical Regiment, thus increasing the ability to detect nuclear explosions and identify contamination at the Front.

In 1986, flamethrowers companies based on platoons established eight years earlier were formed in the 1st and 2nd Chemical Regiments. In the same period, in the 1st Regiment there was also formed a fumigation company that at the time of the war was to be included in the units of the Front as a separate subunit.²⁴

In the late 1980s the level of the peacetime establishment of the 1st and 2nd Chemical Regiment was reduced from 25 to 18% of the wartime establishment 'WE'. This was associated with a significant increase in the degree of the Regiment's manning, which had to be expanded more than five times so as to develop itself into a brigade.²⁵ The

²⁰ *Ogólne zasady i właściwości...*, p. 24.

²¹ In contrast to the previous decade, in which neither time nor material resources were spared to train troops, dramatically deepening economic problems of the state caused widespread restrictions within the limits of training, especially on the fuel and means of warfare. Training programs reduced the number of hours of practical exercise, mainly tactical and tactical-special ones.

²² At the beginning of the 1980s the special treatments installations WUS began to be introduced for the platoons equipment, which significantly raised the efficiency of decontamination. The use of these high-performance special equipment forced changes in the organizational structures of chemical subunits, consisting in the replacement of the second platoon of special treatments IRS with the platoon of special treatments WUS, more: Z. Zielonka, *op. cit.*, p. 260-261, 275.

²³ Despite subsequent plans of forming an independent unit composed of six nuclear explosions detection companies, the Battalion remained the only such a unit in the Polish Army, see: Z. Guz, *Poddziały wykrywania wybuchów jądrowych*, „Chemik. Biuletyn Stowarzyszenia Chemików Wojskowych RP” (Chemik), 2006, No. 2, p. 23-24.

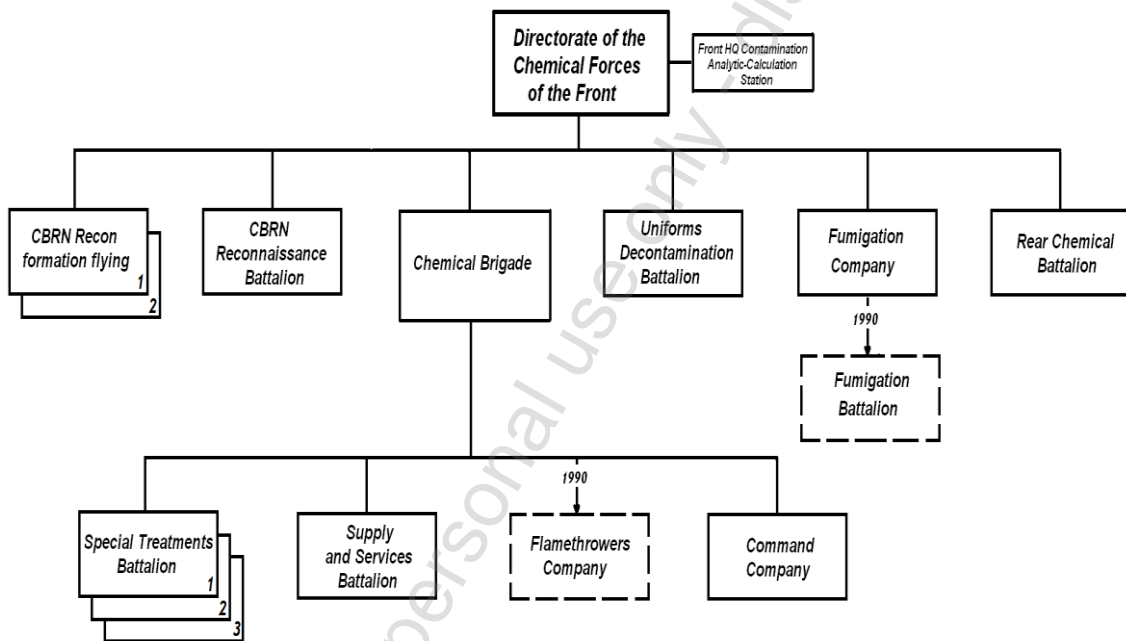
²⁴ AMON, 1607/9/1, k. 84-87, The Ordinance of the Chief of the General Staff No.011/ORG of 27.III.1986 on organizational changes in chemical forces; 1607/9/2, k. 77-9, The Ordinance of the Chief of the General Staff No. 053/ORG of 18.VIII.1986 on forming flamethrowers subunits in chemical forces.

²⁵ A prime example of difficulties which both the Armed Forces and society had to face during units' development mobilization exercise was the central level inspection to the development of the 3rd

3rd Chemical Regiment experienced changes as well, as it was reorganized in the Chemical Forces Training Centre (*Polish abbrev. OSzWOPchem*). It was to form the nucleus of the regiment developed for needs of the WMD in the event of war.²⁶

In the second half of the 1980s changes arose in doctrinal views on the use of nuclear and chemical weapons, shifting the burden of fighting on conventional weapons, and they influenced the decision to boost the capabilities of fumigation and flamethrowers subunits. According to the assumptions of the Directorate of Chemical Forces, it was intended to transform the Front fumigation company into a medium battalion, as well as form medium Front flamethrowers companies until the late 1990s (**Figure 4**). Political changes as well as the end of the Warsaw Pact in 1991 caused, however, that these plans were not realized. The reduction in the Armed Forces carrying out in the subsequent years, as in the late 1940s, seriously affected the chemical forces, leading to dissolving two of the three chemical regiments before the end of the 1990s²⁷, thereby terminating nearly three-decade existence of Polish Chemical Brigades of the Army and Front.

a)

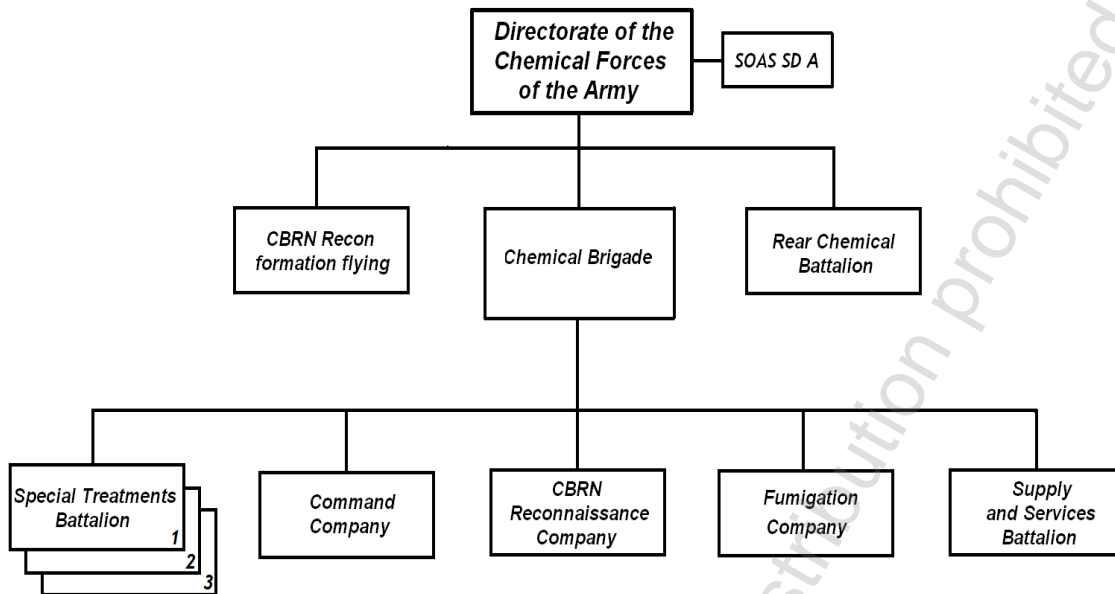


Regiment to the full 'WE' manning in 1976. The exercise involving the mobilization, coordination training and march on the training field in Orzysz, during its first stage, i.e. the called-up and arrival of several hundred reserve soldiers (including a large group of drivers) at the military unit, ended up paralyzing the milk transport and activities of the Car Transport Enterprise (*Polish abbrev. PKS*) in three provinces. The situation forced the Command of the Regiment to release almost all called up drivers from the remaining stages of the exercise - the relation by Col. Andrzej Leosz.

²⁶ AMON, 1607/99/13, k. 459–462, The Ordinance of the Chief of the General Staff No. 064/ORG of 1 VI 1989 on re-forming of the 3rd Chemical Regiment into OSzWOPChem.

²⁷ The 1st and 2nd Chemical Regiments were reduced to the level of battalions, and the 4th Chemical Regiment remained as a reserve of the Supreme Commander.

b)



c)

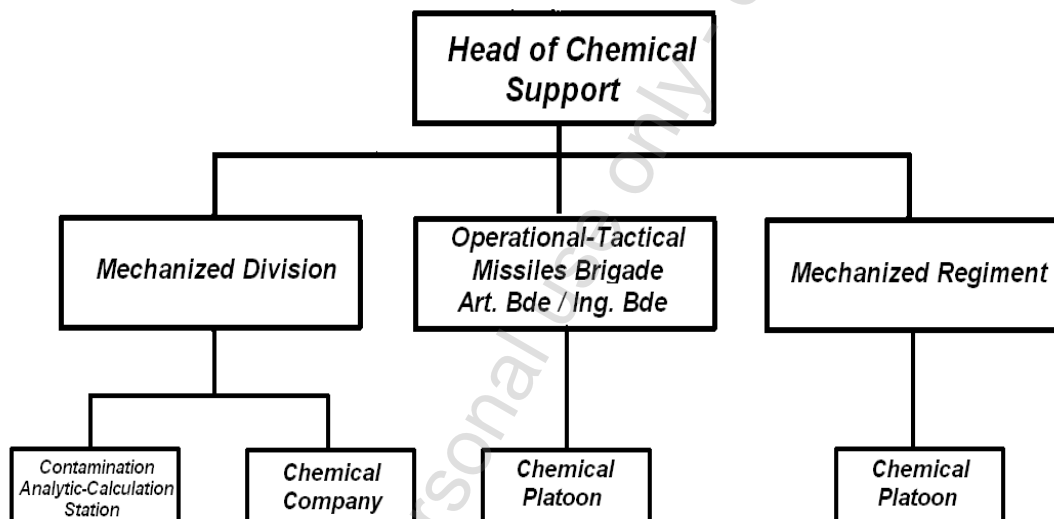


Fig. 4. The organizational structure of chemical forces (the 2nd half of 1980s) and planned changes (the 1st half of 1990s): a) at the Front level; b) at the Army level; c) at the Tactical Formation and Unit level

Source: AMON, 786/93/100, k. 32, 'The status and development directions of chemical forces. Materials for the meeting of the College of the Department of Combat Training (Polish abbrev. GZSiB) of the Armed Forces', Appendix No. 2, The organizational structure of chemical forces, planned changes

2. CONCEPTS OF OPERATION AND COMBAT CAPABILITIES OF CHEMICAL BRIGADES

The creation of four chemical regiments at the turn of the 1960s and 1970s, that in the event of war were to be developed to the Army and Front level brigades, made the

chemical forces pursue their specialized tasks also at the operational level. In the 1970s they included:²⁸

- conducting CBNR and radioactive contamination reconnaissance;
- conducting comprehensive sanitary treatments of the personnel;²⁹
- conducting comprehensive special treatments of weapons, military equipment, uniforms, gears and ISOPS;³⁰
- decontamination and deactivation of sections of the land and roads;
- ensuring control of soldiers' irradiation;
- an inspection of the level of contamination of soldiers, weapons, equipment and related material;
- participation in the planning and application of smokes in combat operations;
- the use of flamethrowers;
- providing forces with military equipment and chemicals.

In the next decade, due to the formation of new subunits and the introduction of changes in chemical protection projects, these tasks were expanded by:

- detection of nuclear explosions, impacts with chemical agents incendiary materials;
- participation in accomplishing transitions in chemical barriers;
- implementation of projects in the field of radiation protection.³¹

During combat operations without the use of weapons of mass destruction, Chemical Brigades could also be used for bathing people, water and other liquids delivery, extinguishing fires.³²

²⁸ AMON, 786/93/33, *Instrukcja o działaniu wojsk chemicznych (projekt)*, Warszawa 1977, p. 7.

²⁹ Sanitary treatments (known today as the personnel decontamination) were defined as a set of actions aimed at the removal of toxic, radioactive and biological substances from the human body, mucous membranes of the eyes, nose and mouth, see: A. Leosz, S. Sawczak, *Decontamination equipment*, Wrocław 1996, p. 7.

³⁰ Special treatments consisted of deactivation, decontamination and / or disinfection of armaments, military equipment and means of transport, uniforms and gears, buildings and the area. Partial special and sanitary treatments were carried out on the commander's order directly in the combat disposition of forces with the use of main and at-hand means. Total special and sanitary treatments were carried out after the combat mission on the commander's order, directly in the unit's deployment area, or at the point of special treatments, see: *Regulamin walki wojsk lądowych (batalion, kompania)*, Warszawa 1965, p. 43; T. Maleszyk, L. Fortuna, *Poradnik szkolenia chemicznego*, Wrocław 1988, p. 84–85.

³¹ *Taktyka wojsk obrony przeciwchemicznej, cz. 1: (brygada, pułk, batalion)*, Warszawa 1990, p. 9; C. Jawor, S. Poprawski, *Węzłowe problemy zabezpieczenia chemicznego operacji obronnej Armii na terytorium kraju*, „Myśl Wojskowa Tajna”, 1989, No. 3, p. 101.

Under the current at that time concept of the chemical forces' operation, Chemical Brigades were to be used in key directions of activity, in favor of the most important elements of the operational formation. Thus, their tasks included supporting missile, armored and mechanized forces' operations, as well as rear units and objects.³³ An important role was played by tactical and special capabilities of individual units and subunits of the Chemical Brigade of the Army or the Front, as they were varied and resulted from their organization and the special equipment changing over time.

The Chemical Brigade could operate in a centralized or decentralized way, depending on the tasks and operating conditions of the Army / Front, and the anticipated contamination risk.³⁴

The centralized³⁵ method of operation consisted in the entire Brigade's arrangement and operation in a single region, while the decentralized one - the appointed Brigade's forces, called chemical reserves (*Polish abbrev.* OChem), arranged and operating within 2-3 areas. The reserves were to be deployed so as to make the decontamination of certain elements of the operating groups possible.³⁶

The Chief of Chemical Forces of the Army / Front / was to command the actions of the Army / Front / Chemical Brigade. In special cases, the Brigade's units or subunits could be temporarily assigned to commanders of tactical units during the time of liquidation of contamination.³⁷ It was assumed that the Chemical Brigade would perform tasks in the field of detecting nuclear explosions, CBRN reconnaissance and decontamination, both in the course of the Army and the Front defensive as well as offensive operations.

During the Army / Front / offensive operation the Chemical Brigade could lead decontamination based on 2 or 3 separate chemical reserves composed of special treatments battalions or companies; their task was to maintain continuous readiness for decontamination in areas as close as possible to elements of the formation for which it was to be made. In practice this meant 1-2 -fold regrouping of reserves at a distance of 30-40 km per day, between the first and second echelon of the Army. It was planned that in the first place the reserves would be used to carry out special treatments of the Army Operational and Tactical Missile Brigades (*Polish abbrev.* ABROT), anti-aircraft

³² W. Chwałek, *Prowadzenie zabiegów sanitarnych i specjalnych w operacji zaczepnej Armii siłami Brygady Chemicznej*, a doctoral thesis, ASG, Warszawa 1985, p. 80.

³³ *Ibidem*.

³⁴ AWO, SzWChem, 2954/84/11, k. 672, *Zagadnienia osiągnięcia gotowości bojowej...* It was assumed that the pace of the brigade troops redeployment during the day on hardened roads would amount to 30-40 km/h, at night - 25-30 km/h. Approx. 1.100 axis, i.e. 10 echelons were needed to transport the Chemical Brigade by rail, see: AWO, SzWChem, 2954/84/11, k. 673, *Zagadnienia osiągnięcia gotowości bojowej...*

³⁵ It was expected that it would be used less.

³⁶ It was assumed that the brigade assembly areas would provide room for manoeuver, good masking and conditions of defense against weapons of mass destruction. The area for the entire brigade was to be of approx. 100 km², see: AWO, SzWChem, 2954/84/11, k. 673, *Zagadnienia osiągnięcia gotowości bojowej...*

³⁷ AWO, SzWChem, 2954/84/11, k. 672, *Zagadnienia osiągnięcia gotowości bojowej...*

missile troops, groups of artillery, command posts and the second echelon of the Army (reserve).³⁸

Depending on the operational situation the further in-depth location of the different battalions in such a way that the first battalion acted in favor of the offensive formation, the second one in favor of the Operational-Tactical Missile Brigade, Headquarters (*Polish abbrev.* SD) and special reserves, while the third one in favor of the second operational echelon of the Army /Front/ and elements of rear formation.³⁹

After reaching the assembly areas by chemical reserves it was indispensable to conduct reconnaissance of 2-3 areas of special treatments, and within them - 2-3 company posts of special treatments (*Polish abbrev.* PZS). This undertaking was to be implemented by special reconnaissance groups, consisting of staff officers of Chemical Brigade and special treatment battalions and companies. Areas of treatments had to be within one-hour march from the reserve's assembly area, and posts of special treatments at a distance of at least 5 km apart.⁴⁰

During the offensive operation the tasks relating to the detection of WMD attacks and CBRN reconnaissance at the Army level were to be fulfilled by a CBRN reconnaissance company of the Chemical Brigade, while at Front level – by a CBRN reconnaissance battalion (in the 1980s - the independent Nuclear Explosion Detection and the CBRN Reconnaissance Battalion). Their tasks at the time of the army's entry to the battle were to develop the explosion observation area (*Polish abbrev.* ROW), secure the most important formation elements (HQ, ABROT, an anti-aircraft missile platoon and the second echelon) and conduct reconnaissance in the direction of the main assault and within the operational area of the Army / Front/.⁴¹ In the run-up to the operation CBRN reconnaissance companies diagnosed assembly areas or offensive groups' march roads from lines of departure to frontiers where battalion columns were to be developed.⁴² Along with the troops' moving forwards, it was intended to lead to reconnaissance of roads of displacement, new areas of deployment of the most important elements of the Army / Front disposition as well as evacuation and delivery roads.⁴³

While organizing and conducting defensive operations⁴⁴ special treatment battalions of Chemical Brigades were to operate in favor of tactical (operational) units of the second echelon, missile troops and artillery, special reserves and elements of rear for-

³⁸ C. Jawor, S. Poprawski, *Węzłowe problemy zabezpieczenia...*, p. 103-104.

³⁹ *Taktyka wojsk obrony przeciwchemicznej*, part 1..., p. 18.

⁴⁰ W. Chwałek, *op. cit.*, p. 114.

⁴¹ C. Jawor, S. Poprawski, *O zabezpieczeniu chemicznym pierwszej armijnej operacji zaczepnej*, „Myśl Wojskowa Tajna”, 1987, No. 4, p. 112.

⁴² *Taktyka wojsk obrony przeciwchemicznej*, part 1..., p. 18.

⁴³ *Właściwości i organizacja...*, p. 172.

⁴⁴ Based on the analysis of normative documents and guidelines for exercise at the levels of the Army, the Front and Joint Armed Forces of Warsaw Pact one may get the impression that less space and attention was devoted to defensive operations than offensive ones. This fact creates doubts concerning widely proclaimed in this part of Europe 'purely defensive' nature of the Warsaw Pact.

mations. They intended to be arranged between the first and second operation line with such calculation, so that they could protect the whole defense disposition of the operation unit, with particular emphasis on elements determining the defense sustainability.⁴⁵

Tasks in the field of detecting WMD attacks and chemical survey while conducting an offensive operation by the Army or the Front were responsibilities of the CBRN reconnaissance company of the Chemical Brigade. It was to lead the reconnaissance of re-deployment roads of tactical units outgoing to the counter-attack, and maneuver roads, as well as develop the area of observation and detection of nuclear explosions and contamination.⁴⁶

It should also be mentioned that the uniforms decontamination battalion included merely in the Chemical Brigade of the Army was to execute its tasks, both in defensive and offensive operations. During defensive operations it could be located between the first and second operation line in the area of the rear of the Army, where uniforms decontamination companies developed decontamination uniforms posts at points of the Chemical Brigade's special treatments or at uniform depots of the Army. During the Army's offensive operation the uniforms decontamination battalion could operate with all its forces or just companies involved, depending on the number and distribution of contaminated uniforms collection points until the end of decontamination. In the case of operating close to uniform depots of the Army, the battalion was to form one group at first, which was to be separated into forces necessary to decontaminate uniform sorts delivered to the area of depots. The battalion operation using particular companies could take place when the battalion was used for uniforms decontamination in special treatment points developed by forces of the chemical brigade.⁴⁷

Special and tactical capabilities of the Chemical Brigade at the Army and Front levels differed and were conditioned by the structure and possibilities of different organizational elements changing over the years, and thus they constituted their appropriate multiple.

For example, for the mid-1970s the Army Chemical Brigade with the use of the CBRN reconnaissance company forces was able to carry out reconnaissance of 12 march roads of a total length of 240 km, 2-3 areas of the division assembly, as well as the 6-12 areas of WMD attacks. While operating in the area of observation and detection of nuclear explosions and contamination (*Polish abbrev.* ROW) it could develop 12 contamination observation posts (*Polish abbrev.* POSk) within the area of approx. 2.700 km².⁴⁸ The Front Chemical Brigade possessed three times greater capabilities than the

⁴⁵ C. Jawor, S. Poprawski, *Węzłowe problemy zabezpieczenia...*, p. 103-104.

⁴⁶ *Ibidem*, p. 102.

⁴⁷ AWO, SzWChem, 2954/84/11, k. 674, *Zagadnienia osiągnięcia gotowości bojowej...; Taktyka wojsk obrony przeciwchemicznej*, part 1..., p. 76-77.

⁴⁸ W. Chwałek, *op. cit.*, p. 80-81. Until the mid-1970s the CBRN reconnaissance company composed of 16 teams implemented these tasks. The organizational transformations of reducing the number of teams to 12, without lowering the subunit's tactical capacity, were possible due to, among others,

Army Chemical Brigade. This resulted from the fact that until 1988 the CBRN reconnaissance battalion composed of three companies⁴⁹ performed the tasks of chemical survey and monitoring nuclear explosions of the Front Chemical Brigade (**Table 1**).

Table 1. Capabilities of the Chemical Brigade of the Army and the Front in the field of CBRN reconnaissance

Subunit (Unit, Tactical Formation)	CBRN Reconnaissance Patrols	Road Reconnaissance	Contamination Observation Posts	Nuclear Explosions Observation Area
CBRN Decontamination and Reconnaissance Company	(16) 12	up to 240 km	(16) 12	up to 2700 km ²
Army Chemical Brigade	(16) 12	up to 240 km	(16) 12	up to 2700 km ²
CBRN Decontamination and Reconnaissance Battalion	36	up to 720 km	12	2000÷5000 km ²
CBRN Reconnaissance Battalion	38	1520 km	38	4800-7200 km ²
Front Chemical Brigade	36	up to 720 km	12	2000÷5000 km ²

(16) –in accordance with the organization in force until the mid-1970s.

Source: Own study based on: *Taktyka wojsk obrony przeciwchemicznej, cz. 1: (brygada, pułk, batalion)*, Warszawa 1990, p. 16; *Taktyka wojsk obrony przeciwchemicznej, cz. 2: (kompania, pluton, drużyna)*, Warszawa 1990, p. 41; AWO, SzWChem, 2954/84/11, k. 673, 'Issues of achieving operational readiness by the Army Chemical Brigade', the Directorate of Chemical Forces of the SMD, Wrocław 1969

In terms of decontamination the capabilities of Chemical Brigade of the Army and the Front they were similar, which was determined by the same number and the structure of special treatments battalions.⁵⁰ In the mid-1980s the Chemical Forces were equipped with new generation devices for special treatments, namely the filling installations IRS-2 and high-performance special equipment WUS, which allowed three battalions to carry out deactivation 1080 and to decontaminate 648 items of combat

the replacement of vehicles for identifying contamination GAZ 69rs with BRDM-rch and FUG, and later BRDM-2rs.

⁴⁹ In 1988, the Decontamination and Reconnaissance Battalion was re-formed into the Nuclear Explosions Detection, and CBRN Reconnaissance Battalion, which at the time of the war, as an independent unit, was to be part of the Front forces.

⁵⁰ The capabilities of the chemical brigade in the field of decontamination were a multiple of the capabilities of one special treatments battalion.

equipment within 1 hour. Performance of sanitary treatments remained virtually unchanged for over three decades and amounted to 3456 soldiers per hour⁵¹ (**Table 2**).

With the forces of the uniforms decontamination battalion consisting of two companies, the Chemical Brigade of the Army was able to decontaminate and disinfect from 1200 to 9920 sets of uniforms⁵² within 10 hours, depending on the special equipment of subunits,⁵³ the type of sorts and toxic agents used.⁵⁴ At the end of the 1980 uniforms decontamination units of the Army-level were incorporated into the structure of an Army rear independent chemical battalion.⁵⁵ At the Front-level an independent battalion was responsible for decontaminating uniforms, and after mobilization development from regimental decontamination company it was detached from the structures of the Front Chemical Brigade.

⁵¹ W. Chwałek, *op. cit.*, s. 80–81; *Taktyka wojsk obrony przeciwchemicznej*, cz. 1..., s. 42-43. These theoretical calculations often do not have too much in common with the actual capabilities of troops. Over the years, the duration of special and sanitary treatments were tried to be made real by taking into account special tactical and organizational factors, which e.g for a contaminated brigade and division amounted to 1.7, and for a regiment and battalion respectively 1.5 and 1.2. It did not change the fact that the extraordinary chaos ruled in determining the indicative time of decontamination, resulting not only from the number of arithmetic mistakes in the manuals and textbooks (differences in times of particular treatments were as high as above 50%, which, after all, could not be justified by the introduction of new generation equipment, or minor organizational changes), but also from the lack of practical verification, especially at the operational level; compare: *Taktyka wojsk obrony przeciwchemicznej*, part 1, p. 46; W. Chwałek, *op. cit.*, p. 80-81; *Właściwości i organizacja...*, p. 156-157; A. Sokołowski, *Zabezpieczenie chemiczne przegrupowania własnych i sojuszniczych wojsk przez terytorium kraju*, „Myśl Wojskowa Tajna”, 1979, No. 1, p. 136; *Ogólne zasady i właściwości organizacji obrony wojsk frontu przed bronią masowego rażenia*, „Bl” 1974, No. 2, p. 32; *Likwidacja skutków uderzeń bronią masowego rażenia w wojskach frontu*, „Bl”, 1974, No. 2, p. 68-69; AWO, SzWChem, 2954/84/11, k. 673-674, *Zagadnienia osiągnięcia gotowości bojowej...*

⁵² *Taktyka wojsk obrony przeciwchemicznej*, part 1, p. 68-71; *Właściwości i organizacja...*, p. 157; *Likwidacja skutków uderzeń...*, p. 69; AWO, SzWChem, 2954/84/11, k. 674, *Zagadnienia osiągnięcia gotowości bojowej...*

⁵³ Until the mid-1970s uniforms decontamination subunits used the installation BU-2 (and its variant BU-3, BU-4), installations AGW-3, disinfecting and bath installations DDA and the device to deactivate uniforms UDU. In the second half of the 1970s field dryers and special treatments laundries were introduced to the troops, as well as installations AGW-3 purchased in the USSR was replaced by upgraded installations AGW-3U, which allowed the significant increase in the possibility of uniforms decontamination; more: Z. Zielonka, *op. cit.*, p. 222-225, 350-351.

⁵⁴ Capabilities of special uniforms decontamination subunits were determined on the basis of standard of a single loading chambers or boilers and duration of the decontamination, disinfection / disinsectization of uniforms, footwear and gears and individual means of protection against contamination. The duration of treatment was significantly influenced by the type of uniforms, i.e. summer or winter, as well as the type of toxic warfare agents used by the enemy: iprit, Vx or soman, see: *Taktyka wojsk obrony przeciwchemicznej*, cz. 1..., p. 68-71; *Właściwości i organizacja...*, p. 157.

⁵⁵ AWO, SzWChem, 2954/84/11, k. 674, *Zagadnienia osiągnięcia gotowości bojowej...*

Table 2. Capabilities of the Chemical Brigade of the Army and the Front in the field of decontamination

Subunit (unit, Tactical Formation)	Mechanized Division			Armored Division			Area Decontamination (1 filling unit)		Uniforms Decontamination during 10 h	Contamination removal (calculation unit in 1 h of work)		
	Deactivation (h)	Decontamination (h)	Sanitary treatments (h)	Deactivation (h)	Decontamination (h)	Sanitary treatments (h)	Vx length km width km	Iprit length km width km		Deactivation (h)	Decontamination (h)	Sanitary treatments (h)
Special Treatment Battalion	10-11* 8** 15***	14-16* 14** 22***	17-21* 11** 18***	10-11* 7** 13***	14-16* 12,5** 19***	17-21* 12** 14***	<u>9</u> 5	<u>18</u> 5	-	312***	216***	1152***
Special Treatment Battalion /WUS/	13***	24***	18***	11***	20***	14***	<u>8</u> 5	<u>16</u> 5	-	384***	204***	1152***
Uniforms Decontamination Battalion	-	-	-	-	-	-	-	-	7800-9600* set 1200-9920** set	-	-	-
Army Chemical Brigade	3**	5**	5**	3**	5**	4**	<u>26</u> 5	<u>52</u> 5	7800-9600* set 1200-9920** set	1080** *	636***	3456***
Front Chemical Brigade	3**	5**	5**	3**	5**	4**	<u>27</u> 5	<u>54</u> 5	-	936***	648***	3456***

* –in accordance with the organization in force until the mid-1970s..

** - in accordance with the organization in force from the mid-1970s until the mid-1980s.

*** - in accordance with the organization in force from the mid-1980s.

Source: Own study based on: *Taktyka wojsk obrony przeciwchemicznej, cz. 1: (brygada, pułk, batalion)*, Warszawa 1990, p. 16, 46; *Ogólne zasady i właściwości organizacji obrony wojsk frontu przed bronią masowego rażenia*, „Biuletyn Informacyjny Sztabu Generalnego”, 1974, No. 2, p. 32; *Likwidacja skutków uderzeń bronią masowego rażenia w wojskach frontu*, „Biuletyn Informacyjny Sztabu Generalnego”, 1974, No. 2, p. 68, A. Sokółowski, *Zabezpieczenie chemiczne przegrupowania własnych i sojusznicych wojsk przez terytorium kraju*, „Myśl Wojskowa Tajna”, 1979, No. 1, p. 136; AWO, SzWChem, 2954/84/11, k. 673, 'Issues of achieving operational readiness by the Army Chemical Brigade', the Directorate of Chemical Forces of the SMD, Wrocław 1969.

CONCLUSION

In the post-war history of chemical forces the year 1949 was a kind of the turning point, when the Armed Forces began to be significantly developed as a result of the development of the international situation as well as the internal one. In the case of chemical forces this actually meant the re-construction and lasting until 1971 the search for optimal organizational structures. The greatest in the history numbers and combat potential of chemical troops were achieved then, thereby ending the over twenty-year-long stage of their quantitative development, and starting the new, lasting over almost two decades, stage of qualitative development⁵⁶.

The creation of chemical regiments developed to the Army and Front brigades at the time of the war resulted in drawing up the concept of the use of chemical forces at the operational level as well. Although three Chemical Brigades and a regiment were the main organizational elements of the war theatre, most of the basic tasks in the field of chemical protection and defense against weapons of mass destruction were pursued by their constituent subunits: CBRN reconnaissance, special treatments, uniforms decontamination, the detection of nuclear explosions as well as smoke and flamethrowers ones. According to the assumptions, companies or battalions separated from Chemical Brigades were to be used on the main lines of operations, to the benefit of the most important elements of the operational groups, i.e. missile, armored and mechanized troops. The concept of the use of chemical troops, which was worked out at this level, did not differ substantially from the principles of the use of chemical forces at the tactical level and was always subordinate to the intention of offensive or defensive operations. An important role in this regard was played by tactical and special capabilities of individual subunits of the Chemical Brigade of the Army or the Front and independent units at these levels, which were varied and resulted from their improved organization and special equipment undergoing changes.

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BIOGRAPHICAL NOTE

CPT Zbigniew ZIELONKA, PhD – a lecturer at the CBRN Defense Team at the General Tadeusz Kościuszko Military Academy of Land Forces in Wrocław. He participated in the missions in Iraq and Afghanistan. Doctor of Humanities; he defended his doctoral dissertations with honors at the Institute of History at the University of Wrocław in 2013. He is a member of the Association of Military Chemists of the Republic of Poland, and the author of, among others, the first and so far the only monograph on post-war history of Polish chemical forces.

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