

1946 Storm of Eagles©

Neu-Heer Nerve Agents Part one

By S. Pearson

"It is my belief Reichsmarchell that the earlier publicly patented organo-phosphorus compounds research available to allied scientists does not come close to the toxicity of our Trilon family. Even if the Allies discovered the chemical composition after our initial deployment of 'Stoff 100' our volatile offensive nerve agents, they would need at least 3 years, in order to replicate an industrial production of the nerve agent too.

Thus, Reichsmarchell we have a strategic superiority in relation to the enemy, who will however retaliate with other "conventional" chemical warfare agents. To circumstance this, we have to launch our new weapon strategically against the RAF and USSAF in Britain, destroying their air power at a stroke, whose long term consequences, could be the surrender of Britain!"

Dr. Ambro's to Reichsmarschell Goring Sept 1945.

Introduction

In the first part of this article on the Neu-Heer chemical weapons programme, I will describe the development, production and use of the Neu-Heer's most deadly arsenal of chemical weapons the Trilon family of deadly contact nerve agents.

Tabun

During 1932 Professor Schrader and his team of scientists worked at Elberfeld improving and developing a new family of nerve damaging chemical agents called 'TABUN'.

This research later led them to discover more stable compounds such as 'SARIN' or Trilon 46, created from synthesizing the more toxic methyl morefluorophosphoracid – isopropylester, or Isopropyl methyl-fluorophosphonat later during December 1938.

These new nerve agents, (the so-called "Trilon group" consisting of 'TABUN', 'SARIN', and later 'SOMAN') worked like hydrogen cyanide on the human body's nervous system.

'TABUN' was registered as a contact insecticide during July 1937 as Reichspatent 767/511.

Trilon Chemical Weapons

TABUN or *Stoff 100*

SARIN or Trilon 46 - 83

SOMAN or

TABUN works

This is the science bit: Nerve agents inhibit the acetylcholinesterase (AChE), a key enzyme to normal human autonomic functions and muscular contractions.

All such contact nerve agents work the same way: by interrupting the breakdown of the neurotransmitters that signal muscles to contract, preventing them from relaxing.

When the AChE makes contact with acetylcholine via unprotected skin, muscle fibres return to their relaxed state.

When nerve agents block AChE and prevent the necessary counter-reaction with acetylcholine that leads to relaxation, muscles that are quickly exhausted from the constant twitching and muscle convulsions.

Too much demand is made on the muscles—particularly the lungs and heart—than those muscles can provide, causing severe fatigue.

Additionally, the build up of acetylcholine in the body leads to the constriction of smooth muscles in the respiratory trunk, as well as copious amounts of mucosal and salivary excretions, which effectively suffocate the victim.

This inability to stop producing mucus in combination with the involvement of the central nervous system, finally stop respiration completely killing the victim.

The lethal dose for 'TABUN' is in the case of the oral ingestion about $LC_{50} = 100$ to 200, with 'SARIN' at about 50 to 100 t50mg minm³. 200 mg to 1000 mg of 'TABUN' (100-500 mg for 'SARIN' and 50-300 mg for 'SOMAN') sprayed over the skin are sufficient to kill an adult.

The Army stock of 'TABUN' in May 1943 was calculated to be at least 1500 tons, theoretically some 7.5 billion people could be killed with these existing stocks!

Production of TABUN

On December 10th 1938 Schrader in Elberfeld invented a new material he called 'SARIN', also known as Gross "Le 213" and Trilon 46 or 83 (also known as *Grünring 4*) as still more toxic than 'TABUN'. The scientists

working on the new nerve agents sent their findings to the German Army and to Dr. Reetz at the gas research Laboratory at Spandau.

During the winter of 1939 the Army, (represented by Dr Reinknecht) secretly negotiated a contract with the company IG Farben to manufacture 1000 tons of 'TABUN' per month at Dyhernfurth, near Breslau on the 30th of December 1939. The plant may have been ordered built during September 1939 in anticipation of the agreement, but building work actually began during January 1940 at Dyernfurth am Oder 25 miles from Breslau, (code named 'Hochwerk').

Meanwhile during 1939, a pilot factory for 'TABUN' production was set up at Munster-Lager, on Luneberg heath near the German Army proving grounds at Raubkammer to test the new weapon.

'Hochwerk' was a large facility, covering an area of 1.5 by 0.5 miles and was completely self-contained, synthesizing there own intermediates, (including Dimethylamin which had to be made on site) as well as the 'TABUN' itself. 'Hochwerk' had an underground plant for filling munitions, which were then stored at *Truppenbauplatz* Krappitz, (Upper Silesia).

The plant was constructed and operated by Luranil and later by Anorgana GmbH, both subsidiaries of IG Farben, as were all the other chemical weapon production plants in Germany, the head of the plant was Albert Palm. The project was supported by the armaments industry, though was not considered a priority.

The factory took a long time to become fully operational, not reaching full capacity till June 1942. All personnel involved in the manufacture and assembling of the weapons all were equipped with respirators and clothing constructed of a poly-layered rubber/cloth/rubber layers, which were destroyed after the tenth wearing. Despite all these precautions, the plant recorded over 300 accidents even before full production began, at least 10 workers were killed during the plants first years of operation.

Contaminated personal would be stripped of their clothing and immersed in a bath of sodium bicarbonate.

Delays were primarily due to the difficult nature of the production process. Certain intermediates were so corrosive that the Germans were forced to run all reactive chemicals in quartz- or silver-lined vessels.

The extreme toxicity of the nerve agent required that the last factory production units be enclosed in double glass-lined walls, with a stream of pressurized air circulating

between the walls. All units were periodically decontaminated with steam and ammonia.

The factory was initially built with just over 100 French prisoners of war who levelled and cleared the area. They were replaced with 800 Italian workers during the autumn of 1941 for reasons of security and it was they who began constructing the factory buildings.

Eighty specialist German metal workers and 240 workers exempt from military service were transferred from other IG-Farben plants, steadily the plants workforce rose from 250 to 1000 during 1943. At the end of 1944 it has risen to 2000 people, (a further 450 concentration camp prisoners were employed on the site during 1943-44).

Up until January 1945 just under 12, 000 tons of 'TABUN' was manufactured at the site, in 120, 000 Howitzer shells and 40, 000 mortar shells using 40% of the German annual phosphorus production was used in its manufacture. The whole project cost the Germany Army approximately 150 Million RM, of which only 48 Million RM had been authorised!

Factories and test sites

TABUN

MunsterLager
Hochwerk, (Dyernfurth)

SARIN

Hockwerk, (Dyernfurth)
Falkenhagen, (Muna Ost' II)

SOMAN

Hockwerk, (Dyernfurth)

Storage

Truppenbauplatz Krappitz

Test site

Truppenbauplatz Raubkammer

Sarin

'SARIN' was created from synthesizing the more toxic methyl morefluorophosphoracid in 'TABUN' – isopropylester, or Isopropyl methyl-fluorophosphonat later during December 1938. It was in effect more deadlier and needed smaller dose to kill.

The name "SARIN" (Trilon 46 or 83) was probably created by using the initial letters of Schrader, IG-Farben board member

professor Ambros and Ritter and as well by Hans-Jürgen von der Linde.

'SARIN' was never patented, thus remained secret from the allies!

SARIN Manufacturing

A further two plants were built and initially run by the SS, (until the change of government) were constructed during the war for the manufacturing of 'SARIN'.

The 3176 hectare sized 'Muna Ost' (Munitions Plant East) at Falkenhagen near Furstenberg, (Oder) manufactured chlorine tri-fluoride; this was invented by Ruff and Krug during the 1930s.

The centre piece of this site designed to manufacture 50 tons of chlorine tri-fluoride a month was a 15,600 square metre four story underground bunker which was 15 metres underground.

Chlorine tri-fluoride

Like Napalm Chlorine tri-fluoride reacts quickly when exposed to air and can destroy glass and quartz except at mid to high temperatures; glass wool will catch fire immediately.

Organic substances react at once with inflammation, one drop of the liquid sets fire to paper, cloth or wood. Many other elements are attacked explosively and if not they will be ignited by even a small fragment of charcoal.

At the plant artillery shells were manufactured and development of a torpedo driven by chlorine tri-fluoride, which leaves no tell-tale wake in the water behind it, is taking place.

The bunker containment level could be flooded in the event of a serious accident.

At Falkenhagen II the 'Sarin' team could manufacture 500 tons of nerve agents which was six times more lethal than 'TABUN' including a derivative designed by the Kaiser-Wilhelm Gesellschaft (Inst. für Elektrochemie, KWIPC) since 1938 called 'N-Stoff'.

Production of Sarin only began during June 1944 and by the spring of 1945 400 tons of nerve agent had been produced by both the Dyhernfurth 'SARIN' facility, (was capable of producing between 40 or 100 tons of 'SARIN' per month) and the 500-ton per month production plant under construction at Falkenhagen, ('Muna Ost II').

Further Developments

"SARIN" was further 'improved' at Dyhernfurth by Professor Richard Kuhn, (the 1938 Nobel Prize winner).

During his experiments he developed a new derivative of 'SARIN' with a greater killing power which he named 'SOMAN' in spring 1944, (derived from the Greek word to 'sleep' or the Latin to bludgeon).

A further derivative is being developed at Falkenhagen which has been called 'CYCLOSARIN'.

Antidotes

There is no 'cure' for exposure to 'TABUN' or 'SARIN', (let alone 'SAMUN' and 'CYCLOSARIN') but there are a handful of drugs that can temporarily relieve the effects of the drug, limiting their damage to the nervous system.

Atropine and anti-cholinergic drugs are poisons in their own right, but they act by blocking the acetylcholine receptors in the body. Pralidoxime chloride can also be used as an anti-dote, this acts by neutralising the nerve agents in the bloodstream, it is safer, but takes longer to work.

Depending on the length of exposure, the victim may live through the attack after being administered these drugs, but will almost certainly require many months if not years of therapy and recovery time, before being well again.

Neu-Heer Involvement

The leading Army chemical warfare expert Artillery Colonel Ochsner described 'Nr or Stoff 100' (TABUN) to the Army command as a new type of contact nerve agent like mustard gas and failed to mention how different the gas was from older types of nerve gas.

Even during a meeting with senior representatives of the High command during October 1939 he still did not reveal that gas mask was not enough to protect the wearer from the nerve agent and that full suit protection was required!

During 1944 the Army established a test facility near Dyhernfurth, at *Truppenbauplatz* Munsterlager to test the 8000 tons of 'TABUN' manufactured by IG Farben.

Storage and testing facility was built at *Truppenbauplatz* Krappitz in Silesia to test the weapons and development methods of dispersal and protection.

The leader of Germany was briefed fully about these new contact nerve agents during December 1941 and was told in no uncertain terms that the allies did not have an effective reply to this new terrible weapon.

He ordered that the plant at Dyhernfurth be expanded and production of the nerve agents continued.

The K-Committee

During 1942 Otto Ambros was appointed head of a new organisation to oversee the manufacturing of the nerve weapons, protective clothing and storage of the Trilon weapons during 1942.

IG-Farben began work on a new universal combat troop gas mask filter and nerve gas protection suit. The project, despite opposition from the head of the production ministry, Albert Speer was slowly proceeding forward with deadly certainty.

Dr Ing. Walther Schieber, (Referent for Chemistry in the Reich Ministry for Arms and Munitions) was Otto Ambros liaison with the Army armaments dept. The second meeting with the German leader in May 1943 produced an agreement to raise production to 2000 tons per month and 'SARIN' to 500 tons per month and raised the status of the weapon to that of tank production in importance.

During the last meeting with the German head of state in spring 1944 Professor Ambro's reported that production of 'TABUN' was running at 70% of previous agreed quota's.

Production was only limited by the amount of phosphorus available in Germany. It was agreed that stockpiling would continue and new sources of phosphorus would be found from within Western Europe.

Professor Ambro's reported to the leadership that there was little chance of retaliation from the Allies; because they were unaware of the existence of the nerve agents and the development of the weapon.

Battlefield development

After the change of government in Germany

Other chemical weapons

Unlike existing gas weapons such as **Blister Gases**, (Mustard, Mustard-Lewisite, Ethyldichlorarsine and Nitrogen Mustard) **Choking Gases**, (Phosgene, Diphosgene, Chlorpicrin and Chlorine) and finally the family of **Vomiting Gases**, (Diphenylchlorarsine, Diphenylcyanarsine and Adamsite) the Trilon nerve agents needed careful handling to prevent accidental exposure to Neu-Heer troops.

during the summer of 1944 the *Neu-Heer* High command or *KVK* was persuaded of the weapons viability and created three units

during the end of 1945 to handle and dispose of the Trilon weapons.

Until the IG Farben designed and manufactured M45 contact gas suit could

Tabun equipped combat units

KG-zbv 'Ortmann'

Commanded by Colonel Rudolf Schriever with their Flugelrad MKVI wingless aircraft 'Diskus' which flies using STOL technology

The 945th Nebelwerfer Brigade

Based at Krampnitz

17th Rakete-FlaK Brigade zbv

Uses the *Enzion* missile for long range delivery

widely issued the following units only a handful of combat units developed techniques to handle and distribute the nerve agent.

The first 'TABUN' nerve gas attack took place in Latvia during the winter soviet offensive of January 1946 with predictably devastating results.

The *triumvirate* were so impressed with the subsequent results that they ordered the *Neu-Luftwaffe* to create a new bomber wing in northern Germany to prepare an offensive against the allied airforce in England.

Plans to infect Moscow's water supplies with a mix of Trilon using a commando unit from the *Jagdkommando* are being considered.

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