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WAR PRODUCTION BOARD

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HISTORY OF THE CHEMICALS BUREAU OF THE WAR PRODUCTION BOARD JUNE 1940 - SEPTEMBER 30, 1945

CHEMICALS BUREAU
OFFICE OF THE OPERATIONS VICE CHAIRMAN
WAR PRODUCTION BOARD

FEBRUARY 1946

NARA II
RG 179
Entry 1
Box 371

Trichlorethylene

TRICHLORETHYLENE

Administration

Trichlorethylene has always been under the jurisdiction of the Chemicals Branch. H. J. Lucey handled this product and the other chlorinated solvents from the latter part of 1941 to July 1, 1944, when he was succeeded by C. P. Wilson, Jr. (to September 29, 1944) and subsequently by J. G. Fletcher, to the close of the war period.

In the closing months of the war there was a working agreement with the Chemical Warfare Service covering the operation of their Marshall, (W. Va.) plant for the production of trichlorethylene at a rate as high as 4 million pounds per month. There was also a working agreement with the Defense Supplies Corporation for the distribution of the output of the CWS Marshall plant. An attempt was made to set up a working agreement with the Foreign Economic Administration to import surplus trichlorethylene production from Canada, but no substantial quantities were ever imported. There were no other important inter-relationships with the WPB Divisions or government agencies.

There was no Industry Advisory Committee, since there were only two producers, duPont and Westvaco.

Production

The production increase during the war period was made necessary by heavy demand for the use of trichlorethylene as a metal degreasing agent. It was used in machines built especially for the purpose, which were usually part of production lines in manufacturing plants making war equipment of all kinds, such as airplanes, tanks, guns, ammunition, etc. A large field use for the same purpose developed by the various military branches, particularly the Air Corps.

There were no serious raw material problems in connection with the manufacture of trichlorethylene. There were times when it was difficult to supply sufficient calcium carbide for the generation of acetylene and on occasion it was difficult to obtain sufficient supplies of chlorine promptly. In general, these difficulties were minor.

The only manpower problem arose at du Pont's plant in the Niagara Falls area. However, this affected other products of the plant more than it did trichlorethylene.

Production was not scheduled, but both producers were requested to maintain maximum production at all times, particularly in the closing months of the war, when the demand was extremely heavy.

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There were no serious price problems in connection with trichlorethylene. When production in the Government CWS plant was brought in it was necessary to work out price changes with Defense Supplies Corporation, CWS and the chief distributors. This was accomplished without major difficulty.

Expansion of Facilities

The du Pont plant at Wyandotte, Michigan started production during this period and provided almost 100 per cent additional capacity. The balance of the expansion was by du Pont at Niagara Falls, where two different expansions were made. At the close of the war the industry capacity was approximately 260 million pounds per year. In addition to this, the CWS Marshall plant, with very minor changes could have been brought to production of 9 million pounds per month, although 4 million pounds per month was the maximum ever made.

All expansion within the industry was privately financed. The CWS Marshall plant, originally built to produce tetrachlorethane and hexachlorethane but converted to trichlorethylene in the closing months of the war, was financed by the Army.

No new processes were developed, although it is claimed that several process improvements of minor nature were made at Niagara Falls.

Distribution

The first control order was issued in October 1941 as Order M-41 and entitled "Chlorinated Hydrocarbon Solvents". This established a control over carbon tetrachloride, trichlorethylene, perchlorethylene and ethylene dichloride. This was not an allocation order; in effect, it set up a rated end use pattern, establishing preferences for the more important war uses ahead of the less important civilian uses.

There were several amendments to M-41 which served to straighten out various minor difficulties as they arose during the administration of the order. In January, 1944 two new M orders were issued (M-363, M-371), one placing carbon tetrachloride under full allocation and the other placing trichlorethylene and perchlorethylene under full allocation. By this time it was no longer necessary to maintain control over the distribution of ethylene dichloride.

Subsequently, trichlorethylene was placed under M-300, Schedule 94. This allocation order was revoked September 1, 1945.

During the periods of short supply and particularly during the closing months of the war, the use was confined almost 100 per cent to the metal degreasing of all types of equipment for direct and indirect

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military use. Very small amounts were released for use in fire extinguishers, certain essential drugs, synthetic rubber manufacture and, occasionally, to some essential demand. There were periods when the dry cleaning industry was allowed a quota in the early stages of the war before degreasing demands had reached the peak and in the last month or two of the war when supplies were sufficient to provide small surplus. All direct military purchases were, of course, honored wherever justified.

The period of greatest shortage was from the fall of 1944 to within a month or two of the close of the war. Stockpiles were reduced during December, 1944 and, at the same time, production difficulties were encountered in plants. At this point production of war materiel again accelerated, resulting in a corresponding increase in demand for trichlorethylene. The problem was solved by curtailment of allocations, boosting production in all plants to a peak, and finally converting facilities at the CWS Marshall plant to the production of trichlorethylene.

Trichlorethylene was never officially programmed, since its use was almost 100 per cent for metal degreasing.

During the first half of the war exports were permitted, since supplies were generally ample; however, during the last half of the war no exports were allowed.

Stockpiling, Public Purchases and Import Quotas

There were no public purchases or government stockpiling or import quotas. Arrangements were made with the FEA to import trichlorethylene from Canada, but no material was ever received from this source. In the closing months of the war, consideration was given to the creation of a substantial government stockpile and all preliminary arrangements were made. The sudden end of the war eliminated this necessity.

Packaging Problems

Most of the trichlorethylene was shipped in steel drums and there was the usual difficulty in obtaining this type of container. However, through cooperation with the Packaging Section, the problem was solved although there were occasional delays in shipment due to drum shortages. The general traffic tie-up in the North in the winter of 1944-45 created difficult situations, since the delay in transit of carloads of new and returned drums caused subsequent delays in packaging and shipment. The movement of as much material as possible in tank car lots was encouraged.

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Transportation Problems

There were no serious transportation problems with respect to trichlorethylene. There were the usual delays from time to time as a result of heavy war-time freight movements and there was difficulty, of course, in the winter of 1944-45.

Reconversion Plans

It is not expected that there will be any reconversion problems with respect to this product. The post-war demand will be heavier than pre-war demand and it is anticipated that, within a reasonable period of time, present productive capacity will be taken up. It is understood that the CWS is desirous of selling their Marshall facilities, which can be used for the production of trichlorethylene and other chlorinated chemicals, and it is expected that sooner or later some private manufacturer will engage in production at this point.

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Administration

Perchlorethylene has always been under the jurisdiction of the Chemicals Branch. J. J. Lucey handled this product and the other chlorinated solvents from the latter part of 1941 to July 1, 1944. He was succeeded by C. F. Wilson, Jr. until September 29, 1944 and subsequently by J. G. Fletcher to the close of the war period.

There were no working agreements with other War Production Board Divisions or other Government agencies.

There was no Industry Advisory Committee, since there were only two producers, Dow and du Pont.

Production

Since there are only two manufacturers, the production is not shown. However, the statement may be made that the production in 1944 was five times that of 1942. This increase was due to its use as an intermediate in the making of hexachlorethane.

Production schedules were frequently worked out with producers. Since the production of perchlorethylene was closely related to the production of tetrachlorethane, trichlorethylene and hexachlorethane, it was usually necessary to balance plant production in such a manner that requirements of each commodity would be met. These chemicals are generally all made in the same plant and the equipment is to a large extent interchangeable. Such scheduling was worked out with the producers.

There were no price problems in connection with perchlorethylene.

Expansion of Facilities

Perchlorethylene plants were built by Dow at Pittsburg, California and Freeport, Texas to supply the raw material for the production of hexachlorethane at these sites. These were relatively small expansions. The major war-time production of perchlorethylene was at the Marshall plant of the Chemical Warfare Service. Here again perchlorethylene production was intermediate to the manufacture of hexachlorethane at that same point, and in addition, large quantities over and above captive demand were produced and shipped to several other points for the production of additional hexachlorethane. Perchlorethylene production at the CWS Marshall plant ceased in the latter part of 1944, when military demand for hexachlorethane production diminished. Part of the facilities were subsequently used for the production of trichlorethylene.

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[illegible] process for [illegible] trichloride to perchlorethylene with subsequent conversion to hexachlorethane, all in one process. It is not known if the process could be stopped at the perchlorethylene stage, although it is reasonable to assume that it could.

Distribution

The first control order was issued in October, 1941, called L-41 and entitled "Chlorinated Hydrocarbon Solvents". This established a control over carbon tetrachloride, trichlorethylene, perchlorethylene and ethylene dichloride. This was not an allocation order; in effect, it set up a rated end use pattern, establishing perferences for the more important war uses ahead of the less important civilian uses.

There were several amendments to L-41. They were to straighten out various minor difficulties as they arose during the administration of the order. In January, 1944 two new L orders were issued (L-263, L-271), one placing carbon tetrachloride under full allocation and the other placing trichlorethylene and perchlorethylene under full allocation. By this time it was no longer necessary to maintain control over the distribution of ethylene dichloride.

Subsequently, perchlorethylene was placed on allocation under L-300, Schedule 95. This allocation order was revoked September 1, 1945.

During the war perchlorethylene was used as a raw material for production of hexachlorethane and as a metal degreasing agent for all types of equipment for direct and indirect military use. Only very small amounts were released from time to time for other special uses. There were periods when the dry cleaning industry was allowed a quota and, in the last month or two of the war when supplies were more ample, the quota to this industry was substantial. Full preference was given at all times to direct and indirect military demand.

The period of greatest shortage was from 1941 to within a month or two of the close of the war, when the demand for degreasing solvents for direct and indirect military use was extremely heavy. Perchlorethylene facilities at the Du Pont Belle plant were converted to the production of trichlorethylene, which was in short supply, and production and distribution of perchlorethylene was adjusted to meet trichlorethylene requirements.

There were no inventory controls other than working agreements with the producers.

There was no Strategic Inventory Requirements Committee program

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Stockpiling, Public Purchases and Export Quotas

There were no public purchases, stockpiles or import quotas.

Packaging Problems

There were no important packaging problems in connection with perchlorethylene.

Transportation Problems

During 1943 and 1944, when the demand for perchlorethylene to manufacture hexachlorethane was at its peak, heavy movement was handled in tank cars and a number of long hauls were necessary. This problem was solved by construction of perchlorethylene plants at Freeport, Texas and Pittsburg, California, thereby eliminating the necessity for moving raw material to these two points from West Virginia.

Reconversion Plans

It is not expected that there will be any reconversion problems with respect to perchlorethylene. The situation surrounding the Old Marshall plant was described under trichlorethylene. It is anticipated that the new capacity at Freeport, Texas and Pittsburg, California will largely be absorbed in the metal degreasing and the dry cleaning fields, where perchlorethylene is reported to be the best solvent now in use.

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