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SOURCE Chemische Industrie, No 12, 1950.

STATUS AND POTENTIAL OF THE USSR CHEMICAL INDUSTRY

STATUS OF THE CHEMICAL INDUSTRY

Reliable reports on the scope of USSR chemical production are rare. An interesting contribution is made by an article "Russia, A Great Power in Chemistry," which appeared in the periodical Chemie-Ingenieur-Technik, No 15, p 335.

USSR chemical production in 1938 is estimated at 2.2 billion reichsmarks, in comparison with 8 billion reichsmarks for the US, 5.75 billion reichsmarks for prewar Germany, 2.3 billion reichsmarks for Great Britain, 1.5 billion reichsmarks for Japan, 1.5 billion reichsmarks for France, and 1.1 billion reichsmarks for Italy. Thus, the USSR was in fourth place.

For 1950, the current Five-Year Plan calls for a 50-percent increase in chemical production over 1940 (in 1940 the value of chemical manufacture was supposed to have already risen about 24 percent above 1938, or to 2.7 billion reichsmarks). If the plan is fulfilled, production will thus increase to 4.1 billion marks in 1950.

The following estimates are made regarding chemical production in the Soviet bloc:

	Production (in million marks per yr)
Soviet Zone Germany	800
Poland (including former German areas)	400
Czechoslovakia	275
Hungary	150
Rumania	70
Bulgaria	10

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POTENTIAL OF CHEMICAL INDUSTRY

The 1949 potential of the USSR and its European satellites (except Yugoslavia), was only one quarter as great as that of the U. This comparison, however, is made only on the basis of value of production which does not indicate the kind of product or the capabilities of the industry. If production is broken down into individual components, there appears to be a fundamental difference in the types of products produced in the two countries.

The US chemical production is made up, to a considerable extent, of items which are permitted to be manufactured only on a very small scale in Eastern Europe; among these are many types of synthetics and perfumes. But there are also other important products, such as medicines, synthetic fibers, lacquers, and textile chemicals, which run into the millions in US production statistics but which have only minor significance in the USSR.

In the USSR, production is directed mainly from a military standpoint; that is, only those products which have some use in the military economy are emphasized. One can, therefore, observe a forced expansion of key products, such as sulfuric acid, nitrogen, and soda, while at the same time there is neglect of those products which are for daily use. This tendency is pointed out in the following table, in which USSR chemical production is compared with that of the US.

Production (in 1,000 mt)

	USSR (Estimated)		US	
	1938	1949	1938	1949
Sulfuric acid (100%)	1,500	2,500	5,800	9,900
Soda	530	720	2,300	3,552
Caustic soda	130	310	750	2,403
Nitrogen (in terms of N)	150	350	304	1,083
Calcium carbide	100	200	163	272
Synthetic rubber	85	220	--	400
Plastics	14	30	--	720
Coal-tar dyes	35	40	54	90

From a simple comparison of figures, the actual achievement of the USSR chemical industry is not clearly evident, because one must take into consideration that the basic chemical industry was largely destroyed during the last war. The reconstruction of these plants was completed for the most part by the end of 1948, and since then there has been a feverish expansion, especially in the eastern parts of the USSR, which far exceeded the construction increase in Britain and can only be compared with the development in the US.

The production figures given in the preceding table have been considerably exceeded this year. Sulfuric acid production for 1950 can be assumed to have been 2.8 - 3 million tons. Also, 800,000 tons of soda were to have been produced, and 390,000 tons of caustic soda. There is no reason to doubt that this plan was fulfilled completely.

The production of sulfuric acid will probably show an even more impressive percentage increase in the coming years, because the demand cannot yet be met, and imports from foreign countries cannot be counted on.

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Raw material for sulfuric acid output is adequate. There are enough iron and copper pyrites available to make possible the production of 10 million tons per year of sulfuric acid. Incidentally, a development of this kind was anticipated in the Third Five-Year Plan, interrupted by World War II, which ordered the production of 8 million tons of sulfuric acid in 1942.

The fulfillment of this plan would not have succeeded during normal peacetime development, because of transportation difficulties. Many production plants were located in the Ukraine and in the areas around Moscow and Leningrad, and were 1,500-2,000 kilometers away from pyrite sources in the Urals. This difficulty has now been overcome since the main factories have been concentrated to the east and west of the Urals. Other plants are located in Siberia, in Belovo, and Kemerovo.

The demand for soda at this time amounts to approximately 1.6 million tons and can be met only 50 percent by domestic production. A faster rate of expansion was not possible because the entire USSR soda industry was concentrated in four factories, of which the three located in the Ukraine, which accounted for two-thirds of the total capacity at that time, were destroyed during the war. These Ukraine factories have been entirely reconstructed, and the fourth plant, in Berezniki in the Urals, has been greatly enlarged during the postwar years. In the meantime, another soda factory has been built in the Urals, so that in the coming year a substantial production increase can be counted upon.

The nitrogen industry suffered heavy war damage. The factories in Dneprodzerzhinsk and Gorlovka in the Ukraine and in Stalinogorsk in Tula Oblast [sic, in Moscow Oblast] were extensively damaged. These plants are once more operating at full capacity. Still more important are the nitrogen factories in Magnitogorsk in the Urals, those in Kemerovo in West Siberia, and the combine on the Chirchik River in Uzbekistan. The 1949 production of approximately 350,000 tons of pure nitrogen is supposed to be topped by several percent in 1950, so that the USSR stands second today among the nations of the world in the output of nitrogen.

Furthermore, great efforts have been made by the USSR in the fields of synthetic rubber and the hydrogenation of coal. In 1950, 250,000 tons of synthetic rubber are to be manufactured, and during 1951, 300,000 tons are to be produced. German scientists and technicians are taking part in the further development of synthetic rubber.

Synthetic motor fuels made from coal were not manufactured in the USSR before the last war. Since then a synthetic fuels industry has been started, with the help of factories dismantled in East Germany and with German technical assistance. The town of Cheremkovo, east of Lake Baykal in Siberia, is an important production center. During 1950, 900,000 tons of synthetic fuels are supposed to be produced from coal and slate.

Synthetic motor fuels from coal are rated as of the utmost significance in the USSR, as the petroleum situation is rather tight. This is brought out by the fact that the petroleum yield this year can be raised to only 35 million tons, despite the greatest efforts. In 1940, it was 31 million tons. The reason for this is the slow exhaustion of the Caucasian oil fields. There are other petroleum centers, such as the so-called "Second Baku" at the southern end of the Urals, and the oil district along the Ukhta River in the Pechora Basin above the Arctic Circle. Despite the new fields, considerable increases in the petroleum yield are not likely.

On the other hand, the USSR possesses enormous natural gas reserves, allegedly the world's richest. Following the US example, the USSR plans to use natural gas on a large scale in the manufacture of chemicals. The plan calls for an output of 8.4 billion cubic meters of natural gas in 1950. The chemical industry based on petroleum is also being given a great deal of attention. It is concentrated mainly in the Baku district, as the oil there is supposed to be

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especially suitable for such purposes. Already, aliphatic chemicals are being produced on a large scale, using refinery gases as a base, and aromatic chemicals are being manufactured on the same basis in increasing quantities.

Besides petroleum, shale oil, natural gas, and ores, the Soviet Union also has more than enough coal and electric power for further major expansion of the chemical industry. Approximately one fifth of the world's coal reserves are supposed to be located in the USSR. The largest part is in the Asiatic areas. More than half the demand is still being filled from European USSR, but this percentage is steadily decreasing. This alone would explain the USSR's industrial shift to Asiatic areas.

Coal mining in the USSR has risen from 166 million tons in 1940 to approximately 250 million tons in 1950. Coke production has also increased, from 21 million tons in 1940 to about 30 million tons in 1950. Great emphasis is being placed now on coke by-products, because of the yield of benzene and toluene. It is estimated that 200,000 tons of ammonium sulfate, 270,000 tons of crude benzene, and 78,000 tons of toluene were produced in 1949.

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