CHRONIC BERYLLIOSIS IN THE NEON SIGN INDUSTRY

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THE PHOSPHOR zinc beryllium silicate was not used by the neon sign industry until 1938, and the first clinical case of berylliosis from that industry was not recognized until 1945. Most of the early phosphor manufacture was done in kitchens and basements of homes. Varying proportions of beryllium oxide (up to 4 per cent) were mixed with zinc sulfate and other chemicals. The resulting "mix" then was fired in small furnaces at about 2,300 F. After firing, the rocklike batch was pulverized, in most instances by very crude milling methods which disseminated dust in the atmosphere to an extreme degree.

The powdered phosphor then was packaged and sold to the trade or was suspended in methanol and coated onto the inner surface of glass tubing to be used for making neon signs. These processes also caused dusting of the atmosphere, but not to such an extreme degree as pulverizing. In recent years, relatively few shops have made their own phosphor and coated their own tubing. Most sign makers have found it cheaper to buy coated tubing from large manufacturers.

Sign making involves the blowing and bending of coated tubing into signs. In many instances rubber mouthpieces have been used by the glass blowers, but in others the blower applied his lips directly to the ends of the glass tubing. The process does not involve inhalation. There is breakage from time to time, which might cause minimal dusting, and there also is reclaiming and salvage work on old signs. These processes do not produce any visible dusting, however, and the dust exposures appear to be minimal.

It has been my privilege to observe four persons whose pulmonary disease apparently resulted from exposure in one small shop (shop A) where the beryllium-containing phosphor was manufactured and tubing was coated from 1938 to 1948. Another person has been under observation whose exposure was in a different shop (shop B) having a similar hazard.

REPORT OF CASES

CASE 1.—R. S., a man aged 32, worked in shop A from 1939 to 1941. The concentration of the phosphor dust in the general atmosphere in this shop was heavy. The patient was in the Army Air Forces from 1942 to October 1945. He had no typical episode of combat fatigue beyond the usual tensions of air corps personnel and had no attacks of respiratory infection beyond ordinary colds. There was no history of allergy. The Army admission roentgenogram was said to have been clear. That of September 1943 showed early granular stippling. The Army discharge roentgenogram of October 1945 showed marked granular stippling. He did not return to phosphor dust exposure after the war. He first noted dyspnea on exertion in

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