

development of power-driven stone-cutting tools—the pneumatic hammer, for example, introduced around the time of the First World War—had dramatically increased exposure to rock dust, a fact well known to German factory physicians in the 1930s.¹²⁷

Otto Schulz, medical director of Berlin's University Institute for Occupational Disease, pointed out in 1939 that one or two years of work in a dusty trade was often sufficient to bring on the disease, and that symptoms would typically not even begin until after exposures had ceased. Schulz drew attention to the "horrific example" of Gauley Bridge, West Virginia, where hundreds of African Americans had died of acute silicosis following dust inhalation during the building of a Union Carbide tunnel. He also noted the economic toll exacted by the disease in Germany: from 1929 through the end of the 1930s, more than sixty million reichsmarks had been paid to silicotic workers or their relatives in accordance with Germany's occupational health and safety laws. Schulz called for a "solution to the dust problem" (*Lösung des Staubproblems*) involving regular checkups of workers and mandatory transfer of anyone showing early signs of the disease. Action was needed since "a great deal of valuable human material" (*Menschengut*) was being lost to the malady.¹²⁸

Steps were taken early in the Nazi era to combat dust diseases in German industry. On April 4, 1934, a Dust Control Office (*Staubbekämpfungsstelle*) was established by the quarrymen's union (*Steinbruchs-BG*) to coordinate the struggle; the office explored new ways of constructing hoods and vacuum devices, new kinds of filters and ventilators, and new ways to service safety devices. In Thuringia, the office worked with the slate roofing industry to lower the dust involved in splitting slate and to reduce the dust inhaled by stonemasons and workmen handling cement, sand, and lime. Workers in many of these industries (sandblasters, for example) were required to undergo periodic medical exams for early signs of silicosis, though reservations were also expressed about how early such ailments could be diagnosed.¹²⁹ Much of the protective gear was still rather cumbersome (as it remains today, I might add), though improvements were made in the quality and comfort of masks. Synthetic abrasives were substituted for the

more hazardous stone abrasives in the metal-cutting industry, and scuba-like breathing gear was introduced for high-risk industries, like sandblasting.¹³⁰ The office established a laboratory to test different kinds of masks; it also formed a special committee to explore innovations in mask design.¹³¹ A journal devoted to research in the area of dust control technology was established in 1936 (*Staub: Reinhaltung der Luft*); it appeared until 1943 and was continued after the war by the Dust Research Institute of Dusseldorf. *Staub* was one of more than two dozen new health-related journals launched in the Nazi period.

Cancer was an occasional concern of the German industrial hygienists who worried about silicosis. A 1934 dissertation explored the coincidence of silicosis and lung cancer, the primary question being whether the quartz dust inhaled by Ruhr Valley coal miners could cause malignancies. Though the results of this particular study were negative (silicosis did not seem to predispose to lung cancer), the prescience of the interest is notable.¹³² Research was also undertaken into the cancer-causing potential of sericite (a silky-green mica used in industry)¹³³ and the silicosis-producing potential of fiberglass.¹³⁴

The question of whether silica exposure could cause cancer was never resolved in the Nazi era—and remains confused even today, more than half a century later. What was fairly clearly resolved, and earlier in Germany than anywhere else, was the deadly malignant force of asbestos.

THE FUNERAL DRESS OF KINGS (ASBESTOS)

One of the most remarkable aspects of dust research in this era was the recognition of a cancer hazard from asbestos. Asbestos is a magnesium silicate, but the dusts produced are long and fibrous—so much so that the mineral can actually be woven into fire-resistant fabrics. Charlemagne is said to have feasted on a tablecloth made from the substance, amazing guests by tossing the cloth after repast into the fire, from which it would later be withdrawn, unharmed. Medieval kings were cremated in a sealed shroud of