

WASTE GASES OF VEGETABLE OIL OXIDATION PROCESSES AND THEIR DISPOSAL. G. M. GINODMAN, *Gigiena i Sanit.*, 1949, no. 3, p. 22.

The gases contain acrolein and unknown organic acids. They can be burned in open furnaces at 800 to 900 C. with complete loss of odor. Catalytic oxidation at 200 to 300 C. is more satisfactory.

CHEM. ABST.

CAMPAIGN AGAINST DUST IN BELGIAN COAL MINES. P. LEDENT, *Arch. belges méd. sociale hyg.* 8:67 (Feb.) 1950.

According to Ledent, the exploitation of the coal mines offers three technical problems, namely, (1) digging of pits and rock galleries which give access to the layers of coal; (2) exploitation of the coal bed through long cuts, the face of which changes every day; (3) the transportation of the mined coal to the underground coalyard and from there to the surface. The procedures of the campaign against coal dust are modeled according to the procedures of exploitation of the mines. The digging of the pits and rock galleries is done by drilling holes for explosives, shoveling, and firing the explosives. All these procedures raise considerable amounts of dust, which is noxious, since it contains large quantities of silica. Thirty-three of the 70 Belgian coal mines have at their disposal exhaustor machines for dry dust and 25 mines are using an apparatus which removes the moistened rock debris in the form of sludge. The progress made in this regard is demonstrated by the fact that in 1946 only 15 mines were using exhaustor machines for dry dust and only seven were using apparatus for the removal of sludge.

The coal mining itself is done with a combined hammer and pick and a shovel and the work is done under considerable draft to provide suitable atmospheric conditions. This current of air raises large amounts of dust. Preventive measures consist in the use of masks which are at the disposal of the miners in 80 per cent of the Belgian coal mines, but which did not prove very effective, because the miners are not using the masks constantly during work. Experiments with masks which furnish compressed air from outside the mine were not successful because the miners systematically opposed the use of devices of this type.

Humidification of the coal proved to be a more successful measure of prevention. The method of choice consists of drilling holes into the coal bed and of injecting water under pressure into these holes. A 60 to 70 per cent reduction of the dust raised by the mining results from this method, which was introduced in 1946 and is now used regularly in 16 mines. Another method now on trial is that of using combined hammer and pick which is equipped with an automatic water-spraying device. This method is still in the stage of preliminary research, but the results so far obtained are encouraging and suggest a 70 to 80 per cent reduction of the dust raised by the mining process.

Water sprayers are placed above and along the transportation lines in 25 mines and at points of transfer and loading in 37 mines; that too presents considerable progress, since only four and 15 mines, respectively, were using such sprayers in the first months of 1946.

EXPERIMENTS ON WETTING AGENTS FOR DUST SUPPRESSION IN MINES. H. NEU, *Beitr. Silikose-Forsch.* 1949, no. 6, p. 35.

After an introduction to the idea of surface tension and surface orientation of chain-molecules containing polar groups, a description is given of a practical test for the wetting of coal dust with solutions of wetting agents. One gram of the dust is placed on the surface of 100 cc. of solution in a cylinder, and the time elapsing before the last particles are engulfed is noted. The experiment is carried out with particles which pass the finest sieve; so the size is below about 42 μ . Fine particles are much more difficult to wet than coarse ones.

The time varied from 22 seconds up to four hours in a series of tests covering 13 wetting agents in concentrations between 0.2 and 5 per cent. Wetting becomes more rapid as the concentration rises, the change being fast at first and then tending to vanish. The curves are similar to those of surface tension, but this becomes independent of concentration much sooner than the wetting time; this simple physical coefficient is evidently inadequate to express efficiency of wetting.