

been offered by Nassauer, certain precautionary measures taken by the German plants in regard to a more effective removal of fumes from the wastes released into the atmosphere indicate that Nassauer's warning was perhaps not entirely without cause. The recognized occurrence of aniline tumors in yard workers employed within the plant district furnishes circumstantial evidence supporting the possibility of the existence of purely environmental aniline tumors among the civil population living in the fume zone of dye plants.

It is apparent that the actuality of such neoplasms depends to a great extent upon the precautionary measures taken in the various plants to prevent the production of carcinogenic dust and the release of fumes containing the carcinogenic agents into the air. Wherever the most fundamental requirements of cleanliness within the plants are lacking, considerable quantities of carcinogenic aromatic amines may enter the air in chemical factories, from which source persons, living beyond the limits of the plant proper, may be endangered. Contamination of the surrounding air in the vicinity of dye factories is brought about by the use of a system of exhaust ventilation without the use of filters or neutralization equipment which delivers the contaminated fumes directly into the air above the buildings. The carcinogenic agent contained in the exhaust material is permitted to spread in the low strata of the air. The installation of high stacks for the removal of fumes and exhausts, on the other hand, is apt to overcome, at least partially, such a danger. Appreciable quantities of aromatic amines may enter the air also when these substances are spilled from the bags while being loaded on outside platforms. The same hazard may be produced when these chemicals are swept, during the cleaning of workrooms, into open drainage ditches, through which they may be carried not only into more remote parts of the factory district but from which they may be carried away by high winds in dry weather and thus spread over a wide area beyond the confines of the factory.

XVI. PROTECTIVE AND PREVENTIVE MEASURES

After the recognition of the existence of etiological interrelations between the exposure to aromatic amino-compounds and the development of neoplasms of the urogenous tract, numerous preventive and protective measures have been proposed. Some have been introduced in many factories manufacturing and handling carcinogenic chemicals. This development started in Germany in 1904, soon after the discovery of the first aniline tumors. It has resulted ultimately in the erection of new plants, in the construction of which were embodied the experiences collected over a number of years. It seems to be doubtful, however, whether many of the observations made and precautions taken in Germany and Switzerland were utilized properly in the countries with a more recent chemical industrial development. The high incidence of bladder tumors among the dye workers of these countries indicates that