

Comments on Production and Use of Benzidine

by

Benzidine Task Force, SOCMA, March 9, 1973

TABLE OF CONTENTS

	<u>Page</u>
Summary	2
I. Pertinent Factual Information	9
A. Modern Industrial Practices	9
1. Benzidine sulfate slurry	11
2. Benzidine production procedures	11
3. Benzidine transportation	17
4. Benzidine use procedures	18
B. Past Practices	21
C. Product Substitution	23
II. Imposing Emergency Temporary Standards Is Inappropriate	28
III. Zero Tolerance	37
A. Measurability and Industry Controls	38
B. Provisions of the Act	40
C. Legislative Derivation	42
D. Human Tolerance Levels	45
IV. Environmental Impact	51
V. Conclusion	55

Appendices

- Appendix A -- The Regulation Proposed by the Petition
- Appendix B -- Statement by Dr. Horst K. A. Schirmer, M. D.
- Appendix C -- List of Benzidine Dye Categories
- Appendix D -- Samples of Benzidine Dyed Materials
- Appendix E -- Photographs of Lakeway Chemicals' plant

March 9, 1973

Department of Labor
Office of Standards
Room 504
400 First Street, N. W.
Washington, D. C. 20210

Re: Request for Information on
Petition for Issuance of Emer-
gency Temporary Standard

Dear Sir:

These comments are submitted by the Benzidine Task Force of the Synthetic Organic Chemical Manufacturers Association, representing domestic industrial producers and users of benzidine, pursuant to the request for information published at 38 Federal Register 4037. These comments focus on the chemical benzidine, and have been designed to provide as much relevant information as it has been possible to assemble within the very short time that has been available. We are prepared to provide supporting information or documentation, and additional information as it becomes available, if, as we believe would be preferable, you should decide to proceed with a normal, permanent standard-setting proceeding.

There are currently seven plants in the United States engaged in the production or use of benzidine. Two of these plants are located in Pennsylvania, where they have operated in compliance

with the Pennsylvania regulatory system described in the Petition.

They are:

American Aniline, Lockhaven, Pa.
Tenneco Chemicals, Reading, Pa.

In addition, the Lakeway Chemicals plant at Muskegon, Michigan, operates under strict controls imposed by the State of Michigan.

The other four plants are:

Allied Chemical, Buffalo, N.Y.
Fabricolor, Inc., Paterson, N.J.
GAF Corporation, Rensselaer, N.Y.
Young Aniline Works, Baltimore, Md.

SUMMARY

We are willing to proceed on the basis, and for OSHA to proceed on the basis, that benzidine may be carcinogenic to humans. We submit, however, that no emergency exists in the benzidine industry which warrants any emergency standard, particularly one such as that proposed in the Petition.^{1/} The precise extent of exposure and the dosage required to produce such an effect have not been demonstrated, but it can prudently be concluded that these are much more than would be experienced in industrial practice generally used today. We believe it would be appropriate for the Occupational

1/

The appropriate conditions that might warrant an emergency standard are discussed below at pp. 28-36. Comments on certain misleading statements in the Petition, and on impracticable and inappropriate provisions of the regulation proposed in the Petition are attached as Appendix A.

Safety and Health Administration to institute a regulatory program to minimize employee exposure to the extent feasible through the use of industrial controls, and to require medical surveillance of employees specifically adaptable to experience with benzidine.

It is noteworthy that benzidine has not long been recognized as a carcinogenic hazard; indeed, animal tests for many years prior to 1950 were uniformly negative. Since the hazards have been recognized, much has been done to reduce and guard against them. This has been an evolutionary process, and is still continuing. Different companies have taken different steps; in general, those producing or using substantial volumes of benzidine have had more resources to devote to improvements, and they have the best practices now in use.

Undoubtedly the most significant development is that benzidine is now handled in the form of benzidine sulfate slurry, rather than the volatile benzidine base or the dusty benzidine dihydrochloride powder or flake form that was used before hazards were recognized.^{1/} Second, benzidine is now produced under highly

^{1/} Also in response to the request for information, we are delivering to the office of Mr. John O'Neill, Director of Enforcement, OSHA, at the above address, three small glass bottles containing, respectively, samples of benzidine dihydrochloride in powder form used many years ago, benzidine dihydrochloride in flake form used in prior years, and benzidine in the form of sulfate slurry as now used throughout the industry.

controlled conditions with enclosed equipment and facilities. Plants utilize strict employee hygiene procedures, including clothes changes, showers, and eating restrictions. Plants are also monitored and employees are tested medically to provide assurance that undue exposure is not occurring despite these controls. Third, benzidine sulfate slurry is presently transferred between plants in high quality, polyethylene-lined fiber drum (A further possible improvement, experimental use of epoxy-phenolic lined steel drums, will begin this month.) Fourth, while the period of potential employee exposure at benzidine consumer plants is much less than at producer plants, and the risk to employees is accordingly much less, these plants, too, have generally adopted strict industrial controls, enclosed process equipment, employee hygiene procedures, and medical surveillance of workers.

The changes noted above have generally come into use over the past twenty years. The basic such changes have been in use by one of the two domestic producers since 1955, and by the other producer since its origins in 1962. (The practices of producers are particularly significant since production potentially involves much more substantial risk of exposure to benzidine than does use.) Since

the institution of these controls there have been no cases of bladder tumor growth among employees with experience only with these improved methods of production and use, so far as we have been able to determine. Available medical evidence clearly indicates that any undue exposure of employees to benzidine should be reflected over this period of time in bladder tumors. This favorable experience with the improved methods of production and use is, we submit, itself dispositive of the Petition's claims that an emergency standard is required. All of the reported instances of bladder tumors in benzidine workers of which we are aware involve employees who were exposed to benzidine before the improved production and use procedures were adopted. Moreover, improvements in medical diagnostic techniques have effectively eliminated the risk of medical complications arising from exposures to benzidine; any adverse development can be reliably detected and adequately treated in safe and timely fashion.^{1/} Based on this experience, we believe that the production and handling of benzidine

1/

A statement by Horst K. A. Schirmer, M.D., Associate Professor, Brady Urology Institute, Johns Hopkins University, Baltimore, Maryland, regarding the improved medical techniques for detection and cure of tumor growth in the human urinary tract, is attached as Appendix B.

under properly controlled procedures already generally in use is entirely safe for the workers, and that there is therefore no need for a proposed zero exposure rule, which would be tantamount to a ban.

Total benzidine production in the United States in 1972, valued at market prices, amounted to approximately \$1.95 million. By comparison, the total value of benzidine-derived dyestuffs produced in the U.S. in 1970 was \$12.5 million.^{1/}

Benzidine is an important intermediate for the production of dyestuffs. There are no known replacements for benzidine-derived dyes capable of producing equivalent tinctorial

^{1/} Benzidine production statistics are not published by the government because there are only two domestic producers. The source for statistics on production of benzidine-derived dyestuffs is U.S. Tariff Commission, Synthetic Organic Chemicals - United States Production and Sales, 1970, at 57-62. A list of benzidine dye categories, with sales figures, is attached as Appendix C. We understand that in addition to these reported sales, approximately \$3 million worth of benzidine dye sales per year are not reported by the Tariff Commission because there are fewer than three producers of such dyes.