



UNION CARBIDE CORPORATION

PLANT LABORATORY

CHEMICALS AND PLASTICS

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R. N. WHEELER, JR.

SOUTH CHARLESTON PLANT
P.O. BOX 8004
SOUTH CHARLESTON, W. VA. 25303

VINYL CHLORIDE MONOMER THRESHOLD

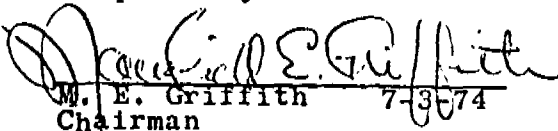
ODOR CONCENTRATION IN AIR

SUMMARY As the result of some discrepancies existing in the literature 1,2, for the Threshold Odor Level of vinyl chloride monomer in air, a study was initiated by the South Charleston Plant Odor Panel to determine the lowest detectable odor level of VCM in air. These data are tabulated in Table I.

DISCUSSION A series of six samples of vinyl chloride monomer and a blank were presented to the odor panel for determination of the Threshold Odor Level. The samples were prepared in increasing concentration over odorless distilled water in 250-ml Erlenmeyer flasks with stainless steel caps and submitted to a panel of seven people with instructions to record the first detectable odor. Each panelist tested the samples individually, so that there was no collusion among panelists.

A sample of the VCM vapor was then taken and analyzed by an AID Gas Chromatograph Model 511, hydrogen flame detector equipped with an 8 ft. column packed with Poropak Q 50-80 mesh. These data were corrected for the water vapor pressure and calculated to normal gas volume conditions, 0°C and 760 mm mercury. The tests and analytical data were duplicated.

CONCLUSION Individuals vary greatly as to the minimum concentration which is barely detectable. Our most sensitive odor panelists barely detected an odor of VCM at 1200 ppm. Normal odor detection level of VCM is at 2000 ppm. The normal detection level of VCM for the average untrained person is probably higher than 2000 ppm. An explanation as to why discrepancies have existed in the Threshold Odor Level is the fact that VCM is now a much purer commercial product than it was years ago and the odor detected was probably due to some impurity rather than VCM.


M. E. Griffith 7-3674
Chairman
South Charleston Plant
Odor Panel

UCC 092728



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TABLE I

THRESHOLD ODOR LEVEL OF VINYL CHLORIDE MONOMER IN AIR

<u>Vinyl Chloride Monomer in Air ppm</u>	<u>Number of Panelists that Detected VCM Odor</u>
Blank	0
133	0
350	0
680	0
1200	0
1960	2
3800	7
	7

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REFERENCES

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Issued 1972 Page 6, Paragraph 3.1.2.
Manufacturing Chemists Association
Threshold Odor 260 ppm
2. Industrial Hygiene and Toxicology
Patty, F. A. and Associates
Interscience Publishers 1962
Volume 2 Page 1304
4100 ppm lowest level VCM odor can be detected.
3. Basic Principles of Sensory Evaluation
STP 433
American Society for Testing and Materials
4. Manual on Sensory Testing Methods
STP 434
American Society for Testing and Materials
5. Correlation of Subjective-Objective Methods
in the Study of Odors and Taste
STP 440
American Society for Testing and Materials

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VINYL CHLORIDE MONOMER THRESHOLD ODOR CONCENTRATION IN AIR

The Odor Panelists have been screened for proficiency by the Arthur D. Little, Inc., Co. and have an average of 10 years experience in odor detections and evaluations. These screening test results are on file in the South Charleston Plant Laboratory.

Mr. Griffith, the chairman and moderator of the testing program is a graduate chemist and a member of the American Society for Testing and Materials E-18 Committee. This committee was founded in 1960 to promote knowledge, stimulate research, state principles and develop recommended practices in all areas of sensory evaluation of materials and products. Fields of interest currently represented include air pollution, clothing and textiles, metals and appliances, beverages and liquors, manufactured food products, flavors and fragrances, agricultural commodities, naval stores, tobacco, chemicals, paints and varnishes, paper and plastics, telephone, railroads, petroleum and allied products, laboratory equipment, packaging materials and pharmaceuticals. He is currently co-chairman of a Task Group to develop a recommended practice for odor of chemicals. Mr. Griffith represents the Kanawha Valley Union Carbide Locations on this committee.

M. A. Aitken
M. A. Aitken
Director of Laboratories

MAA/jjh

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