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TO Carl Yockey
OM
J. W. Born
SUBJECT

FIELD POINT OR DEPT. & BLDG. NO.
Avon Lake General Chemical Plant
Brecksville R&D Center, D/8506

DATE YOUR LETTER
DATE THIS LETTER
January 20, 1982

PRECISION AND ACCURACY OF VINYL CHLORIDE CROSS-CHECKS

RETENTION CODE 801-001
PROJECT REPORT
PERMANENT RECORD COPY

You asked me for a statement of the limits of precision and accuracy of the BFG Goodrich method of monitoring VCM in air. That method involves adsorbing the VCM from the air as the VCM-air mixture flows through a Bendix Flasher tube at 10.0 cc per minute. The VCM is subsequently desorbed thermally and analyzed by gas chromatography. The volume of air sampled and the weight of VCM collected are accurately measured. The concentration of VCM in the sampled air is then calculated on the basis that at 25 C and 1.0 atmosphere pressure 1.0 ppm of VCM in air equals 2.56 mg of VCM per cubic meter of air.

Our BFG inter-plant cross-checks used carefully-prepared VCM samples in Bendix Flasher tubes. Prior to loading the Flasher tubes, we carefully cleaned them. We used tubes which were dedicated to the cross-check program and so were not heavily contaminated with interfering substances. We cleaned them before each loading by repeated thermal desorptions until we obtained no significant GC absorption peak. Thus, our measurements gave the results which can be expected under ideal conditions. If the sampled air contains pollutants which interfere with the GC analysis of VCM, an analyst may not achieve as good results.

The VCM cross-check results for the most recent five calendar quarters appear in the following table. OSHA requires that the 95% confidence limits be $\pm 25\%$ or less at 1.0 ppm concentrations of VCM in air and $\pm 35\%$ or less at 0.5 ppm. In all but the earliest cross-check the 95% confidence limits were within the OSHA requirements.

I hope that this information covers your needs. If not, please let me know (extension 5503).

John H. Born

John W. Born
Senior R&D Chemist

JWB/pf

cc: E.B. Katzenmeyer, Jr.
T.S. Bialke
P.M. Zakriski
~~R&D Ethics~~

Att.

THE B. F. GOODRICH CO.

FEB 6 1982

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A SUMMARY OF THE BFGOODRICH INTERPLANT CROSS-CHECK RESULTS

<u>Starting Date</u>	<u>VCM Load (μg)</u>	<u>VCM Recovery (%)</u>	<u>Standard Dev. (%)^b</u>	<u>95% Confidence Limits (%)^c</u>
7/20/81	5.0	99.3	13.0	$\pm 26.$
4/27/81	5.0	95.8	14.8	$\pm 30.$
2/2/81	10.0	103.	10.1	$\pm 20.$
10/13/80	5.0	99.9	8.35	$\pm 17.$
7/14/80	10.0	94.4	10.2	$\pm 20.$
3/19/80	10.0	92.1	20.3	$\left\{ \begin{array}{l} + 33. \\ - 45. \end{array} \right.$ ^d

- a. These VCM loadings per Flasher tubes were the intended loadings. The actual loadings were within $\pm 10\%$ of the target loadings. The 10.0- μ g loading approximated a concentration of 1.0 ppm of VCM in the air.
- b. The units of standard deviation(%) are the same as the units of percent recovery.
- c. The units of the limits of 95% confidence also are the same as the units of percent recovery.
- d. In the cross-check study for this one quarter, we had higher 95% confidence limits because of less clean Flasher tubes.

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