ENVIROTECH | DOHRMANN
3240 Scott Boulevard
Santa Clara, California 95050
Telephone (408) 249-6000
Telex 346 395

July 3, 1975

Mr. Paul Fetzer
Continental Oil Co.
P.O. Box 605
Westlake, LA 70669

Dear Mr. Fetzer:

We have completed the analysis of your samples. Project No. 1048B. The results are summarized in the attached Application Report. Also attached are copies of other pertinent literature.

This sample analysis exemplifies the method of determining organic chlorocarbons in aqueous solutions of inorganic chlorides. We have prepared a standard consisting of a one percent solution of sodium chloride and 834 ng/μl of organic chlorine (from 1, 2 - dichloroethane). The standard was analyzed for chlorine under normal system operating conditions. In addition, the furnace inlet temperature was reduced to 200 °C to assure that all inorganic salts (including ammonium chloride) remained in the boat. Analysis under these conditions yielded 835 ng/μl Cl, which is essentially the same as the value of the prepared standard. Following analysis of several samples, the boat should be rinsed with deionized water to remove the salt accumulation.

If you have any questions concerning these results, please feel free to contact us directly or Mr. John Zimmerman, our sales engineer in your area.

Sincerely,

M. K. Carter

M.K. Carter, Ph.D.
Manager, Applications Laboratory

MKC:ki

cc: Mr. Homer Hackett

Mr. John Zimmerman
Dohrmann - Envirotech
P.O. Box 42295
Houston, TX 77042

(713) 467-0624

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APPLICATION PROJECT REPORT

Report No. 1048B

SYSTEM USED: MCTS-20 Oxidative Chlorine System with SBI Single Boat Inlet.

INSTRUMENTAL CONDITIONS: As per Application Note MC-201, except inlet between 170 ° - 400 °C.

SAMPLE TREATMENT: Two standards were mixed using 1, 2 dichloroethane. 911 ppm in water and 834 ppm in 1% NaCl solution. Mininert sample vials (with sliding sheath - valve and septum) were used.

DATA:

Conoco Sample No.	Dohrmann No.	Recovery
1,2 dichloroethane 8 CVCP-M-75-1 mixed to 911 ppm in H_2O	1048-9	100%
1,2 dichloroethane 8 CVCP-M-75-1 mized to 834 ppm in 1% NaCl solution	1048-9	100%

COMMENTS: A clean pyrolysis zone is imperative for dependable results. Also same concentrations in the range of 1000-2000 ppm Cl are recommended with sample volumes of 2 μl.

RECOMMENDATIONS: The MCTS-20 System with SBI Single Boat Inlet is well suited for analysis of these samples.

STATUS SUMMARY - 8/11/76

VCM PLANT - EMISSION CONTROLS

Following is a summary of developments leading to our current program to control VCM emissions to comply with the proposed EPA regulation:

(1) The EPA first proposed regulations on December 24, 1975. These regulations would require all vent streams from any emission source to contain less than 10 ppm of VCM excluding the oxychlorination vent which is required to emit no more than 0.02 pounds/100 pounds of EDC produced. Compliance is required 90 days from the effective date (now estimated to be in October, 1976), but EPA can grant a waiver of compliance of up to two years from the effective date. From various EPA drafts of the standard and discussions with EPA we believe we understand what a control device must do to reduce vent concentrations of VCM.

(2) Either catalytic oxidation (being developed in R&D) or incineration have been considered as suitable control methods. During the preparation of the 1976 Capital Budget projected operating cost savings were believed to favor catalytic oxidation for which $5.17MM was budgeted.

(3) Early in 1976 it was learned that the feed to the catalytic oxidizer would be flammable and potentially unsafe. The cost to correct this has eliminated much of the economic incentive for this process. In addition, there was insufficient time to complete the necessary engineering to meet the timetable of the standard. This has forced substitution to the incineration scheme and, therefore, that design is being developed. The project cost, however, has remained at approximately $4MM. Both systems have planned to use clamshell neutralization to destroy the dilute hydrochloric acid formed from scrubbing the combustion gases.

(4) Consideration is also being given to production of dry hydrogen chloride from the dilute hydrochloric acid as an alternative to clamshell neutralization. We are concerned that the high effluent brine content may resuspend the solids in our settling ponds causing their discharge above NPDES permit levels and discharge of calcium chloride brine may occur at a higher than allowable concentration of dissolved solids. Produced dry hydrogen chloride could be used to make EDC in an expanded oxychlorination section or methyl chloride. Additional capital of $2.9MM is estimated for dry hydrogen chloride manufacture which will be included in the 1977 Capital Budget requests.

(5) Many options of size and configuration of the incineration system have been considered. Balancing economics, pollution and logistical concerns, a single train is judged best consisting of:

(1) A 48MM BTU/hour incinerator with a waste heat boiler
(2) A hydrogen chloride scrubbing unit
(3) A 4,200 lb./hour dry hydrogen chloride recovery unit

(6) A light and a heavy by-product stream are produced in the VCM plant. The "light ends" consisting mostly of ethyl chloride and chloroform are currently sold. The "heavy ends" or tars are shipped to PPG and incinerated for a fee. Our planned incinerator capacity will be sufficient to burn vents and tars but not "light ends" and plans are to use it this way. Although continued sales of "light ends" are anticipated, the incinerator will be designed so that they may be burned. Should this be desirable, the feed would be switched to "light ends" and the tars backed out by sending them again to PPG, for example. The waste heat boiler will produce steam for plant use. The entire incineration train will be constructed so a parallel unit can be easily installed later if we expand the plant or if the EPA requires a second incinerator to maintain compliance while operating the plant when the other incinerator malfunctions.