



COMMONWEALTH of VIRGINIA

Department of Air Pollution Control

ROOM 801, NINTH STREET OFFICE BUILDING

POST OFFICE BOX 10089

RICHMOND, VIRGINIA 23240

(804) 786-2378

FAX # (804) 225-3933

TDD # (804) 371-8471

WALLACE N. DAVIS
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CONSENT AGREEMENT AND ORDER

WITH

NABISCO BRANDS, INC.
HENRICO COUNTY, VIRGINIA
Registration No. 50703

SECTION A: Purpose

This Order establishes a Reasonably Available Control Technology (RACT) standard for Nabisco Brands, Inc.'s plant in Henrico County, Virginia for the control of volatile organic compound (VOC) emissions as required by the 1985 State Implementation Plan (SIP) revision for the Richmond, Virginia ozone nonattainment area. This RACT standard shall be the basis for VOC emissions control for this plant.

SECTION B: References

Unless the context indicates otherwise, the following words and terms have the meanings assigned to them below:

1. "Affected Facility" or "Nabisco" refers to Nabisco Brands, Inc. (qualified in Virginia) plant located at 6002 Laburnum Avenue in Henrico County. The Registration Number is 50703.
2. "BOARD" or "SAPCB" means the State Air Pollution Control Board, a collegial body of the Commonwealth of Virginia established by § 10.1-1301 of the Code. Particular powers and duties of the Board are referred to in Section C of this document.

3. "Code" means the Code of Virginia.
4. "Day" means consecutive periods of 24 hours beginning with the start of the first shift of the week.
5. "Department" means the Department of Air Pollution Control, an agency of the Commonwealth described in § 10.1-1303 of the Code.
6. "Director" means the Executive Director of the Department.
7. "Director, Region V" means the Director of the State Capital Administrative Region, Department of Air Pollution Control.
8. "Major Stationary Source" means any stationary source which emits, or has the potential to emit, 100 tons or more per year of any air pollutant.
9. "Non-CTG" when referring to a source type, means that the U. S. Environmental Protection Agency (EPA) has issued no Control Techniques Guideline (CTG) and, thus, has not established RACT for the source type.
10. "Order" means this Consent Agreement and Order.
11. "Potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment, and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or its effect on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.
12. "Reasonably Available Control Technology" or "RACT" means the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.
13. "Richmond Area" refers to the Richmond ozone nonattainment area, which includes Richmond City, Henrico County, and Chesterfield County.

14. "SAPCB Regulations" means the "State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution."
15. "Sponge-dough" refers to dough formulated by yeast leavening.
16. "Straight-dough" refers to dough leavened chemically in the absence of yeast.
17. "Year" refers to the period, January 1 to December 31.

SECTION C: Authority

1. Chapter 13 of Title 10.1 of the Code creates the Board and vests in it the authority to supervise and control various aspects of air pollution in the Commonwealth. Among the Board's powers is the authority to promulgate regulations "abating, controlling and prohibiting" air pollution, found in § 10.1-1308.
2. Pursuant to its authority, the Board has promulgated the SAPCB Regulations, which first took effect March 17, 1972 and have been amended.
3. Pursuant to § 10.1-1307 D and § 10.1-1309, the Board has the authority to issue orders to diminish or abate the causes of air pollution and to enforce its regulations. Orders of the Board are enforceable pursuant to § 10.1-1316 of the Code.
4. The Executive Director is the chief executive officer of the Department. Under § 10.1-1303 of the Code, the Executive Director is authorized to supervise, administer and enforce the provisions of Chapter 13 of Title 10.1 of the Code, as well as the regulations and orders of the Board. Additionally, the Executive Director has such powers as are conferred upon him by the Board. Appendix F of the SAPCB Regulations contains the Delegation of Authority from the Board to the Executive Director. In Section II A of Appendix F, the Executive Director is given the authority, with some exceptions, to act to abate or control air pollution, approve consent agreements and consent orders, and perform other duties as prescribed by law or regulation.

SECTION D: Findings

1. In the 1985 SIP revision and again by letter of May 10, 1989, the Department made a commitment to establish emission standards in accordance with EPA policy requiring RACT for all non-CTG major stationary sources of VOC emissions in Richmond area in order to diminish or abate causes of air pollution, especially ozone in Richmond area. Accordingly, this Order will be submitted to EPA as a revision to the SIP and upon approval become federally enforceable.
2. Nabisco was determined by the Department to be a non-CTG major stationary source of VOC emissions in the Richmond area.
3. On December 21, 1989 Nabisco met with the Department to discuss the RACT determination for the affected facility.
4. The design of Oven Number 1 limits the cracker production to 8,953 pounds per hour and 108 tons per day, and the cracker production can not be increased beyond these limits without making physical modifications to Oven Number 1.
5. Oven Number 1 normally operates at an exhaust gas flow rate of more than 3,500 scfm. The actual volume of gases generated during the baking process from combustion air and evaporation of water and VOCs is only about 1,900 scfm.
6. The feed to Oven Numbers 2, 3, 4, 5, 6, 8, 9, and 10 contains only straight-dough and does not contain any sponge-dough.
7. Uncontrolled VOC emissions from the baking of sponge-dough in Oven Number 1 are estimated to be 261 tons per year.
8. Uncontrolled VOC emissions from the baking of straight-dough are estimated to be less than 1 ton per year for each oven.
9. Uncontrolled VOC emissions from the proof-room are estimated to be 0.3 ton per year.
10. According to an August 21, 1990 policy memo "Interpretation of VOC Definition as Applied to Vegetable Oil" from EPA's Office of Air Quality Planning and

Standards, vegetable oil emissions are not considered as VOC for the purpose of control programs for attaining the national ambient air quality standards for ozone.

11. RACT for Oven Number 1, when baking sponge-dough, is determined to be the control of VOC emissions as described below:
 - a. The design and proper operation of the oven that meet criteria presented in Attachment 1 for a permanent total enclosure.
 - b. The use of a catalytic incinerator having a VOC destruction efficiency of at least 95 percent on a mass basis.
12. RACT for Oven Number 1, when baking straight-dough, is determined to be no control.
13. RACT for Oven Numbers 2, 3, 4, 5, 6, 8, 9, and 10 is determined to be a limit on their baking processes to only straight-dough.
14. RACT for the proof-room is determined to be no control.
15. RACT for the oil treatment facilities is determined to be a limit on the type of oil used to only vegetable oils.
16. Oven Number 7 is regulated by a new source permit and, therefore, it is not subject to this Order.

SECTION E: Agreement and Order

Accordingly, the Board orders and Nabisco agrees that:

1. VOC emissions from the affected facility shall be controlled and reduced as outlined in this Order.
2. Beginning immediately, Nabisco shall utilize RACT as set forth in this Order.
3. Oven number 1, when baking sponge-dough, shall meet the criteria presented in Attachment 1 for a permanent total enclosure during its operation.
4. Exhaust VOC emissions from Oven Number 1, when baking sponge-dough, shall be controlled by the use of a

- catalytic incinerator having a destruction efficiency of at least 95 percent on a mass basis.
5. The feed to Oven Numbers 2, 3, 4, 5, 6, 8, 9, and 10 shall be limited to only straight-dough and shall not contain any sponge-dough.
 6. The type of oil used in the oil treatment facilities shall be limited to only vegetable oils.
 7. Sponge-dough products from Oven Number 1 shall not exceed 108 tons per day and 32,400 tons per year.
 8. VOC emissions from the operation of Oven Number 1 shall not exceed 96 pounds per day and 13.5 tons per year.
 9. Nabisco shall conduct a performance test using EPA Reference Method 25, any other Reference Method approved by the Department, or an equivalent or alternative method to demonstrate compliance with the destruction efficiency specified in Section E4 for the catalytic incinerator within 180 days after start-up of the catalytic incinerator. The schedule of the performance test is to be arranged with and approved by Director, Region V.
 10. Nabisco shall furnish written notification to the Director, Region V of:
 - a. The actual start-up date of the catalytic incinerator within 15 days after such date.
 - b. The anticipated date of the performance test postmarked at least 30 days prior to such date.
 11. Results of the performance test shall be reported to Director, Region V in writing within 45 days after completion of the performance test. The details of the format of the performance test report shall be arranged with and approved by Director, Region V.
 12. During the performance test of the catalytic incinerator, Nabisco shall establish and record the 3-hour average gas temperature at the catalyst bed inlet that achieves the destruction efficiency of at least 95 percent on a mass basis. The corresponding 3-hour average gas temperature rise across the catalyst bed shall be determined and recorded.

13. After the performance test, when baking sponge-dough in Oven Number 1, Nabisco shall demonstrate continued compliance with the destruction efficiency specified in Section E4 by maintaining the 3-hour average gas temperature at the catalyst bed inlet at not less than 5°F below that established during the performance test. Nabisco shall record each temperature deviation and furnish written notification to the Director, Region V of the period and the 3-hour average gas temperatures at the catalyst bed inlet for that period within ten days from the beginning of each occurrence.
14. Whenever 3-hour average gas temperature rise across the catalyst bed, when baking sponge-dough in Oven Number 1, is less than 80 percent of the average gas temperature rise demonstrated during the most recent performance test, Nabisco shall record it and furnish written notification to the Director, Region V of the period and the 3-hour average gas temperature rise for that period within thirty days from the beginning of such occurrence, and shall provide the explanation for the reduction in the temperature rise. The Department, upon its review, may require Nabisco to analyze the catalyst for its effectiveness.
15. Nabisco shall install, calibrate, operate, and maintain monitoring devices that continuously measure and record the gas temperatures both upstream and downstream of the catalyst bed during baking of sponge-dough in Oven Number 1 and shall comply with the following requirements:
 - a. The temperature sensors shall be installed as close as possible to the catalyst bed inlet and outlet.
 - b. Each continuous monitoring device shall be calibrated annually and have an accuracy of ± 1 percent of the temperature being measured in Celsius degrees or $\pm 0.5^{\circ}\text{C}$, whichever is greater.
 - c. Nabisco shall determine and record, in addition to the record made by the continuous monitoring device, the 3-hour average temperature of the gas stream at the catalyst bed inlet and the 3-hour average gas temperature rise across the catalyst bed.
16. The exhaust gas flow rate from Oven Number 1 to the incinerator shall not be less than 3,500 scfm during the baking of sponge-dough in Oven Number 1.

17. Nabisco shall install and operate a monitoring device that, during baking of sponge-dough, continuously measures and records the exhaust gas flow rate from Oven Number 1 to the incinerator. The continuous monitoring device shall be maintained and calibrated in accordance with manufacturer's specifications.
18. The written statement required by Section 120-02-34 C of the SAPCB Regulations shall be submitted to Director, Region V within ten days from the beginning of the failure or malfunction of affected facility or related air pollution control equipment. For the purposes of Section 120-02-34 of the SAPCB Regulations, the malfunctions or failures include, but are not limited to, the following events:
 - a. Exhaust gas flow rate from the Oven Number 1 to the incinerator, when baking sponge-dough in Oven Number 1, falls below 3,500 scfm for more than 1 hour.
 - b. 3-hour average temperature of the gas stream at the catalyst bed inlet, when baking sponge-dough in Oven Number 1,8 is more than 28°C below the average temperature demonstrated during the most recent performance test.
 - c. During baking of sponge-dough, Oven Number 1 or the catalytic incinerator fails or malfunctions and may cause excess emissions for more than 1 hour.
19. The daily and yearly sponge-dough products from Oven Number 1 shall be measured and recorded by Nabisco.
20. As long as Nabisco continues to include the in-process product that comes out after the end of the last shift of a week in the production record of that shift, Nabisco has an option to average the productions recorded for the first and the last shifts of that week to demonstrate compliance for only those two days with the daily production limit specified in Section E7. This option may only be exercised when both the shifts produce only sponge-dough products.
21. Whenever the actual production from Oven Number 1 exceeds the allowable production rate, Nabisco shall record and furnish written notification to the Director, Region V of the period and amount of the excess production within ten days from the beginning of such occurrence.

22. Nabisco shall maintain records of the time period during which straight-dough is baked in Oven No. 1.
23. Nabisco shall record and notify Director, Region V in writing within ten days of the date and time for each period during which any monitoring system is inoperative (except for calibration), the nature of the system problems, and the repairs or adjustments that were made.
24. Nabisco shall record the dates of the last catalyst cleaning and replacement.
25. The records required by this Order shall be maintained by Nabisco for a minimum of the most recent three year period and made available for review and inspection by representatives of the Department.
26. Nabisco shall comply with all applicable SAPCB Regulations including the requirements for monitoring, notification, recordkeeping, reporting, maintenance, and malfunction.
27. Nabisco agrees that this Order is not construed to mean that its operation is automatically in compliance with all aspects of the SAPCB Regulations. Department personnel will be constantly evaluating all sources for compliance with Part IV, Section 120-04-0303 - Standard for Non-Criteria Pollutants, Section 120-04-0104 - Standard for Fugitive Dust/Emissions, Section 120-04-0103 - Standard for Visible Emissions, and Section 120-04-0203 - Standard for Odor. Compliance with all air pollution regulations must be a continuing, full time effort.
28. The Board may modify, rewrite, or amend this Order with the consent of Nabisco, for good cause shown by Nabisco, or on its own motion after notice and an opportunity for a hearing. If this Order is modified, rewritten, or amended without a written consent of Nabisco, Nabisco shall have the right to appeal under the Administrative Process Act of Virginia.
29. Anytime in future, should Nabisco plan any modifications of the affected facility covered by this Order, Nabisco shall have the right to apply to the Board and the Board may consent to such modifications provided such modifications will meet all the regulatory requirements in existence at that time.

30. So long as this Order remains in effect and is not modified, rewritten, or amended without a written consent of Nabisco, Nabisco waives the right to any hearing pursuant § 10.1-1309 of the Code and to judicial review of any issue of fact or law contained herein. Nothing herein, however, shall be construed as a waiver of the right to a hearing or to judicial review of any action taken by the Board to enforce this Order.
31. Failure by Nabisco to comply with any of the terms of this Order shall constitute a violation of an order of the Board. Nothing herein shall waive the initiation of appropriate enforcement action or the issuance of additional orders as appropriate by the Board as a result of such violations. Nothing herein shall affect appropriate enforcement actions by any other federal, state, or local regulatory authority.
32. Nabisco declares it has received fair and due process under the Administrative Process Act (§ 9-6.14:1 et. seq.), as affected by § 10.1-1309 of the Code.
33. If any provision of this Order or the application thereof to any person or circumstances is held to be invalid, such invalidity shall not affect other provisions or application of any other provision of this Order which can be given effect without the invalid provisions or application, and to this end the provisions of this Order and the various applications thereof are declared to be severable.
34. This Order shall become effective upon signature by both parties and shall continue in effect as long as the affected facility exists and is in operation, or until the Department replaces this Order with any federally enforceable administrative mechanism.

The forgoing Consent Agreement and Order has been executed on behalf of the STATE AIR POLLUTION CONTROL BOARD of the COMMONWEALTH OF VIRGINIA and on behalf of NABISCO BRANDS, INC., each by its duly authorized representatives, or self, on the dates indicated below.

STATE AIR POLLUTION CONTROL BOARD
OF THE COMMONWEALTH OF VIRGINIA

April 24, 1991
(date)

BY: Wallace N. Davis
Wallace N. Davis
Executive Director

NABISCO BRANDS, INC.

April 18/1991
(date)

BY: Andrew J. Behr
Andrew J. Behr
Vice President, Manufacturing

STATE OF NEW JERSEY
CITY/COUNTY OF Somerset

The foregoing instrument was acknowledge before me this 18th day of April, 1991, by Andrew J. Behr, Vice President, Manufacturing, of Nabisco Brands, Inc., a Delaware corporation, on behalf of the corporation.

My Commission expires 10/25/95

SUSAN J. SNYDER
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES OCT. 25, 1995

Susan J. Snyder
Notary Public



APR 16 1990

VOC CAPTURE EFFICIENCY
Procedure T - Criteria for and Verification of a Permanent
or Temporary Total Enclosure

1. INTRODUCTION

1.1 Applicability. This procedure is used to determine whether a permanent or temporary enclosure meets the criteria of a total enclosure.

1.2 Principle. An enclosure is evaluated against a set of criteria. If the criteria are met and if all the exhaust gases are ducted to a control device, then the volatile organic compounds (VOC) capture efficiency (CE) is assumed to be 100 percent and CE need not be measured. However, if part of the exhaust gas stream is not ducted to a control device, CE must be determined.

2. DEFINITIONS

2.1 Natural Draft Opening (NDO) -- Any permanent opening in the enclosure that remains open during operation of the facility and is not connected to a duct in which a fan is installed.

2.2 Permanent Total Enclosure (PTE) -- A permanently installed enclosure that completely surrounds a source of emissions such that all VOC emissions are captured and contained for discharge through a control device.

2.3 Temporary Total Enclosure (TTE) -- A temporarily installed enclosure that completely surrounds a source of emissions such that all VOC emissions are captured and contained for discharge through ducts that allow for the accurate measurement of VOC rates.

3. CRITERIA OF A TEMPORARY TOTAL ENCLOSURE

3.1 Any NDO shall be at least 4 equivalent opening diameters from each VOC emitting point.

3.2 Any exhaust point from the enclosure shall be at least 4 equivalent duct or hood diameters from each NDO.

3.3 The total area of all NDO's shall not exceed 5 percent of the surface area of the enclosure's four walls, floor, and ceiling.

3.4 The average facial velocity (FV) of air through all NDO's shall be at least 3,600 m/hr (200 fpm). The direction of air through all NDO's shall be into the enclosure.

3.5 All access doors and windows whose areas are not included in Section 3.3 and are not included in the calculation in Section 3.4 shall be closed during routine operation of the process.

4. CRITERIA OF A PERMANENT TOTAL ENCLOSURE

4.1 Same as Sections 3.1 and 3.3 - 3.5.

4.2 All VOC emissions must be captured and contained for discharge through a control device.

5. PROCEDURE

5.1 Determine the equivalent diameters of the NDO's and determine the distances from each VOC emitting point to all NDO's. Determine the equivalent diameter of each exhaust duct or hood and its distance to all NDO's. Calculate the distances in terms of equivalent diameters. The number of equivalent diameters shall be at least 4.

5.2 Measure the total area (A_t) of the enclosure and the total area (A_N) of all NDO's of the enclosure. Calculate the NDO to enclosure area ratio (NEAR) as follows:

$$\text{NEAR} = A_N/A_t$$

The NEAR must be ≤ 0.05 .

5.3 Measure the volumetric flow rate, corrected to standard conditions, of each gas stream exiting the enclosure through an exhaust duct or hood using EPA Method 2. In some cases (e.g., when the building is the enclosure), it may be necessary to measure the volumetric flow rate, corrected to standard conditions, of each gas stream entering the enclosure through a forced makeup air duct using Method 2. Calculate FV using the following equation:

$$\text{FV} = [Q_0 - Q_1] / A_N$$

where:

Q_0 = the sum of the volumetric flow from all gas streams exiting the enclosure through an exhaust duct or hood.

Q_1 = the sum of the volumetric flow from all gas streams into the enclosure through a forced makeup air duct; zero, if there is no forced makeup air into the enclosure.

A_N = total area of all NDO's in enclosure.

The FV shall be at least 3,600 m/hr (200 fpm).

5.4 Verify that the direction of air flow through all NDO's is inward. Use streamers, smoke tubes, tracer gases, etc. Strips of plastic wrapping film have been found to be effective. Monitor the direction of air flow at intervals of at least 10 minutes for at least 1 hour.

6. QUALITY ASSURANCE

6.1 The success of this protocol lies in designing the TTE to simulate the conditions that exist without the TTE, i.e., the effect of the TTE on the normal flow patterns around the affected facility or the amount of fugitive VOC emissions should be minimal. The TTE must enclose the application stations, coating reservoirs, and all areas from the application station to the oven. The oven does not have to be enclosed if it is under negative pressure. The NDO's of the temporary enclosure and a fugitive exhaust fan must be properly sized and placed.

6.2. Estimate the ventilation rate of the TTE that best simulates the conditions that exist without the TTE, i.e., the effect of the TTE on the normal flow patterns around the affected facility or the amount of fugitive VOC emissions should be minimal. Figure 1 may be used as an aid. Measure the concentration (C_G) and flow rate (Q_G) of the captured gas stream, specify a safe concentration (C_F) for the fugitive gas stream, estimate the CE, and then use the plot in Figure 1 to determine the volumetric flowrate of the fugitive gas stream (Q_F). A fugitive VOC emission exhaust fan that has a variable flow control is desirable.

6.2.1 Monitor the concentration of VOC into the capture device without the TTE. To minimize the effect of temporal variation on the captured emissions, the baseline measurement should be made over as long a time period as practical. However, the process conditions must be the same for the measurement in Section 6.2.3 as they are for this baseline measurement. This may require short measuring times for this quality control check before and after the construction of the TTE.

6.2.2 After the TTE is constructed, monitor the VOC concentration inside the TTE. This concentration shall not continue to increase and must not exceed the safe level according to OSHA requirements for permissible exposure limits. An increase in VOC concentration indicates poor TTE design or poor capture efficiency.

6.2.3 Monitor the concentration of VOC into the capture device with the TTE. To limit the effect of the TTE on the process, the VOC concentration with and without the TTE must be within ± 10 percent. If the measurements do not agree, adjust the ventilation rate from the TTE until they agree within 10 percent.

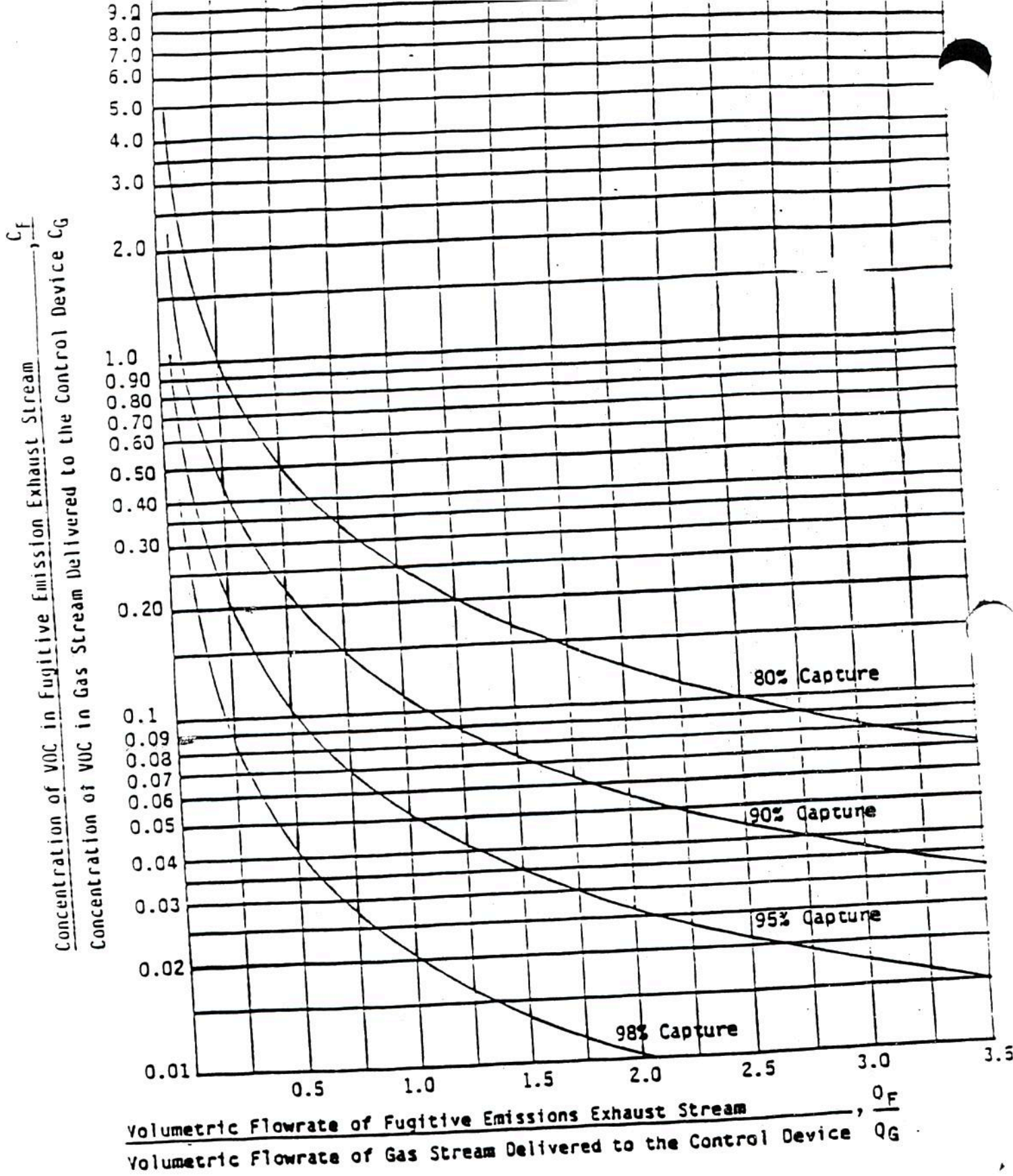


Figure 1. The Crumpler Chart