

THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

ORDER NO. 77-13

NPDES PERMIT NO. CA0006343

WASTE DISCHARGE REQUIREMENTS FOR:

MERCK & COMPANY, INC.  
SOUTH SAN FRANCISCO, SAN MATEO COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. Merck & Company, Inc., hereinafter called the discharger, submitted a report of waste discharge (NPDES Standard Form C) dated June 30, 1976, for a reissuance of its current NPDES Permit No. CA0006343, adopted January 21, 1975.
2. The discharger currently discharges an average of 5.0 mgd of industrial waste containing pollutants into central San Francisco Bay, a water of the United States, at a point one mile offshore from Point San Bruno at a depth of about 17 feet. This discharge is through an outfall pipe jointly used by the cities of South San Francisco, San Bruno, Burlingame, Millbrae, and the San Francisco International Airport.
3. The discharger's waste consists principally of magnesium and calcium compounds in dissolved and suspended form, produced during precipitation of magnesium hydroxide from bay water. In addition, the waste contains filtrates, wash water, sealing water from rotary vacuum filter pumps, flue gas scrub water, filter backwash water, boiler blowdown, bay water foamate, and laboratory wastes. Sanitary sewage is discharged to the City of South San Francisco sewer system.
4. On June 24, 1969, the Board adopted Waste Discharge Requirements for this discharger in Resolution No. 69-31. On April 22, 1971, the Board adopted Order No. 71-22, a Cease and Desist Order for violations of receiving water requirements for discoloration and turbidity contained in Resolution No. 69-31. The discharger has complied with Resolution No. 69-31 and Order No. 71-22 by diversion of the waste discharge from the previous near-shore location and connection to the joint deepwater outfall.
5. The Board, in April 1975, adopted a Water Quality Control Plan for the San Francisco Bay Basin. The Plan contains water quality objectives for San Francisco Bay.
6. The beneficial uses of San Francisco Bay are:
  - a. Recreation
  - b. Fish migration and habitat
  - c. Habitat and resting for waterfowl and migratory birds
  - d. Industrial water supply
  - e. Esthetic enjoyment
  - f. **Navigation**

7. Effluent limitation, and toxic effluent standards, established pursuant to Sections 208(b), 301, 304, and 307, of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharge.
8. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
9. On February 15, 1977, the California Regional Water Quality Control Board, San Francisco Bay Region, after due notice, held a hearing under the provisions of Water Code Section 13301 regarding the discharge of waste and pollutants by Merck and Company, Inc.
10. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Water Pollution Control Act, or amendments thereto, and shall take effect at the end of ten days from date of hearing provided the Regional Administrator, U. S. Environmental Protection Agency, has no objections.
11. The project will have no significant effects on the environment pursuant to the California Environmental Quality Act.

IT IS HEREBY ORDERED that Merck & Company, Inc., in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Water Pollution Control Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Effluent Limitations

1. The discharge of an effluent containing constituents in excess of the following limits is prohibited:

<u>Constituent</u>	<u>Units</u>	<u>30-Day Average</u>	<u>Maximum Daily</u>
Oil & Grease *	lbs/day	495	740
	kg/day	225	335
	mg/l	10	15

\*Increment above intake.

2. The discharge shall not have a pH of less than 6.0 nor greater than 9.0. This requirement shall be waived when the combined effluent, as discharged in a joint outfall, has a pH of not less than 6.0 nor greater than 9.0.
3. In any representative set of samples the waste as discharged to the combined outfall shall meet the following limit of toxicity:

The survival of test fishes in 96-hour bioassays of the effluent shall be a 90 percentile value of not less than 50 percent survival.

Compliance with this requirement may be demonstrated using effluent samples for which the pH has been adjusted to the pH of the combined effluent as discharged from the subregional outfall.

4. The daily discharge rate is obtained from the following calculation for any calendar day:

$$\text{Daily discharge rate} = \frac{8.34}{N} \sum_{i=1}^N Q_i C_i$$

in which N is the number of samples analyzed in any calendar day.  $Q_i$  and  $C_i$  are the flow rate (MGD) and the constituent concentration (mg/l) respectively, which are associated with each of the N grab samples which may be taken in any calendar day. If a composite sample is taken,  $C_i$  is the concentration measured in the composite sample and  $Q_i$  is the average flow rate occurring during the period over which samples are composited.

5. The 30-day average discharge rate or concentration shall be the arithmetic average of all the daily values calculated using the results of analyses of all samples collected during any 30 consecutive calendar day period. If fewer than four samples are collected and analyzed during any 30 consecutive calendar day period, compliance with the 30-day average limitation shall not be determined.

B. Receiving Water Limitations

1. The discharge of waste shall not cause the following conditions to exist in waters of the State.
- a. Floating, suspended, or deposited macroscopic particulate matter or foam;
  - b. Aquatic growths;
  - c. Significant alteration of temperature or apparent color beyond present natural background levels;
  - d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;
  - e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.
  - f. Unnatural changes in turbidity or light transmittance where change impairs beneficial use. Increases from normal background light penetration or turbidity attributable to waste discharge shall not be greater than 10 percent in areas of 10 JFD or more; waters of characteristically low natural turbidity shall be maintained so that discharges do not cause visible, aesthetically undesirable contrast with the natural appearance of the water.
  - g. Substances that will form detrimental deposits and material that can cause or induce formation of combinations or amounts of deposited materials that can be deleterious to beneficial uses of waters and underlying surfaces, with or without resuspension of any deposits.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:
  - a. Dissolved oxygen 5.0 mg/l minimum. Annual median 80% saturation. When natural factors cause lesser concentration(s) than those specified above, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.
  - b. Dissolved sulfide 0.1 mg/l maximum.
  - c. pH Variation from natural ambient pH by more than 0.2 pH units.
3. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

C. Discharge Prohibitions

1. The discharge of waste at any point at which the wastewater does not receive an initial dilution of at least 10:1 is prohibited.

D. Provisions

1. Neither the treatment nor the discharge of pollutants shall create a nuisance as defined in the California Water Code.
2. Storm runoff from all processing areas of the plant site shall be collected and routed for discharge through the outfall pipe.
3. The discharge of sanitary sewage directly to waters of the State is prohibited.
4. The discharger shall comply with the following time schedule to assure compliance with Section A.2 of this Order:

<u>Task</u>	<u>Completion Date</u>	<u>Report of Compliance Due</u>
Develop conceptual plan to meet full compliance by July 1, 1977	April 1, 1977	April 15, 1977
Full Compliance	July 1, 1977	July 15, 1977

The discharger shall comply with all other Sections of this Order immediately upon its adoption.

The discharger shall submit a report to the Board on or before each compliance report date, detailing his compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the discharger will be in compliance. The discharger shall notify the Board by letter when he has returned to compliance with the time schedule.

5. The effluent limitations contained in this Order may be amended as necessary to ensure compliance with the Receiving Water Limitations contained in Section B of this Order.
6. This Order includes items 1, 3, 5, and 7 of the attached "Reporting Requirements" dated August 8, 1973.
7. This Order includes items 1, 2, 4, 5, 6, 7, 8, 9, and 10 of the attached "Standard Provisions" dated November 20, 1974.
8. The following are rescinded: Resolution No. 69-31, adopted June 24, 1969; Order No. 71-22, adopted April 22, 1971; Order No. 75-5, adopted January 21, 1975; and Order No. 76-129, adopted December 21, 1976.
9. This Order expires on February 15, 1982, and the discharger must file a Report of Waste Discharge in accordance with Title 23, California Administrative Code, not later than 180 days in advance of such date as application for issuance of new waste discharge requirements.
10. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the discharger, the discharger shall notify the succeeding owner or operator of the existence of this Order by a letter, a copy of which shall be forwarded to this Board.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 15, 1977.

FRED H. DIERKER  
Executive Officer

Attachments:

Reporting Requirements 8/8/73  
Standard Provisions 11/20/74  
Self-Monitoring Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM  
FOR

Merck & Company, Inc.

South San Francisco

San Mateo County

NEDES NO. CA 0006343

ORDER NO. 77-13

CONSISTS OF

PART A, dated 7/74

PART B, ordered and effective January 23, 1975  
revised May 23, 1975  
(both above as part of Order No. 75-5)  
revised February 15, 1977

AND

Bottom Sampling and Reporting Guidelines,  
dated 9/4/74 (3 pp)

Part B

I. DESCRIPTION OF SAMPLING STATIONS

A. INTAKE

<u>Station</u>	<u>Description</u>
I-001	At any point in the water intake from San Francisco Bay preceding usage for cooling or processing.

B. EFFLUENT

<u>Station</u>	<u>Description</u>
E-001	At any point in the interceptor from the discharger's facilities between the point of connection with the subregional outfall and the point at which all of the discharger's waste tributary to that interceptor is present.
E-002	At any point in the subregional outfall where all the wastes tributary to the outfall are present.

C. RECEIVING WATERS

<u>Station</u>	<u>Description</u>
C-1	At a point in San Francisco Bay located over the geometric center of the outfall's discharge ports.
C-2	At a point in San Francisco Bay located midway between C-1 and C-3.
C-3	At a point in San Francisco Bay located in the center of the waste plume.
C-50-SW	At a point in San Francisco Bay, located 50 feet southwesterly, along the outfall line shoreward from Station C-1.
C-50-NW	At a point in San Francisco Bay, located 50 feet northwesterly from Station C-1, normal to the outfall line.
C-50-NE	At a point in San Francisco Bay located 50 feet northeasterly from Station C-1 along the outfall line extended.
C-50-SE	At a point in San Francisco Bay located 50 feet southeasterly from Station C-1 normal to the outfall.

C. RECEIVING WATERS (Cont'd)

<u>Station</u>	<u>Description</u>
C-300-N thru C-300-NW (8 stations)	At a point in San Francisco Bay located on a 300-foot radius from the geometric center of the outfall diffuser, at equidistant intervals, with Station C-300-SW located shoreward from Station C-1 at the outfall line.
C-R-NW	At a point in San Francisco Bay located approximately 1500 feet northerly from the point of discharge.
C-R-SE	At a point in San Francisco Bay, located approximately 1500 feet southeasterly from the point of discharge.

D. SEDIMENTS

<u>Station</u>	<u>Description</u>
B-1	At a point in San Francisco Bay located fifty (50) feet perpendicular to <b>and</b> south of the diffuser, and two hundred and fifty (250) landward from the end of the diffuser.
B-2	At a point in San Francisco Bay located one hundred fifty (150) feet perpendicular to and south of the diffuser, and two hundred and fifty (250) feet landward from the end of the diffuser.
B-3	At a point in San Francisco Bay located three hundred (300) feet perpendicular to and south of the diffuser, and two hundred and fifty (250) feet landward from the end of the diffuser.
B-4	At a point in San Francisco Bay located fifty (50) feet perpendicular to and south of the diffuser, and six hundred (600) feet landward from the end of the diffuser.
B-5	At a point in San Francisco Bay located one hundred fifty (150) feet perpendicular to and south of the diffuser, and six hundred (600) feet landward from the end of the diffuser.
B-RS	At a point in San Francisco Bay located approximately fifteen hundred (1500) feet south of the center of the diffuser.

II. SCHEDULE OF SAMPLING AND ANALYSIS

- A. The schedule of sampling, measurements and analysis shall be that given as Table I.
- B. If the discharger samples at E-002 to demonstrate compliance with effluent pH requirements, he may use grab sample till July 1, 1977. After July 1, 1977, all pH samples taken at E-002 must be continuous.

III. MODIFICATION OF PART "A", DATED 7/74

- A. Exclusions: Paragraphs C.3., C.4.a.(1)(b), C.4.a.(1)(c), C.5.d., C.5.e, D.1., D.4., E.4.
- B. Modifications:
  - (1) Paragraph C.4.a.(1)(d): Replace "Metals (depending on industrial input)" with "Magnesium."

I, Fred H. Dierker, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

- 1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 77-13.
- 2. Was ordered by the Executive Officer on January 21, 1975; was revised May 23, 1975, to monitor compliance with Regional Board Order No. 75-5; and is hereby ordered further revised February 15, 1977, to become effective immediately.
- 3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger and revisions will be ordered by the Executive Officer.

FRED H. DIERKER  
Executive Officer

Date ordered February 15, 1977

Attachments:

- Table I
- Legend for Table I

**TABLE I**  
**SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSES**

MERCK & COMPANY, INC.      NPDES NO. CA0006343

SAMPLING STATIONS	I-001		E-001		E-002		C	B
		G	C-24	G		G	G	BS
Flow Rate (mgd)			D					
Settleable Matter (ml/l-hr & cu. ft/day)				2/W				
Total Suspended Matter (mg/l & kg/day)			2/W					
Oil & Grease (l) (mg/l & kg/day)		M (2)		M				
Fish Toxicity, 96-hr TL <sub>50</sub> % Survival in undiluted waste			(3) 2/M					
Turbidity (Jackson Turbidity Units)							2/M	
pH (units) (4)				cont		(4) cont	2/M	
Apparent Color (Color units)							2/M	
All Applicable Standard Observations				5/W			2/M	
Bottom Sediment Analyses and Observations								2/Y

LEGEND FOR TABLE

TYPES OF SAMPLES

G = grab sample  
C-24 = composite sample - 24-hour  
BS = bottom sediment sample

TYPES OF STATIONS

E = waste effluent stations  
C = receiving water stations  
B = bottom sediment stations

FREQUENCY OF SAMPLING

D = once each day  
W = once each week  
M = once each month  
2/W = w days per week  
2/Y = once in March and once in Sept.  
5/W = 5 days per week  
2w = every 2 weeks  
Cont = continuous

NOTES:

- (1) Oil and grease sampling shall consist of 3 grab samples taken at equal hour intervals during the sampling day, with each grab being collected in a glass container and analyzed separately. Results shall be expressed as a weighted average of the 3 values, based upon the instantaneous flow rates occurring at the time of each grab sample.
- (2) If oil and grease at E-001 is below effluent limits, I-001 need not be sampled.

NOTES: (Cont'd)

- (3) Prior to the toxicity test, the discharger may adjust the undiluted waste pH to the **average** pH of the preceding 24 hours of the combined effluent as discharged from the subregional outfall.
- (4) At his option the discharger may monitor pH continuously at E-002 to establish compliance with effluent limitations. Until July 1, 1977, the discharger may monitor pH at E-002 by a grab sample at frequency of once per day.