

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 79-59

NPDES NO. CA0028436

WASTE DISCHARGE REQUIREMENTS FOR:

RICHMOND SANITARY SERVICE
RICHMOND, CONTRA COSTA COUNTY

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

1. Richmond Sanitary Service (hereinafter called the discharger) on June 7, 1978, filed a report of waste discharge, (NPDES Short Form D) dated June 1, 1978.
2. The discharger operates an approved waste disposal site for Group 1 and Group 2 wastes located adjacent to San Pablo Bay in Richmond. Waste discharge requirements for the facility were adopted by the Board on March 16, 1976, by Order 76-28 and amended on February 21, 1978, by Order 78-9.
3. The proposed discharge consists of stormwater runoff from the covered Class I barrel disposal area and from exterior surfaces of the Class I waste pond dikes. Run-off from these areas is collected in a retention basin which was constructed to retain wastes in case of levee failure of the Class I waste pond dikes. The proposed discharge would be made in order to maintain the basin's emergency holding capacity. The waste volume is reported at 2,000,000 gallons over a 5 day period, recurring at infrequent intervals during the wet season. The waste will be discharged into an unnamed watercourse located along the discharger's southeast perimeter dike and tributary to San Pablo Bay.
4. The Board in April, 1975, adopted a Water Quality Control Plan for the San Francisco Bay Basin. The Basin Plan contains water quality objectives for San Pablo Bay.
5. The beneficial uses of San Pablo Bay and contiguous water bodies are:
 - a. Water contact recreation
 - b. Non-contact water recreation
 - c. Navigation
 - d. Open commercial and sport fishing
 - e. Wildlife habitat
 - f. Fish spawning and migration
 - g. Preservation of rare and endangered species
 - h. Shellfishing
6. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21000) of Division 13 of the Public Resources Code in accordance with Water Code Section 13389.

7. Effluent limitations and toxic and pretreatment effluent standards established pursuant to Sections 208b, 301, 304, and 307 of the Federal Water Pollution Control Act 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 proposed discharge.
9. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that Richmond Sanitary Service, 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. Discharge Prohibitions

1. The discharge of Group I wastes to waters of the State is prohibited.
2. The discharge of surface drainage from areas other than the covered barrel disposal area and exterior surfaces of the Class I waste pond dikes is prohibited.
3. The discharge shall not cause erosion of the receiving water channel.

B. Discharge Specifications

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

<u>Constituent</u>	<u>Units</u>	<u>Maximum</u>
BOD	lbs/day	1000
	kg/day	454
	mg/l	60
COD	lbs/day	3336
	kg/day	1516
	mg/l	200
Settleable Matter	ml/l	1.0
Oil & Grease	lbs/day	167
	kg/day	75.8
	mg/l	10
Arsenic	lbs/day	.33
	kg/day	.15
	mg/l	.02
Cyanide	lbs/day	.83
	kg/day	.38
	mg/l	.05
Cadmium	lbs/day	.50
	kg/day	.23
	mg/l	.03

<u>Constituent</u>	<u>Units</u>	<u>Maximum</u>
Total Chromium	lbs/day	.83
	kg/day	.38
	mg/l	.05
Copper	lbs/day	.83
	kg/day	.38
	mg/l	.05
Lead	lbs/day	3.3
	kg/day	1.5
	mg/l	.2
Mercury	lbs/day	.033
	kg/day	.015
	mg/l	.002
Nickel	lbs/day	3.33
	kg/day	1.52
	mg/l	.2
Zinc	lbs/day	8.34
	kg/day	3.79
	mg/l	.5
Total Identifiable ⁽¹⁾	lbs/day	.033
Chlorinated Hydrocarbons	kg/day	.015
	mg/l	.002

(1) Total Identifiable Chlorinated Hydrocarbons shall be measured by summing the individual concentrations of DDT, DDD, DDE, aldrin, BHC, chlordane, endrin, heptachlor, lindane, dieldrin, polychlorinated biphenyls, and other identifiable chlorinated hydrocarbons.

2. The discharge shall not have pH of less than 6.5 nor greater than 8.5.
3. In any representative set of samples, the waste as discharged shall meet the following limit of toxicity:

The survival of test organisms acceptable to this Regional Board in 96-hour bioassays of the effluent as discharged shall achieve a median of 90% survival for three consecutive samples and a 90 percentile value of not less than 70% survival for 10 consecutive samples.

C. Receiving Water Limitations

1. The discharge of waste shall not cause the following conditions to exist in waters of the state at any place.
 - a. Floating, suspended, or deposited macroscopic particulate matter or foam;
 - b. Bottom deposits or aquatic growths;

- c. Alteration of temperature, turbidity, 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.
2. 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.

D. Provisions

- 1. Neither the treatment nor the discharge of pollutants shall create a nuisance as defined in the California Water Code.
- 2. Compliance with the effluent limitations specified in this Order shall be demonstrated prior to each discharge.
- 3. Water contained in the retention basin at the time this Permit is adopted may be discharged until June 15, 1979, but only in full compliance with this Permit. All discharge after that date shall be limited to the period between October 1 and April 30.
- 4. Following the first half-inch of rain after September 1 in each year, retention pond contents which do not meet the effluent specifications B.1 through B.3 above shall be disposed of in the Class I pond or, after securing approval of the Executive Officer, in the Class II site.
- 5. The discharger shall comply with all Sections of this Order immediately upon adoption.
- 6. The discharger shall file with the Board technical reports on self-monitoring work performed according to the detailed specifications contained in any Monitoring and Reporting Program as directed by the Executive Officer.
- 7. The discharger shall file with the Board a report on waste discharge at least 120 days before making any material change or proposed change in the character, location, or volume of the discharge.
- 8. This Order includes all items of the attached "Standard Provisions and Reporting Requirements," dated April 1977 except A.5, A.16, B.1, B.2, B.5.

9. 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 the date of hearing provided the Regional Administrator of the U. S. Environmental Protection Agency has no objections.
10. This Order expires on April 17, 1984, 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.
11. 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 **May 15, 1979.**

FRED H. DIENKER
Executive Officer

Attachments:
Standard Prov. & Reporting Requirements,
April 1977

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

Richmond Sanitary Service

NPDES NO. CA 0028436

ORDER NO. 79-59

CONSISTS OF

PART A, January 1978

AND

PART B, ordered
effective immediately

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. Retention Basin

<u>Stations</u>	<u>Description</u>
R-1	Located in the northwestern corner of the retention basin.
R-2	Located in the southwestern corner of the retention basin.
R-3	Located in the southeastern corner of the retention basin.

B. Effluent

<u>Station</u>	<u>Description</u>
E-001	Located in the outfall pipe or at the point of discharge prior to mixing with receiving water.

C. Receiving Waters

<u>Station</u>	<u>Description</u>
C-1	In the receiving waters five to ten feet downstream from the discharge point.
C-2	In the receiving waters ten to fifteen feet upstream from the discharge point. (Reference Station)

D. Miscellaneous Reporting

1. Map showing the location of all stations and the discharge line must be submitted with each report.
2. Discharger shall notify Regional Board staff prior to sampling and communicate to the staff the analysis results required by Table I prior to discharge.

II. SCHEDULE OF SAMPLING AND ANALYSIS

- A. The schedule and sampling shall be that given in Table I.

III. SPECIAL PROVISIONS

- A. Discharge shall not be made unless retention basin water quality complies with the effluent limitations specified in Order No. Compliance shall be determined at stations R-1, R-2, and R-3 or using the "Station R composite" according to Table I (attached).
- B. All analyses and pre-discharge sampling shall be conducted by personnel of a certified laboratory.

IV. MODIFICATION OF PART "A"

Exclusions: Paragraphs C1, C2, C3, C4, C5e, D1, D2, and E4.

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. 79-59.
2. Is effective on the date shown below.
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

Attachment:
Table I
Federal Register (3 pages)

Effective Date _____

TABLE I
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	R-1	R-2	R-3	R	E-001									
TYPE OF SAMPLE	G ⁽⁴⁾	G ⁽⁴⁾	G ⁽⁴⁾	C ⁽¹⁾	C ⁽²⁾	G ⁽³⁾								
Flow Rate (mgd)					E									
BOD, 5-day, 20° C, (mg/l & kg/day)				E	E									
COD (mg/l & kg/day)	E	E	E		E									
Settleable Matter (ml/1-hr. & cu. ft./day)				E	E	E								
Total Suspended Matter (mg/l & kg/day)				E	E	E								
Oil & Grease (mg/l & kg/day)				E										
Coliform (Total or Fecal) (MPN/100 ml) per req't														
Fish Toxicity, 96-hr. TL ₅₀ % Survival in undiluted waste				E	E									
Ammonia Nitrogen (mg/l & kg/day)				E										
Nitrate Nitrogen (mg/l & kg/day)														
Nitrite Nitrogen (mg/l & kg/day)														
Total Organic Nitrogen (mg/l & kg/day)														
Total Phosphate (mg/l & kg/day)														
Turbidity (Jackson Turbidity Units)														
pH (units)	E	E	E											
Dissolved Oxygen (mg/l and % Saturation)														
Temperature (°C)				E										
Apparent Color (color units)														
Secchi Disc (inches)														
Sulfides (if DO < 5.0 mg/l) Total & Dissolved (mg/l)														
Arsenic (mg/l & kg/day)				E	E									
Cadmium (mg/l & kg/day)				E	E									
Chromium, Total (mg/l & kg/day)				E	E									
Copper (mg/l & kg/day)				E	E									
Cyanide (mg/l & kg/day)				E	E									
Silver (mg/l & kg/day)														
Lead (mg/l & kg/day)				E	E									

TABLE I (continued)
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	R-1	R-2	R-3	R	E-001			C-1	C-R				
TYPE OF SAMPLE	G	G	G	C ⁽¹⁾	C ⁽²⁾	G ⁽³⁾	O						
Mercury (mg/l & kg/day)													
Nickel (mg/l & kg/day)				E	E								
Zinc (mg/l & kg/day)				E	E								
PHENOLIC COMPOUNDS (mg/l & kg/day)				E									
All Applicable Standard Observations	E	E	E				E	E	E				
Bottom Sediment Analyses and Observations													
Total Identifiable Chlorinated Hydrocarbons (mg/l & kg/day)				E									
Bioaccumulation Potential ⁽⁵⁾ (mg/l)				E									

LEGEND FOR TABLE

TYPES OF SAMPLES

O = observation
C = composite
G = grab

TYPES OF STATIONS

E = waste effluent stations
R = retention basin stations

FREQUENCY OF SAMPLING

E = each occurrence.

FOOTNOTES:

1. "R" shall be a composite consisting of equal volumes of grabs from stations R-1, R-2, and R-3.
2. Shall be a composite of the discharge taken over the period of the discharge.
3. Shall be a grab sample taken immediately prior to cessation of discharge.
4. Shall be a composite of equal volumes of grab samples taken at 1 foot above the pond bottom and 1 foot below the water surface.
5. This test is described in the attached Federal Register Vol. 43, no. 243 - Monday, December 18, 1978.

The same dose must be used in exposing the DNA repair-competent and repair-deficient strains.

b. *Unscheduled DNA Synthesis in Human Diploid Cells*

1. *General.* DNA damage induced by chemical treatment of a cell can be measured as an increase in unscheduled DNA synthesis which is an indication of increased DNA repair. Unrepaired or misrepaired alterations may result in gene mutations or in breaks or exchanges which can lead to deletion and/or duplication of larger gene sequences or to translocations which may affect gene function by position effects (Stich, 1970; Stoltz *et al.*, 1974).

2. *Methodology:*

(1) *General.* Primary or established cell cultures with normal repair function shall be used. Standardized human cell strains from repositories are recommended. Control should be performed to detect changes in scheduled DNA synthesis at appropriate sections in the experimental design. The media conditions shall be optimal for measuring repair synthesis.

(2) *Dose.* At least five dose levels shall be used and the time in the cycle or synchronisation or non-proliferating cells at which exposure takes place shall be given. The maximum compound dose shall induce toxicity, and the dosing period with the test substance shall not be less than sixty minutes.

c. *Sister Chromatid Exchange in Mammalian Cells With and Without Metabolic Activation*

1. *Controls:* All considerations discussed under Group I a. are applicable.

2. *General:* Cytological techniques are available to evaluate the genetic damage induced by chemicals. In the past few years a technique has been developed for identifying sister chromatid exchanges much more simply and efficiently than by the autoradiographic method. The method utilizes the fact that a fluorescent stain Hoechst 33258 binds to thymidine-containing DNA but not, or far less efficiently, to BrdUrd-substituted DNA. This means that the order of fluorescence would be brightest for DNA unreplacated in BrdUrd, intermediate for DNA after one round or replication in BrdUrd, and least for DNA following two rounds or replication in BrdUrd. Thus a sister chromatid exchange can be seen as a switch of fluorescence pattern at the point of exchange. Perry and Wolff (Nature 251, 156-158 (1974)) combined Hoechst staining with Giemsa staining such that the brightly fluorescing regions stain darkly with Giemsa, and the dullly fluorescent regions hardly stain at all.

3. *Choice of Organisms:* Chromosomal preparations of human peripheral blood leukocytes or Chinese hamster ovary cells shall be used.

4. *Methodology:*

(1) *General:* The test method must be capable of detecting sister chromatid exchanges. Procedures reported by Perry and Wolff (Nature 251, 156-158 (1974)) and Moorhead *et al.* (Exp. cell Res. 20, 613-616 (1960)) are recommended. Metabolic activation with rat liver S-9 mix should be incorporated whenever it is appropriate.

(2) *Doses:* Test substances shall be tested to the highest dose where toxicity does not interfere with the test procedure.

d. *Mitotic Recombination and/or Gene Conversion in Yeast*

1. *Controls:* All considerations discussed under Group I are applicable.

2. *General:* One can effectively study the chromosomes of eukaryotic microorganisms by employing classical genetic methodologies which depend upon the behavior and interaction of specific markers spaced judiciously within the genome. These methods have been developed over several decades and have been applied in recent years to the study of induced genetic damage (Zimmerman, 1971, 1973, 1975; Brusick and Andrews, 1974).

3. *Choice of organisms:* Diploid strains of yeasts that detect mitotic crossing-over and/or mitotic gene conversion shall be used. Additionally, as appropriate strains are developed, monitoring for induced non-disjunction and other effects may be possible. Mitotic crossing-over shall be detected in a strain or organism in which it is possible, by genetic means, to determine with reasonable certainty that reciprocal exchange of genetic information has occurred.

Strains employed for genetic testing shall be of proven sensitivity to a wide range of mutagens.

4. *Methodology:*

(1) *General.* In general, wastes shall be tested in liquid suspension tests.

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APPENDIX XI—BIOACCUMULATION POTENTIAL TEST

(a) *General.* Reverse-phase liquid chromatography is a separation process in which chemicals are injected onto a column of fine particles coated with a nonpolar (water insoluble) oil and then eluted along the column with a polar solvent such as water or methanol. Recent development in this field have produced a permanently bonded reverse-phase column in which long-chain hydrocarbon groups are chemically bonded to the column packing material which leads to a more reproducible separation. The chemicals injected are moved along the column by partitioning between the mobile water phase and the stationary hydrocarbon phase. Mixtures of chemicals can be eluted in order of their hydrophobicity, with water soluble chemicals first and oil soluble chemicals last in proportion to their hydrocarbon/water partition coefficient. Calibration of the instrument using compounds of known octanol/water partition coefficient allows this procedure to be used to determine whether an unknown mixture contains compounds with octanol/water partition coefficients above a designated level.

Specific correlations exist between octanol/water partition coefficients and bioconcentration in fish. This test thus offers a rapid, inexpensive method of identifying those mixtures which contain compounds which pose a potential bioaccumulative hazard.

Compounds with log P 3.0, but which readily biodegrade would not be expected to persist in the environment long enough for accumulation to occur. Thus a degradation option has been included in order to exempt these substances from the hazardous waste control system.

(b) *Chromatography Conditions.* A liquid chromatograph equipped with a high pres-

sure stopflow injector and a 254 nm ultraviolet detector with an 8 ul cell volume and 1 cm path length is employed. The column is a Varian Preparative Micropak C H (Catalog number 07-000181-00), or its equivalent, consisting of a 250 mm x 8 mm (i.d.) stainless steel cylinder filled with 10 micron Iichrosorb to which octadecylsilane is permanently bonded.

The column is operated at ambient temperature. The solvent consists of a mixture of water and methanol (15:85, v/v) which is pumped through the column at 2.0 ml/minute.

(c) Retention Volume Calibration. Chemicals are dissolved in a mixture of acetone and cyclohexane (3:1, v/v). For preparing the calibration curve the quantity of individual chemicals in the solution is adjusted to give a chromatographic peak of at least 25 percent of the recorder scale. Acetone produces a large peak at approximately 2.6 minutes.

Six chemicals for which Log P has been reported are used to calibrate the elution time in units of Log P. The calibration mixture is summarized in Table 1 and includes benzene, bromobenzene, biphenyl, bibenzyl, p,p'-DDE, and 2,3,5,2',5'-pentachlorobiphenyl.

(d) Sensitivity Calibration. The mixture is chromatographed and a calibration curve prepared daily to eliminate small differences due to flow rate or temperature and to follow the retention properties of the column during prolonged use. The calibration is made by plotting Log P vs the logarithm of the absolute retention time (log RT). Figure 1 is an example of such a calibration curve.

(e) Test Procedure. (1) Prepare a calibration curve as described above.

(2) Calculate the geometric mean of the instrumental response to the chemicals listed in Table 1 with the exception of the acetone. This value, expressed in ug/25% full scale deflection, is designated the Instrumental Sensitivity (IS).

(3) Extract X liters of the Extraction Procedure extract to be tested, using dichloromethane, and concentrate the extract to a quantity suitable for injection on to the column. The quantity X is determined by the Instrumental sensitivity and is given by the relationship: X in liters = IS in micrograms.

(4) Analyze the extract using the now calibrated chromatograph. A positive response is defined as an instrumental response greater than or equal to 25 percent full scale detector response in the region of Log P greater than or equal to 3.5.

(5) If a positive response is indicated in step (4), then subject a sample of the waste to a biodegradation assay and then retest. If a positive response with the degraded waste is not obtained, then the waste is not considered to be hazardous by reason of bioaccumulativeness.

TABLE I.—Partition Coefficients for Chemicals Used for Calibration

	Log P
Acetone.....	0.55
Benzene.....	2.13
Bromobenzene.....	2.99
Biphenyl.....	3.70
Bibenzyl.....	4.81
p,p'-DDE.....	5.69
2,3,5,2',5'-Pentachlorobiphenyl.....	8.11

[6560-01-C]

Figure 1

