

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 95-151

CEASE AND DESIST ORDER Requiring:

TOSCO CORPORATION
AVON REFINERY
CONTRA COSTA COUNTY

to Cease and Desist from discharging or threatening to discharge waste in violation of requirements contained in Waste Discharge Requirements (National Pollutant Discharge Elimination System Permit No. CA00004961), Order No. 93-068, as amended.

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

1. Tosco Corporation, Avon Refinery (hereinafter called the discharger) operates a petroleum refinery east of Martinez, in Contra Costa County.
2. The Board adopted Waste Discharge Requirements Order No. 93-068 on July 21, 1993, for the discharger, for the discharge of about 4.7 million gallons of treated process wastewater, storm water runoff, and other wastes to Suisun Bay. On June 21, 1995, the Board adopted Order No. 95-138 amending Order No. 93-068 re-establishing the basis for the dioxins limit specified in Order No. 93-068 based on available technical information. Hereinafter reference to Order No. 93-068 shall be as amended by Order No. 95-138.
3. Finding 5.a. of Order No. 93-068 designated the treated process wastewater stream, storm water runoff from certain areas, and other minor discharge streams as Waste 001, and specified an effluent limit for dioxins for this discharge in Effluent Limitation A.3 as follows:

" The discharge of Waste 001 containing constituents in excess of the following concentration limits is prohibited:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Average</u>
TCDD Equivalents ^[3,4]	µg/l	1.4E-07	--

[3] See Attachment C for definition of terms.

[4] The discharger shall comply with the limit for TCDD Equivalents in accordance with the tasks and time schedule specified in Provision C.2 of this Order. "

4. Attachment C of Order No. 93-068 states in part:

" TCDD Equivalents shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity equivalence factors, as shown in the table below.

<u>Isomer Group</u>	<u>Toxicity Equivalence Factor</u>
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8-tetra CDF	0.1
1,2,3,7,8-penta CDF	0.05
2,3,4,7,8-penta CDF	0.5
2,3,7,8-hexa CDFs	0.1
2,3,7,8-hepta CDFs	0.01
octa CDF	0.001

5. Provision C.2 of Order No. 93-068 states in part:

" TCDD Equivalents Compliance Schedule: The discharger shall comply with the effluent limit specified in A.3 for TCDD equivalents in accordance with the following tasks and time schedule:

<u>Task</u>	<u>Compliance Date</u>
...	
f. Achieve full compliance with Effluent Limit A.3 for TCDD equivalents.	June 30, 1995

6. The discharger investigated treatment options for the wash water from catalyst regeneration of the reformer catalyst which was previously identified as a source of dioxins. This wash water stream is combined with other process wastewaters for treatment at the discharger's wastewater treatment plant. Final effluent from the treatment plant is discharged to a two mile long canal referred to by the discharger as the "Clean Canal." Other streams (eg. coke pond water, storm water runoff) combine with the treatment plant effluent in the "Clean Canal" and flow to the discharger's deep water outfall. Compliance samples are collected at the end of the "Clean Canal" immediately before the discharge is pumped to the outfall.

7. Pilot testing showed that treatment of the reformer catalyst regeneration wash water with granular activated carbon was successful at removing greater than 95% of the dioxins from this stream. This source treatment was fully implemented by about October 1993. However, monitoring data collected since November 1993 show no appreciable reduction of dioxins levels in the discharge

from this facility. The data show that although treatment of the regeneration wash water was effective at the source, it had little if any impact on the final discharge.

8. The discharger has performed some preliminary studies to determine other potential sources of dioxins to Waste 001. Although not conclusive at this time because of the limited amount of data available, these preliminary studies indicate that the discharger's treatment plant effluent may not be the major source of dioxins in the Waste 001 discharge. Other streams which combine with the treatment plant effluent in the "Clean Canal" may be contributing greater quantities of dioxins. These streams include the discharger's coke storage pond water, storm water runoff from non-process areas, storm water runoff from adjoining properties, and possibly even sediment in the "Clean Canal." Further investigation is necessary to verify any of these preliminary findings.
9. All seven compliance samples collected of the Waste 001 discharge since implementation of the treatment system for the catalyst regeneration wash water show dioxins above the effluent limit of $1.4E-07 \mu\text{g/l}$ (or 0.14 picograms per liter [pg/l]) TCDD Equivalents. The reported concentrations range from 2.5 to 13.1 pg/l TCDD Equivalents. Also, the discharger reported 3 pg/l TCDD Equivalents in a compliance sample taken on August 5, 1995. These data show that the discharger has violated and is threatening to continue to violate the effluent limit for dioxin specified in Order No. 93-068, as amended by Order No. 95-138.
10. Section 13301 of the California Water Code authorizes the Regional Board to issue a Cease and Desist Order when a waste discharge is taking place or threatening to take place in violation of the Board's prescribed requirements.
11. The Board finds that the discharger has put forth a reasonable amount of effort thus far to solve the dioxin problem by installing the treatment system for catalytic reformer wash water. However, additional effort is necessary to reduce the discharge of dioxins so that beneficial uses of the receiving water are fully protected.
12. This Cease and Desist Order specifies an interim effluent limit of 0.14 pg/l for 2,3,7,8-tetraCDD (or 2,3,7,8-TCDD). This dioxin compound is the most toxic of the other dioxin compounds listed in finding 4. The limit is based on the USEPA Water Quality Criterion for 2,3,7,8-TCDD. The discharger's past discharge data show non-detectable levels for 2,3,7,8-TCDD with reporting limits from 1 to 13 pg/l. These detection limits are within the acceptable range that is currently achievable by commercial laboratories but they are greater than the interim limit. Therefore, the interim limit will also serve as a performance standard but only in as far as it is determinable by current commercial laboratory performance.
13. This Cease and Desist Order requires the discharger to conduct a comprehensive investigation of all sources of dioxins to wastewater from the refinery, and to develop and evaluate alternatives for prevention and control measures in order to comply with the final effluent limit. Compliance is required by July 1, 1999 (in about 3 $\frac{3}{4}$ years). This is an aggressive schedule and assumes that the source prevention and control measures will be straight forward and feasible with currently available technologies such as filtration, carbon adsorption or sedimentation, that necessary equipment for control measures are reasonably available, and that the time frames for obtaining the necessary permits for construction and implementation of the chosen solution will be minimal.

14. This enforcement action is being taken for the protection of the environment and, as such is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) in accordance with Section 15321 of the Resources Agency Guidelines.
15. The Board has notified the discharger and interested agencies and persons of its intent to adopt this enforcement order, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
16. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that, in accordance with Section 13301 of the California Water Code, the discharger shall cease and desist from discharging waste in violation of Order No. 93-068, as amended by Order No. 95-138, by complying with the following:

1. **Interim Limit:** Immediately upon adoption of this Order, comply with the following interim effluent limitation for Waste 001 as discharged:

<u>Constituent</u>	<u>Unit</u>	<u>Monthly Average</u>
2,3,7,8-tetrachlorodibenzo-p-dioxin	pg/l	0.14

Compliance with the interim limit and final limit shall be based on compliance samples collected at a minimum monitoring frequency of quarterly. The samples shall be analyzed using USEPA Method 1613A. In the event of violation of the interim limit, sampling shall be increased to monthly, until such time as the discharger has demonstrated compliance with the interim limit for twelve consecutive months, at which time sampling shall resume on a quarterly basis.

2. **Literature Search:** Conduct a literature search to identify all pertinent information regarding dioxins. This shall include sources of dioxins to the San Francisco Bay area environment and quantities and types of dioxin discharged from those sources, and appropriate methods for environmental sampling involving very low concentrations of dioxins. The sampling methods search shall focus on ways to concentrate samples where necessary in order to improve the analytical detection limits. The source search shall, in particular identify information concerning all sources of dioxins from oil refinery processes. The dioxin sources search shall include all sources which may impact water quality.

Deadline: No later than **November 1, 1995**

3. **Study Plan for Source and Control Measures Investigations:** Submit a detailed study plan acceptable to the Executive Officer for investigation of all sources of dioxins to the Waste 001 discharge. The study plan shall be designed to obtain data which will allow development and evaluation of possible dioxin prevention or control measures. The study plan shall include sampling and analysis of wastewater, storm water and sediment sources during both the wet and dry seasons. The study plan shall include but not necessarily be limited to monthly sampling of Waste 001 for twelve consecutive months during the study period. The sediment sources shall include but not necessarily be limited to sediments in the Clean Canal. The study plan shall describe the sampling method, timing, and locations including quality assurance and quality control procedures. Background samples of storm water and sediment shall also be included.

The study plan shall describe how the sampling plan proposed will accomplish the scope and intent of this investigation as stated above. The study plan may describe provisions and circumstances where the investigation will be modified during data collection in response to results obtained through the sampling effort.

In addition to describing the schedule for the investigation, the study plan shall include a provision for submittal of quarterly progress reports to staff of the Board. The status reports shall discuss progress of the investigation, preliminary findings, foreseeable delays and measures taken or will be taken to minimize those delays, and any proposed deviations from the study plan.

The study plan shall also include an additional element for pilot studies to determine the feasibility of the alternative for a bypass pipe of the Clean Canal. This element would not be required if the investigation showed that this alternative would not solve the discharger's non-compliance problem. A determination of the necessity for performing these pilot studies shall be made by the Executive Officer subsequent to review of the information presented in the second status report.

The discharger shall submit a draft study plan for review and comment by Regional Board staff no later than November 22, 1995.

Deadline: No later than **January 1, 1996**

4. **Status Reports:** Commence with the investigation in accordance with a study plan approved by the Executive Officer and submit quarterly status reports described above.
Deadline: First status report is due no later than **April 15, 1996**. Subsequent reports due **15 days after the end of each calendar quarter**.
5. **Source Investigation Report:** Submit a report acceptable to the Executive Officer describing the results of the investigation.
Deadline: No later than **April 1, 1997**
6. **Alternatives Report:** The discharger shall submit a report describing the alternatives for dioxin prevention and control measures. These shall range from reconfiguration of refinery systems to end of pipe controls. If refinery processes are identified to be the source or one of the sources of dioxins to Waste 001, one of the control alternatives shall include an assessment of pollution prevention and source reduction measures. In other words, this alternative should consider the feasibility of eliminating dioxins generating processes, and reducing dioxins generation through changing the operating conditions of those processes. Preliminary flow schemes and cost estimates shall be included for each alternative. From the range of alternatives, the discharger shall propose one to three of the most effective alternatives for further detailed evaluation as acceptable to the Executive Officer.
Deadline: No later than **July 1, 1997**
7. **Compliance Schedule Re-Evaluation:** The Board will re-evaluate the appropriateness of the length of the compliance schedule based on information about sources and alternatives for prevention and control measures. The Board may lengthen the compliance schedule specified in this Order if the Board finds that more time would be necessary to conduct the tasks specified below than what was originally estimated when this Order was adopted. It is the burden of the discharger to demonstrate to the satisfaction of the Board that additional time is necessary due to

factors beyond the discharger's control or conditions unknown at the time this order was adopted. For example, extensions may be granted if

- a) through the good-faith and reasonable exercise of good engineering judgement, the prevention and control measures testing (bench scale and/or pilot testing) show that compliance cannot be achieved through currently available technology, or
- b) there is(are) a permit(s) that would be necessary for construction or implementation of control measures, and despite the diligent pursuit of the permit(s) by the discharger, the permit(s) will require more than 3 months to obtain.

If the discharger wishes the Board to lengthen the schedule, the discharger shall submit a written report supporting this position by July 1, 1997.

Deadline: The Executive officer shall prepare an item on this matter for Board consideration no later than the September 1997 Board Meeting.

8. **Chosen Alternative:** The discharger shall conduct pilot testing of the selected alternatives. The discharger shall submit a report describing the results of the pilot testing. The report shall also include process flow diagrams for the most promising alternative(s). The information shall be sufficient to enable final design of the dioxin prevention and control measure(s).
Deadline: Submit report no later than **January 1, 1998**
9. **Status Reports:** The discharger shall begin construction and/or implementation of dioxin prevention and control measure(s) capable of achieving compliance with the effluent limitation for dioxin specified in Order No. 93-068. Submit quarterly progress reports to staff of the Board. The status reports shall discuss progress of the contracting, construction or implementation plan development, construction or implementation activities, and foreseeable delays and actions taken or will be taken to minimize those delays.
Deadline: **First status report is due January 15, 1998. Subsequent reports due 15 days after the end of each calendar quarter.**
10. **Final Compliance:** Achieve compliance with the limitation of 0.14 pg/l TCDD Equivalents specified in A.3 of Order No. 93-068 as amended by Order No. 95-138, no later than **July 1, 1999**.
11. In the event the discharger is successful in identifying and piloting prevention or control measures capable of achieving compliance with the dioxins limit in advance of the schedule set forth above, the discharger shall, to the extent feasible, accelerate the implementation of such prevention or control measures so as to achieve compliance with the dioxins effluent limitation in advance of the July 1, 1999 deadline.
12. The discharger may request the Board to re-evaluate the effluent limit for dioxins specified in Order No. 93-068, as amended by Order No. 95-138 if there is substantial new information that becomes available. Substantial new information may include information generated by the discharger, Water Quality objectives for dioxins that may be established in the future by the State Water Resources Control Board, and changes to methodologies for assessment of mixtures of dioxins for California.

I, Loretta K. Barsamian, 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 November 15, 1995.



LORETTA K. BARSAMIAN
Executive Officer