

CHEVRON RICHMOND REFINERY

TENTATIVE ORDER AND NPDES PERMIT

REQUEST FOR SCHEDULE OF INTERIM REQUIREMENTS AND DEMONSTRATION OF NECESSITY BASED ON INSUFFICIENT DATA TO CALCULATE A FINAL EFFLUENT LIMITATION FOR CYANIDE

Or, in the alternative,

REQUEST FOR COMPLIANCE SCHEDULE AND DEMONSTRATION OF INFEASIBILITY TO ACHIEVE IMMEDIATE COMPLIANCE WITH CALCULATED EFFLUENT LIMITATION FOR CYANIDE

EXECUTIVE SUMMARY

For the reasons stated herein, Chevron requests that the Regional Board act pursuant to applicable sections of the State Implementation Plan to set a three-year schedule of interim data collection requirements in order to develop the basis for establishing a water quality-based effluent limit for cyanide in Chevron's permit. In addition, out of concern that the CTR cyanide criterion is inappropriate for the San Francisco Bay, Chevron also requests that the Regional Board initiate a site-specific study for the purpose of adopting a site-specific objective. Chevron is committed to supporting and participating in the site-specific study and interim data collection efforts as the basis for developing an appropriate cyanide objective for the San Francisco Bay Region, and establishing an appropriate water quality-based effluent limit in Chevron's permit.

While Chevron believes this approach is both consistent with the SIP and proper, the Regional Board has established May 23, 2001 as the deadline for submitting requests for compliance schedules and demonstrations of infeasibility. Therefore, Chevron is submitting its request for a compliance schedule and demonstration of infeasibility as an alternative proposal. Chevron asks that the Regional Board consider and adopt the compliance schedule for cyanide only if the Regional Board rejects Chevron's request for interim data collection requirements and request to develop a site-specific objective for cyanide.

REQUEST AND DEMONSTRATION OF NECESSITY

Chevron submits the following request for interim requirements for providing data and request for a site-specific objective together as provided in Section I. In the event that the Regional Board does not accept this request, Chevron requests that the Regional Board adopt a compliance schedule, described in Section II.

Section I.

Request for Interim Requirements for Providing Data. Based upon its conclusion that currently available ambient water quality data is insufficient to establish a water quality-based effluent limitation ("WQBEL"), Chevron requests that the RWQCB establish interim data requirements pursuant to the *Policy for Implementation of Toxics Standard for Inland Surface Waters, Enclosed Bays, and Estuaries of California* [the "SIP"]. The SIP Section 2.2.2 provides that

The RWQCB may determine, based on a discharger's request and/or a demonstration of necessity, that it is appropriate to establish a schedule of interim requirements regarding the implementation of a CTR criterion. Such interim schedules may be established based on a consideration of time needed to collect sufficient data to . . . calculate effluent limitations (as described in section 1.4).

In such cases, the SIP provides that a final water quality-based effluent limitation is not to be calculated and incorporated in the permit as an enforceable limitation at the time of permit issuance. Rather, the SIP requires that the RWQCB establish a schedule of interim data collection requirements (as distinguished from a *schedule of compliance*). A schedule of interim requirements may be established for a period of up to three years from adoption of the SIP in order to collect sufficient data. A final WQBEL is to be calculated and incorporated in the permit based upon the data collected pursuant to the interim requirements. SIP section 2.2.2.B.

Where a schedule of interim data requirements is incorporated in an NPDES permit, the SIP also provides for establishment of numeric interim limitations in the place of final water quality based effluent limitations.

Chevron believes that the available ambient background data is insufficient, for purposes of calculating a final effluent limit. It is not clear how the data used by Staff was derived, but we understand it was derived from the 1993 RMP data study, taking one data point from three independent locations. The RMP itself raises questions about the sufficiency of the data for this purpose. For example, customized analytical techniques (with no valid method citation) were utilized that are insufficiently documented, yielding data that cannot be verified. There were no data quality objectives and QA/QC review for trace organics was not

completed in the study Further investigation was ceased at that time, making the data antiquated. The SIP provides for the Regional Board to exercise its judgement in evaluating data sufficiency, and provides the mechanism for enhancing data quality for the purpose of calculating effluent limits in cases such as this. The issue at hand is not whether a final effluent limit will be calculated, but when, and on what basis. Our concern about the sufficiency of the ambient background data is heightened by the fact there are legitimate questions about the validity of the CTR criterion for cyanide in the San Francisco Bay Region. For these reasons, Chevron is proposing the dual solution of setting a schedule of interim data requirements, and establishing a site-specific objective for San Francisco Bay.

Request for Site-Specific Objective for Cyanide Pursuant to SIP Section 5.2.

In addition to, and as part of, its request for interim data collection requirements, Chevron requests that the RWQCB initiate the development of a site-specific objective. Chevron's request includes a preliminary commitment to fund, or cooperate with other dischargers in funding, a site-specific study. In a separate submittal, Chevron will submit other information required by SIP section 5.2 During the period when site-specific objectives studies are being conducted, the SIP provides acknowledges the propriety of establishing interim requirements pursuant to SIP Section 2.2 (which includes section 2.2.2).

Chevron believes that the limit of 1 ug/l is inappropriate for San Francisco Bay. The CTR criterion was derived based upon an east coast crab study; none of the species studied are indigenous to San Francisco Bay. Further independent studies conducted in the Puget Sound of Washington State on West Coast indigenous crab species, suggest that a higher water quality objective is appropriate for West Coast areas. This information, combined with the lack of information for San Francisco Bay, strongly suggest that further study should be completed to set appropriate new Water Quality Objectives and WQBELs within the San Francisco Bay estuary. Chevron will, in conjunction with other interested dischargers, provide additional information as necessary to demonstrate that San Francisco Bay dischargers cannot be assured of achieving this criterion through reasonable treatment, source control, and pollution prevention measures. However, Chevron's infeasibility demonstration, provided in the next section in support of Chevron's alternative request for a compliance schedule, strongly supports this conclusion.

Section II.

Alternative Request for Compliance Schedule and Demonstration of Infeasibility to Achieve Immediate Compliance with Calculated Effluent Limitation for Cyanide. Chevron believes that the above request is consistent with the SIP and requests that the Regional Board give full consideration to that request. However, the Regional Board staff has established a deadline of May 23, 2001 for submission of requests for a compliance schedule. In light of that

deadline, Chevron determined that it must submit, in the alternative to the request for an interim data collection schedule, a request for a compliance schedule. Chevron requests that the RWQCB establish a compliance schedule and an interim numeric limitation only in the event the RWQCB determines not to establish an interim data collection schedule and requirements as requested above and instead establishes a final effluent limit for cyanide. The submission includes Chevron's demonstration of infeasibility and the justification required by the SIP.

Infeasibility Demonstration.

In support of its request, Chevron submits the following demonstration that it is infeasible to achieve immediate compliance with 1 ug/l AMEL and 2 ug/l MDEL for CYANIDE

As defined in the SIP, infeasible means

“not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors”

In this case, the SIP defines a “reasonable period of time” to be “immediate.” Therefore, in cases where, as here, the actions needed to achieve compliance could not be implemented by the permit's effective date, they could not be completed within a reasonable period of time. In addition to this timing factor, possible actions to achieve compliance must be evaluated in light of the defined factors to determine their feasibility.

Staff has calculated a proposed final Water Quality Based effluent of 1 ug/l AMEL and 2 ug/l MDEL. Chevron's performance history relating to this constituent reflects that Chevron's effluent does not meet this limit. Further, as explained in greater detail below, Chevron has undertaken a variety of efforts to date to reduce its discharge loading as much as possible and cannot achieve immediate compliance with the proposed final limits for the following reasons:

- Source of the contaminant is generally known, as described elsewhere in this document, but we need to develop additional information on the quantity and variability of the principle source(s) before we can develop additional appropriate measures for control.
- The technology currently in place is already thought to be the best available and we are not even aware of a better technology to provide
- Because Cn is generated from several sources in the refinery but at levels already below what treatment technology is expected to

achieve, additional treatment at the sources would be both ineffective and impractical

- If any major projects were to be generated as the result of identifying additional practical treatment or source control technologies, we would have to go through a permitting process which may trigger CEQA and other environmental impact analysis'.
- A detailed program to develop alternative feasibility technologies may need to be considered

Given the efforts to date, it is unclear what additional actions and measures may be necessary to meet that limit. A number of steps will be needed to determine what actions may be necessary and feasible in order to achieve compliance with this limit. Those steps will involve additional studies to evaluate future options, and those studies may demonstrate that new technology or new methods are necessary, appropriate and feasible. For example, Chevron may evaluate options, using criteria such as the following:

- Known, demonstrated technology that is available and has been demonstrated in refineries or related industries;
- Ability to achieve required effluent levels;
- Ability to pilot or demonstrate the technology in Chevron's plant;
- Implementation time for a given technology;
- Feasibility and cost effectiveness.

Certainly, carrying out these steps will be costly and time-consuming and may require additional environmental analyses and permits. In any case, they can not be completed and implemented in time for this permit to go into effect.

For these reasons, it is infeasible to achieve immediate compliance with the proposed effluent limit for CYANIDE.

Cyanide is not a CWA §303(d)-listed constituent and not subject to the TMDL development process. Its presence in the refinery wastewater occurs infrequently at very low levels (typically <20 ug/L in the effluent). Cyanide is formed in certain refinery process units, and Chevron practices certain proprietary technology to convert cyanide to thiocyanate, a relatively benign compound, before the process wastewater is sent to treatment.

The Tentative Order reflects a potential WQBEL for cyanide of 1 ug/L average monthly effluent level (AMEL) and 2-ug/L maximum daily effluent level (MDEL). Chevron can not consistently comply with either limit today or in the near future.

In the following sections Chevron will document:

- A. Diligent efforts Chevron has made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts;
- B. Source control and/or pollution minimization efforts currently underway or completed;
- C. A proposed schedule for potential additional or future source control measures, pollution minimization actions, or waste treatment;
- D. A demonstration that the proposed schedule is as short as practicable.

A. Chevron's Efforts to Quantify Pollutant Levels and Sources.

Final Limits. The potential final WQBELs for cyanide in the tentative order are:

AMEL: 1 ug/L

MDEL: 2 ug/L

Effluent data:

Cyanide is monitored monthly in refinery effluent. Table 1.0 summarizes cyanide data for the last three years. All but three data points are below the PQL, 10 ug/L. Although three data points are not sufficient to define a performance-based limit, by using the probits method, Chevron estimates that, if this potential interim limit of 25 ug/L were imposed, the 99.87%tile of performance would be comparable to or exceed that limit.

Sources:

Cyanides are formed in certain high temperature refinery process units, where hydrocarbons and nitrogen-bearing compounds such as ammonia can react to form hydrogen cyanide, HCN. The units typically associated with cyanide production are fluid catalytic crackers (FCCs), cokers, and hydrocrackers. Richmond Refinery has no coker, but does have a large FCC unit and several hydrocrackers. Cyanide is a by-product of refining, is not deliberately created, and in fact constitutes a significant corrosion problem (since it is an acid).

HCN, being a gas, is typically found in the overhead vapor from the fractionating columns, which separate the reaction mix, produced in the above units. The overhead vapor includes steam as well as condensable hydrocarbons. The vapor is cooled and water condenses, and will tend to dissolve HCN with it. Because the water typically includes hydrogen sulfide and ammonia as well, it is called sour water. Sour water is collected, the dissolved gases are, for the most part, removed in steam strippers, and the stripped sour water is either reused in process units (typically hydrocrackers and the desalter), or is discharged to the refinery effluent treatment system.

B. Source Control.

Chevron has a patented process that utilizes the injection of ammonium polysulfide solution into the overhead system. The ammonium polysulfide reacts with cyanide to form thiocyanate ion, SCN^- , which is soluble in the water. Thiocyanate is a relatively benign compound, is not a priority pollutant, and has a negligible impact on the environment. To some degree it is oxidized in the refinery treatment system.

C. Pollution Minimization Proposal and Schedule

Chevron proposes the following schedule for additional measures:

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In addition to supporting the development of a site-specific objective as discussed in Section I above, Chevron has developed a schedule of action items that would be necessary to come into compliance with the WQBELs. As demonstrated above, there is a great deal of uncertainty about what actions are possible, appropriate and feasible, so the schedule of compliance would not define the specific action items but rather the steps that would be taken to develop the measures needed to come into compliance.

- Develop a study proposal by 12/31/01 and submit it to RWQCB staff. This study proposal would address such issues as source location, generation, quantity, potentially speciation, investigation potential improvements to cyanide control at process units, and investigation of treatment of refinery wastewater.
 - Step 1. Based on data collected through year-end 2002, develop a proposal for a study plan by 06/30/03 and submit it to RWQCB staff.
 - Step 2. Potentially implement a cost-effective plan by 09/30/03 upon Staff approval.
 - Step 3. Report progress annually by 09/30/04 and 09/30/05.
 - Step 4. Complete the work defined by the plan by 03/31/06.
 - Step 5. Submit completion report by 6/15/06.

Chevron will conduct any additional source control or pollution minimization studies and implement their results in accordance with California Water Code §13263.3 and §2.1 of the SIP relating to Pollution Prevention Plans. Section 13263.3 establishes a separate process outside of the NPDES permit process for the preparation, review and approval and implementation of such plans.

D. Why schedule is as short as practical

Under the circumstances involved here, the five-year compliance schedule is as short as possible. Chevron has proposed the use of project management principles to develop and execute a plan to come into compliance within the allotted time frame. At the current time, there has not been enough scoping of the issue to identify all the potential alternatives and evaluate their feasibility for

coming into compliance with the final effluent limits calculated by the RWQCB staff. Therefore, the five-year compliance schedule allowed by the SIP is appropriate and is as short as possible.

