



# California Regional Water Quality Control Board

## Central Coast Region



Winston H. Hickox  
Secretary for  
Environmental  
Protection

Internet Address: <http://www.swrcb.ca.gov/rwqcb3>  
895 Aerovista Place, Suite 101, San Luis Obispo, California 93401  
Phone (805) 549-3147 • FAX (805) 543-0397

Gray Davis  
Governor

June 2, 2003

Mr. Richard W. McClure  
Olin Corporation  
Environmental Remediation Group  
PO Box 248  
Charleston, TN 37310-0248

Dear Mr. McClure:

### **SLIC: 425 TENNANT AVENUE, MORGAN HILL; REQUEST FOR SOIL REMEDIATION WORKPLAN**

Regional Board staff reviewed MACTEC's March 31, 2003, *Soil Remediation Alternatives Evaluation* (Report) submitted on behalf of Olin Corporation. The Report evaluated several technologies to address perchlorate in soil including:

- Low permeability cap
- In-situ/ex-situ bioremediation
- Excavation and offsite disposal

The treatment alternatives evaluation considered the effectiveness, feasibility, relative costs, and a substantial likelihood to achieve compliance, within a reasonable time frame, with cleanup goals applicable to the site. Based on these criteria, you propose to use a combination of a low permeability cap and in-situ bioremediation to remedy perchlorate soil contamination. In-situ bioremediation involves the in-place destruction of perchlorate in soils using naturally occurring microorganisms and enhancing the bioremediation process with the addition of organic amendments such as ethanol, methanol, acetate, or other carbon sources. The most suitable organic amendment will be determined in a treatability study. The low permeability cap will minimize infiltration of precipitation and leaching of perchlorate to groundwater in the treated soil areas during the bioremediation phase.

On April 28, 2003, staffs of Regional Board, Santa Clara Valley Water District, Olin, and MACTEC held a meeting to discuss technical elements of the Report at the Santa Clara Valley Water District offices. Regional Board staff has accepted the selected soil perchlorate remedial alternative of in-situ bioremediation combined with the use of low permeability cap provided you can satisfactorily address the following items, listed below, in your soil remediation workplan.

- Identify all perchlorate contaminated soil areas that are included in the remedial plan.
- Approximate mass of perchlorate to be treated and volume of soil within which this mass resides.
- Proposed cleanup level for the protection of water quality, human health, and the environment.
- Type of soil in which contamination is found and the expected unsaturated flow properties for this soil type to help understand the success of the organic amendment delivery technique.
- Field analysis of baseline geochemical conditions to characterize the environment in which treatment would occur and how an anoxic zone would be created.

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- Expected mass ratios of organic amendments or other nutrients to perchlorate in soil.
- Approximate solubility of perchlorate in organic amendments if organic amendment is aqueous or degree to which perchlorate laden soil water might be displaced by the introduction of a nonaqueous organic amendment. This would help us understand the likelihood that flushing by an organic amendment will add perchlorate to groundwater.
- Means by which arrival of the organic amendment to the treatment zone will be monitored.
- Means by which flushing of perchlorate from soil to groundwater by injection or surface application of organic amendment will be prevented and how groundwater quality will be monitored.
- If flushing could not be prevented, a shallow groundwater extraction and treatment system or an alternative contingency treatment system must be installed to prevent further degradation of groundwater. This would also address the seasonal perchlorate flushing that may occur as the water table rises higher into the soil profile.
- Means by which success of the treatment will be determined.

Please submit a workplan for the proposed use of in-situ bioremediation and low permeability cap to remedy soil areas at the site contaminated with perchlorate. The work plan, at a minimum, must include the following elements:

1. Responses to the items listed above;
2. A detailed description, purpose, expected results, and time schedule for initiating and completing the various tasks to complete the soil corrective action. Submit calculations and documentation to validate proposed tasks, as needed;
3. A Sampling and Analysis Plan;
4. A Quality Assurance Project Plan; and
5. A Health and Safety Plan

Based on the landfill information discussed at the meeting, you also committed to provide additional evaluation of the excavation and landfill disposal option to remedy perchlorate contaminated soil at the site. If this option turns out to be better than the proposed in-situ bioremediation and low permeability option, you may submit a workplan for the excavation and landfill disposal of perchlorate contaminated soil.

Pursuant to Section 13267 of the California Water Code, you are directed to submit to the Regional Board, by **June --, 2003**, a workplan to remedy perchlorate contaminated soil areas at the site. Failure to comply with this request may subject you to civil liability pursuant to Section 13268 of the California Water Code. The reason the Regional Board needs this workplan is to ensure timely remediation of perchlorate contaminated soil areas at the site. The evidence that supports requiring Olin Corporation to provide the report includes soil and groundwater data collected at and near the site. More detailed information is available in the Regional Board's public file on this matter.

Any person affected by this action of the Regional Board may petition the State Water Resources Control Board to review the action in accordance with Section 13320 of the California Water Code and Title 23, California Code of Regulations, Section 2050. The petition must be received by the State Board within 30 days of the date of this order. Copies of the law and regulations applicable to filing petitions will be provided upon request.



If you have any questions, please contact **A. John Mijares at (805) 549-3696** or Harvey Packard at (805) 542-4639.

Sincerely,

Roger W. Briggs  
Executive Officer

ajm/s/icb/cru/johnm/olin./rick mcclure request for soil remediation workplan 30may03

cc:

Mr. Jim Ashcraft  
City of Morgan Hill  
17555 Peak Avenue  
Morgan Hill, CA 95037

Mr. Rich Chandler  
Komex  
2146 Parker Street, Suite B-2  
San Luis Obispo, CA 93401

Mr. Peter Forest  
San Martin County Water District  
PO Box 1501  
Morgan Hill, CA 95038

Mr. Steven L. Hoch  
Hatch & Parent  
11911 San Vicente Boulevard, Suite 350  
Los Angeles, CA 90049

Mr. Eric Lacy  
CA Dept. of Health Services  
2151 Berkeley Way  
Berkeley, CA 94704-1011

Ms. Helene Leichter  
City of Morgan Hill  
17555 Peak Avenue  
Morgan Hill, CA 95037

Mr. Eugene Leung  
CA Dept. of Health Services  
2151 Berkeley Way  
Berkeley, CA 94704-1011

Mr. Bobby Lu  
MACTEC Engineering and Consulting  
200 Citadel Drive

Los Angeles, CA 90040-1554

Mr. Tom Mohr  
Santa Clara Valley  
Water District  
5750 Almaden Expressway  
San Jose, CA 95118-3686

Ms. Suzanne Muzzio  
Santa Clara Co. Environmental Health Services  
1555 Berger Drive, Suite 300  
San Jose, CA 95112-2716

Mr. Bill O'Braitis  
MACTEC Engineering and Consulting  
200 Citadel Drive  
Los Angeles, CA 90040-1554

Mr. Keith M. Casto  
Sedgwick, Detert, Moran & Arnold  
One Embarcadero, 16th Floor  
San Francisco, CA 94111-3628

Ms. Jennifer Soloway  
State Water Resources Control Board  
Office of the Chief Counsel  
P. O. Box 100  
Sacramento, CA 95812-0100

Mr. Joe Root, General Manager  
Corde Valle  
One Corde Valle Club Drive  
San Martin, CA 95046

Mr. Rob Stern  
7510 Kenbrook Place  
Suwanee, GA 30024