



Terry Tamminen  
Secretary for  
Environmental  
Protection

# California Regional Water Quality Control Board

## Central Coast Region



Arnold Schwarzenegger  
Governor

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July 6, 2004

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

Certified Mail No. 7000 0520 0019 0359 6988

Return Receipt Requested

Mr. Jay McLaughlin  
President and CEO  
Standard Fusee Corporation  
PO Box 1047  
Easton, MD 21601

Dear Messer's McClure and McLaughlin:

**SLIC: 425 TENNANT AVENUE, MORGAN HILL; CLEANUP OR ABATEMENT ORDER NO. R3-2004-0101, 425 TENNANT AVENUE FACILITY, SANTA CLARA COUNTY**

Enclosed is Cleanup and or Abatement Order (Order) No. R3-2004-0101. This Order directs you to supply uninterrupted replacement water to well owners with perchlorate-contaminated wells. Olin Corporation and Standard Fusee Corporation (hereafter "Discharger") have been named in this Order because it is or was the sites' owner and or operator.

This Order establishes criteria for supplying interim and long-term uninterrupted water service to private well owners with perchlorate-contaminated wells. The Order requires Discharger to provide interim uninterrupted water to well owners whose wells meet two important criteria. The first criteria is for wells that test at or higher than 4ppb. Well owners with wells that test at or higher than 4 ppb shall be supplied interim uninterrupted water service (currently bottle water). The Order also establishes a mechanism for stopping bottled water supply to these wells and includes follow up monitoring. The second criterion is for wells that test less than 4 ppb. For those wells, Discharger may cease supply of uninterrupted water service if, after four quarters of testing, the results remain less than 4 ppb. However, the Order will still require additional testing to monitor perchlorate groundwater concentrations.

The Order also requires Discharger to begin implementation of long term uninterrupted water supply service for wells with concentrations at or above 10 ppb. As part of this requirement, Discharger will be submitting a time schedule for long-term uninterrupted water supply implementation. In addition, Discharger is required to submit a detailed plans for long term uninterrupted water supply

*California Environmental Protection Agency*



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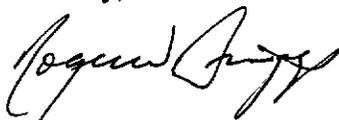
July 6, 2004

options for wells with concentrations ranging from 4 to 9.9 ppb. Once this plan is Approved by the Executive Officer, Discharger will be required implement the plan.

As noted in the Order, any person affected by the Order may petition the State Water Resources Control Board for review within 30 days. (California Water Code §13320.) You may also request a Regional Board hearing by contacting Staff Counsel **Lori T. Okun by facsimile to (916) 341-5199** within 30 days of receipt of this letter. The hearing will be conducted by the Regional Board at a public meeting or by the Executive Officer, as determined by the Executive Officer. A hearing by the Executive Officer may consist of a review of the written record after interested parties have had the opportunity to submit any additional written materials. Any hearing will be open to Olin Corporation, Standard Fusee Corporation and other interested persons. A request for a Regional Board hearing does not toll or otherwise extend the 30-day period for filing a petition with the State Board pursuant to Water Code Section 13320.

If you have questions, please call **David Athey at (805) 542-4644** or Eric Gobler at (805) 549-3467.

Sincerely,



Roger W. Briggs  
Executive Officer

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Attachment: Order No. R3-2004-0101

cc via E-mail:

Ms. Lori Okun  
Office of the Chief Counsel  
State Water Resources Control Board

Mr. Jim Ashcraft  
City of Morgan Hill

Mr. Rich Chandler  
Komex

Mr. Peter Forest  
San Martin County Water

Ms. Sylvia Hamilton  
PCAG

Mr. Tom Mohr  
Santa Clara Valley Water District

PCAG Members

Elected Officials

U.S. Environmental Protection  
Agency

Mr. Steven L. Hoch  
Hatch & Parent

***California Environmental Protection Agency***



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cc via U.S. Mail:

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Mr. Eric Lacy  
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Ms. Helene Leichter  
City of Morgan Hill  
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Morgan Hill, CA 95037

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Mr. Richard Peekema  
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Mr. Keith M. Casto  
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Mr. Rob Stern  
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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION  
895 Aerovista Place, Suite 101  
San Luis Obispo, California 93401-7906**

**CLEANUP OR ABATEMENT ORDER NO. R4-2004-0101**

**Issued to**

**Olin Corporation and Standard Fusee, Incorporated  
425 Tennant Avenue, Morgan Hill  
Santa Clara County**

The California Regional Water Quality Control Board, Central Coast Region (hereafter Regional Board) finds:

1. Olin Corporation and Standard Fusee, Incorporated, (hereafter "Discharger") discharged or permitted the discharge of potassium perchlorate (hereafter "perchlorate") to waters of the state underlying a manufacturing facility located at 425 Tennant Avenue, Morgan Hill (hereafter "Property").

2. Section 13304(a) of the California Water Code provides that:

"Any person ... who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including but not limited to, overseeing cleanup and abatement efforts. A cleanup and abatement order issued by the state board or a regional board may require the provision of, or payment for, uninterrupted replacement water service, which may include wellhead treatment, to each affected public water supplier or private well owner. Upon failure of any person to comply with the cleanup or abatement order, the Attorney General, at the request of the board, shall petition the superior court for that county for the issuance of an injunction requiring the person to comply with the order. In the suit, the court shall have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant."

3. Section 13050(*l*) of the California Water Code defined "pollution" as an alteration of the water quality to a degree that unreasonably affects either beneficial uses or facilities that serve these beneficial uses. Section 13050(*m*) defines "nuisance" as "anything which meets all of the following requirements: (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so

as to interfere with the comfortable enjoyment of life or property. (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons ... (3) Occurs during, or as a result of, the treatment or disposal of wastes.”

4. Pursuant to Chapter 2 of the Water Quality Control Plan, Central Coast Region, (Basin Plan), present and potential beneficial uses of groundwater underlying the Property, and down gradient, include domestic and municipal water supply, agricultural water supply, and industrial water supply.
5. Perchlorate is a hazardous substance. The perchlorate detected at the site is waste as defined in California Water Code Section 13050(d). There is no Basin Plan water quality objective for perchlorate in groundwater. The current cleanup standard for perchlorate, as required by State Water Resources Control Board Resolution No. 92-49 is background or the lowest feasible levels, as described in Finding 10, below.
6. The discharge of perchlorate described in this Order creates, or threatens to create, a condition of pollution or nuisance because, among other reasons, it has interfered with the use of private domestic wells, which contain perchlorate, and has interfered with the use of affected water supplies for municipal and domestic beneficial uses.
7. The former Olin Corporation site is a 13-acre parcel located in southern Morgan Hill. Olin Corporation manufactured signal flares at the Property for about 32 years from 1956 to 1988. Standard Fusee Corporation leased the site and manufactured signal flares for seven years from 1988 to 1995. Potassium perchlorate was used by the Discharger to manufacture flares from 1956 to 1995. Perchlorate contamination at the site may have occurred primarily from an unlined evaporation pond and sumps that received wastes from the cleaning of the ignition material mixing bowls, on-site incineration of cardboard flare coatings with potassium perchlorate residues, and accidental spills.
8. The Discharger caused or allowed perchlorate-containing wastes to be discharged to the soil and groundwater underlying the Property. Due to the naturally permeable and transmissive nature of underlying and down gradient hydrogeology, perchlorate-containing wastes have impacted soils and groundwater beyond the Property. The following reports detail the presence of perchlorate in soil and/or groundwater at, and beyond, the Property:
  - Environmental Engineering Consultant’s *Perchlorate Investigation* dated December 7, 2000
  - Environmental Engineering Consultant’s *Perchlorate Investigation* dated March 21, 2001
  - Law Engineering and Environmental Service’s *Soil and Groundwater Investigation Report for the Olin/Standard Fusee Property* dated May 16, 2002
  - MACTEC Engineering Consultant’s *Phase 3 Soil and Groundwater Investigation Report* dated December 2, 2002

- MACTEC Engineering Consultant's *Phase 3 Soil and Groundwater Investigation and Remedial Action Conceptual Design Report* dated June 30, 2003
- GeoSyntec Consultant's *Soil Remediation Feasibility Study* dated November 21, 2003
- MACTEC Engineering and Consulting's *Third Quarter 2003 Groundwater Monitoring Report* dated October 30, 2003
- MACTEC Engineering and Consulting's *Fourth Quarter 2003 Groundwater Monitoring Report* dated January 30, 2004
- MACTEC Engineering and Consulting's *First Quarter 2004 Groundwater Monitoring Report* dated April 30, 2004

The maximum perchlorate concentration detected in groundwater beneath the Property (at well MW-01) was 770 parts per billion (ppb) during the October 27, 2003, groundwater-sampling event. Measurable perchlorate concentrations in the nine plus mile offsite groundwater plume range from 2 ppb to a maximum of 100 ppb. Perchlorate presence, as noted above and in Finding 10, constitutes a condition of pollution and or nuisance, as defined in California Water Code Section 13050.

9. Since October 22, 2002, Olin Corporation (hereafter "Olin") has been supplying interim uninterrupted replacement water, in the form of bottled water, to affected private well owners with perchlorate detections at 4 ppb or higher. On April 7, 2004, Olin requested that Regional Board staff reconsider the 4 ppb interim uninterrupted replacement water supply level since the Department of Health Services (DHS) Action Level was changed to 6 ppb, based on the Office of Emergency Health Hazard Assessment's public health goal. In a response dated April 29, 2004, the Regional Board Executive Officer determined it necessary to maintain the 4 ppb level for interim uninterrupted replacement water supply. Consequently, the Discharger was directed to keep providing bottled water, on an interim basis, to people whose wells contained perchlorate above 4 ppb.
10. The 4 ppb interim uninterrupted replacement water supply level is 2 ppb lower than the DHS Action Level. However, this requirement is appropriate pursuant to Section 13304. First, alternative water would not be required if the perchlorate had not been discharged. While some wells are below 6 ppb, perchlorate, at any level, is not considered a background constituent of local groundwater. The natural background perchlorate concentration in the Llagas groundwater sub-basin and vicinity is zero. Since the perchlorate discharge has caused a condition of pollution or nuisance and has impacted groundwater beneficial uses, Olin is required to abate potential and actual effects. State Water Resources Control Board Resolution No. 92-49 applies to all cleanup and abatement activities, including providing alternate water supplies. The Resolution requires dischargers to "clean up *and abate* the effects of discharges in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the

total values involved, beneficial and detrimental, economic and social, tangible and intangible.” (Id., Section III.G.) Cleanup levels less stringent than background must comply with Section 20400, Title 27, California Code of Regulations (formerly Section 2550.4, Title 23, California Code of Regulations). The Discharger has not demonstrated that cleanup levels above background are appropriate or that background levels cannot be restored. Since the groundwater supplying the polluted wells must be cleaned up to background, absent such demonstration, replacement water should meet the same standard.

Second, perchlorate Public Health Goals, also called Reference Dose by some government agencies (hereafter referred to collectively as “public health goal”), have been established by both the California Office of Environmental Health Hazard Assessment (OEHHA) and the state of Massachusetts Department of Environmental Protection. The United States Environmental Protection Agency (USEPA) has also established a perchlorate public health goal. The public health goal is used by the respective states and federal government in establishing drinking water standards. There is general agreement among these entities that the most sensitive receptor populations are pregnant women, infants, developing children, and hypothyroid individuals. While the USEPA’s and Massachusetts’ public health goal is 1 ppb, California’s is 6 ppb. The difference between California’s and the USEPA and Massachusetts’ public health goals is based on the uncertainty factor used. The USEPA and Massachusetts public health goal is calculated using a larger uncertainty factor, which they believe assures protection of the most sensitive populations. The OEHHA level also strives to be protective of sensitive populations, but differs in magnitude. The states of Massachusetts and California are both awaiting the National Academy of Science’s (NAS) final recommendations on an acceptable public health goal. Both states have pledged to re-review their public health goals, if the NAS study differs from each state’s respective goal. Since the states’ and USEPA’s toxicological risk assessments differ in regard to an appropriate uncertainty factor, a public health goal, and because the NAS study is still underway, it is appropriate to continue requiring interim uninterrupted replacement water supply at the conservative levels described below in ordering paragraphs 1 and 2.

Lastly, groundwater elevations and quality show variance during the wet and dry seasons. Monitoring data demonstrates that perchlorate concentrations in wells that are 6 ppb and over could and have occasionally and temporarily dropped below 4 ppb. Many well owners that now receive bottled water only have one or two sample results for their well, which may not reflect seasonal variations in perchlorate concentrations. Such variance must be considered when determining conditions for interim uninterrupted water supply.

11. Olin has also supplied interim uninterrupted replacement water (bottled water) to some well owners with perchlorate detections less than 4 ppb. However, if perchlorate detections remain less than 4 ppb or non-detect for four quarters, the Regional Board Executive Officer agreed that Olin may end alternative water supply

to the specific well owner. Olin recently sent a blanket letter to over 400 interim uninterrupted replacement water recipients notifying them that bottled water delivery would cease on or about June 4, 2004. It is not known if those well owners had a minimum of four sample results prior to cessation of bottled water delivery.

12. Olin submitted an Alternative Water Supply Evaluation report on April 16, 2004, that outlines alternative water supply options for perchlorate-impacted well owners. Regional Board staff directed Olin to evaluate uninterrupted replacement water supply options for wells with perchlorate concentrations ranging from 4, 6, 8, 10, 16 and 40 ppb. Olin's report did not evaluate alternatives for wells with concentrations below 6 ppb, the current Department of Health Services Action Level.
13. 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 Sections 15307 and 15308, Chapter 3, Title 14, California Code of Regulations. The issuance of this Order is also an enforcement action taken by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), pursuant to Section 15321(a)(2), Title 14, CCR.
14. Pursuant to Section 13304 of the California Water Code, the Regional Board is entitled to, and may seek, reimbursement for all reasonable costs actually incurred by the Regional Board to investigate unauthorized discharges of wastes or to oversee cleanup of such waste, abatement of the effect thereof, or other remedial action pursuant to this Order.
15. Any person affected by this action of the Regional Board may petition the State Water Resources Control Board (State 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 State Board, Office of Chief Counsel, must receive the petition within 30 days of the date of this Order. Copies of the law and regulations applicable to filing petitions will be provided upon request.
16. Section 13267(b) of the California Water Code provides that:

“In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the

reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”

As described in this Order, existing data and information about the site indicates that waste has been discharged or is discharging from the facilities described above, which facilities are owned or operated, or formerly owned or operated by the Discharger named in this Order.

This Order requires monitoring, work plans and reports pursuant to Water Code Section 13267. This finding is made in compliance with Section 13267. The work plans and monitoring required by this Order are necessary to design a water replacement plan and implementation schedule and to determine compliance with this Order.

IT IS HEREBY ORDERED, pursuant to Sections 13267 and 13304 of the California Water Code that the Discharger abate the discharge of waste at and near the Property as follows:

1. Effective immediately, Discharger shall supply interim uninterrupted replacement water service (i.e., bottled water or equivalent), in accordance with California Water Code Section 13304, to owners of private domestic wells in which perchlorate has been detected at concentrations at or above 4 ppb at any time within the past four consecutive quarters. Discharger may stop supplying interim uninterrupted water service upon the Regional Board Executive Officer's concurrence that long term uninterrupted water service has been provided to individual well owners or there have been four consecutive quarters of non-detect (using a maximum Method Detection Limit of 2 ppb) or less than 4 ppb results. However, if interim uninterrupted water service is stopped because one of the above mentioned conditions is satisfied, the Discharger shall continue to monitor the private wells in question for perchlorate semi-annually for one year. If perchlorate groundwater concentrations remain at trace or non-detect levels during that time, the Discharger shall monitor the private wells annually for two years. If perchlorate groundwater concentrations remain non-detect or trace during that two-year period, the Discharger may stop sampling with the Executive Officer's concurrence.
2. Effective immediately, Discharger shall supply interim uninterrupted replacement water service (i.e., bottled water or equivalent), in accordance with California Water Code Section 13304, to owners of private domestic wells in which perchlorate has been detected at concentrations below 4 ppb. Discharger may stop supplying interim uninterrupted water service upon the Regional Board Executive Officer's concurrence that long term uninterrupted water service has been provided to individual well owners or there have been four consecutive quarters of non-detect (using a maximum Method Detection Limit of 2 ppb) or less than 4 ppb results. However, if interim uninterrupted water service is stopped because one of the above mentioned conditions

is satisfied, the Discharger shall continue to monitor the private wells in question for perchlorate semi-annually for one year. If perchlorate groundwater concentrations remain at trace or non-detect levels during that time, the Discharger shall monitor the private wells annually for two years. If perchlorate groundwater concentrations remain non-detect or trace during that two-year period, the Discharger may stop sampling with the Executive Officer's concurrence. If perchlorate is detected at or above 4 ppb at any time, the Discharger shall provide uninterrupted water service in accordance with Paragraph 1.

3. **By October 29, 2004**, Discharger shall submit a detailed Alternative Water Supply Implementation Work Plan for uninterrupted replacement water, for wells with perchlorate concentrations from, and including, 4 ppb to 9.9 ppb. The work plan shall include: a detailed evaluation of water production rates, infrastructure needs, water usage rates, and estimated timetables for implementation.
4. Following Executive Officer concurrence with the detailed Alternative Water Supply Implementation Work Plan for wells with concentrations from 4 ppb to 9.9 ppb, Discharger shall implement the plan according to a schedule approved by the Executive Officer.
5. Discharger shall provide long term uninterrupted water service to affected well owners with perchlorate concentrations at 10 ppb (or above) as outlined in MACTEC's April 16, 2004 *Alternative Water Supply Evaluation report* (Report). The Report discusses uninterrupted water replacement options for each of these 15 individual wells. If the Discharger identifies ion exchange treatment as the most effective alternative, Discharger shall submit a schedule for implementation within **30 days following** certification by DHS. However, if ion exchange is not certified by March 31, 2005 or if DHS denies certification, Discharger shall select an alternate long term replacement water option by **May 2, 2005** or within 30 days after DHS denies certification (whichever is earlier). Discharger shall implement the alternative option in accordance with a schedule approved by the Executive Officer. Discharger may elect to implement ion exchange technology before DHS acts on the certification, in lieu of selecting an alternative option, as long as Discharger also provides bottled water until DHS issues the certification.
6. Interim and long-term replacement water shall comply with California Water Code Section 13304(f).

The Discharger shall be liable, pursuant to California Water Code Section 13304, to the Regional Board for all reasonable costs incurred by the Regional Board to investigate unauthorized discharges of waste, or to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, pursuant to this Order. The Discharger shall reimburse the Regional Board for all reasonable costs associated with Property investigation, oversight and cleanup. Failure to pay any invoice for the Regional Board's investigation or oversight costs within the time stated in the invoice (or within thirty days

after the date of invoice, if the invoice does not set forth a due date) shall be considered a violation of this Order. If the Property is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program.

All technical and monitoring plans and reports required in conjunction with this Order are required pursuant to Section 13267 of the California Water Code and shall include a statement by the Discharger, or an authorized representative of the Discharger, certifying (under penalty of perjury in conformance with the laws of the State of California) that the work plan and/or report is true, complete, and accurate. Hydrogeological reports and plans shall be prepared or directly supervised by, and signed and stamped by a registered geologist and/or an appropriately licensed engineer.

This Order in no way limits the authority of this Regional Board to institute additional enforcement actions or to require additional investigation and cleanup at the facility consistent with California Water Code. This Order may be revised by the Executive Officer as additional information becomes available.

FAILURE TO COMPLY WITH THE PROVISIONS OF THIS ORDER MAY SUBJECT YOU TO FURTHER ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO, ASSESSMENT OF CIVIL LIABILITY UNDER SECTIONS 13268 AND 13350 OF THE CALIFORNIA WATER CODE AND REFERRAL TO THE DISTRICT ATTORNEY OR ATTORNEY GENERAL FOR INJUNCTIVE RELIEF AND CIVIL OR CRIMINAL LIABILITY.



Roger W. Briggs  
Executive Officer

7-6-04

Date