

STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD

**ORDER WQ 2005 - 0007**

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In the Matter of the Petitions of

**OLIN CORPORATION AND STANDARD FUSEE, INCORPORATED**

For Review of Cleanup And Abatement Order No. R3-2004-0101

Issued by the  
California Regional Water Quality Control Board,  
Central Coast Region

**SWRCB/OCC FILES A-1654 and A-1654(a)**

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BY THE BOARD:

On July 6, 2004, the Executive Officer of the Central Coast Regional Water Quality Control Board (Central Coast Water Board) issued Cleanup and Abatement Order No. R3-2004-0101 (Cleanup Order)<sup>1</sup>, which required Olin Corporation (Olin) and Standard Fusee, Incorporated (Standard Fusee), to provide replacement water service to owners of private domestic wells affected by discharges of potassium perchlorate (perchlorate) from the facility at 425 Tennant Avenue, Morgan Hill, in Santa Clara County (hereinafter referred to as "Facility"). Olin and Standard Fusee (Petitioners) filed petitions asking the State Water Resources Control Board (State Water Board) to review the requirement to provide replacement water service for wells with perchlorate detections below the current California public health goal and notification

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<sup>1</sup> The Cleanup Order was incorrectly numbered R4-2004-0101.

level for drinking water.<sup>2</sup> In this Order the State Water Board addresses the significant issues raised in the petition and revises the Cleanup Order.<sup>3</sup> The remaining issues are dismissed.<sup>4</sup>

## I BACKGROUND

Olin manufactured signal flares at the Facility from approximately 1956 to 1988. From 1988 to 1995, Standard Fusee leased the Facility and also manufactured signal flares.<sup>5</sup> Perchlorate, used in the manufacture of signal flares, was detected in water samples at the site in August 2000. In 2001, Olin undertook further investigation of the contamination with the Central Coast Water Board's oversight. Perchlorate has been detected in numerous groundwater wells located downgradient of the Facility (up to a distance of approximately ten miles) with

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<sup>2</sup> Olin also requested a stay of the Cleanup Order. The State Water Board's Executive Director denied the stay request by letter dated September 22, 2004.

<sup>3</sup> This order is based upon the record before the Central Coast Water Board and upon the following documents, of which the State Water Board takes administrative notice: *Public Health Goal for Perchlorate in Drinking Water*, prepared by Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, March 2004; National Academy of Sciences, *Health Implications of Perchlorate Ingestion*, 2005; Memorandum from Joan E. Denton, Director, Office of Environmental Health Hazard Assessment, to Alan C. Lloyd, Agency Secretary, California Environmental Protection Agency, 4/1/05, Responses to Recent Comments on the Perchlorate PHG. Petitioners as well as the Central Coast Water Board sought to supplement the record with additional information documenting ongoing state and national efforts to establish a reliable drinking water standard for perchlorate. With the exception of the OEHHA document named above, these requests are denied. In addition, Petitioners requested leave to reply to contentions set forth in the Central Coast Water Board response to the petition. That request is also denied. Olin submitted documents as attachments to its comment letters dated March 29, 2005, and May 16, 2005, but did not comply with California Code of Regulations, Title 23, section 2050.6(a) for admission of new evidence. Of those documents, the following are excluded: U.S. Environmental Protection Agency, Analytical Methods Developed by the Office of Ground Water and Drinking Water; and Air Force Center for Environmental Excellence, Monitoring and Remediation Optimization System (MAROS) Software User's Guide, Version 2.1, November 2004. All other attachments submitted by Olin are either already in the record or are hereby made a part of the record.

<sup>4</sup> See *People v. Barry* (1987) 184 Cal.App.3d 158; Cal. Code Regs. (CCR) tit. 23, § 2052(a)(1). Dismissed issues have either been addressed in previous State Water Board orders or are not sufficiently substantial to warrant review.

<sup>5</sup> Standard Fusee's brief petition joins in Olin's petition and request for relief, as well as Olin's reasons for contending that the Central Coast Water Board action was improper. On March 30, 2005, Standard Fusee submitted comments on a draft of this Order that had been circulated for public comment. That submission included a request to present additional evidence on claims not previously raised in Standard Fusee's or Olin's petitions. The State Water Board's regulations governing petitions of regional water quality control board actions provide that petitioners must raise substantive issues or objections before the regional water board or, in the alternative, provide an explanation of why these issues could not have been raised before the regional water board. Cal. Code Regs., Tit. 23, § 2050(a)(9). Moreover, any request to present additional evidence not provided to the regional board shall be made at the time the petition was filed, or as soon as possible thereafter. Cal. Code Regs., Tit. 23, § 2050.6(a)(1). If evidence was not presented to the regional water board, the proponent must provide a detailed explanation of the reasons why the evidence could not have been submitted. Cal. Code Regs., Tit. 23, § 2050.6(a)(2). Because Standard Fusee failed to raise the new claim in its petition or in earlier submissions and has not satisfactorily explained why this claim or evidence could not have been submitted previously, comments presenting new claims not properly before the State Water Board are excluded from the administrative record. The request to present supplemental evidence is denied.

concentrations ranging from non-detect to 100 micrograms per liter ( $\mu\text{g/L}$ ). Since 2002, Olin has been providing alternative water to owners of domestic water wells in which perchlorate concentrations exceed  $4 \mu\text{g/L}$ .

Water Code section 13304 was amended in 2004 to clarify the authority of regional water quality control boards to require alternative water supplies pursuant to a cleanup.<sup>6</sup> The statute provides that a regional water board may require provision of “uninterrupted replacement water service, which may include wellhead treatment, to each affected public water supplier or private well owner.”<sup>7</sup> Replacement water provided “shall meet all federal, state, and local drinking water standards and shall have comparable quality to that pumped by the public water system or private well owner prior to the discharge of waste.”<sup>8</sup> The statute does not define what constitutes an “affected” well.

There is currently no enforceable state or federal standard for perchlorate in drinking water for use in determining when a well is affected such that the user should be entitled to replacement water service. In March 2004, the California Office of Environmental Health Hazard Assessment (OEHHA) issued a final Public Health Goal (PHG) of  $6 \mu\text{g/L}$  for perchlorate.<sup>9</sup> OEHHA’s PHG must be based upon a risk assessment to identify a level at which no known or anticipated adverse effects on health will occur, with an adequate margin of safety.<sup>10</sup> PHG’s are used by the California Department of Health Services (DHS) in establishing drinking water standards or Maximum Contaminant Levels (MCLs).<sup>11</sup>

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<sup>6</sup> Cal. Water Code, § 13304(a), (f). SB 1004, approved 9/29/03, effective 01/01/04.

<sup>7</sup> Cal. Water Code, § 13304(a).

<sup>8</sup> *Id.* Water Code § 13304(f). The cited provision refers to the quality of replacement water provided, and not to the groundwater affected by a discharge. The intent of this Order is to clarify the condition of an affected well in order to determine when replacement water is appropriately required. This Order is not intended to address requirements as to the quality of water served as replacement water when such service is otherwise found warranted.

<sup>9</sup> California Health & Safety Code, section 116293 requires OEHHA to perform a risk assessment and adopt a public health goal for perchlorate based exclusively on public health consideration. Criteria for this determination are set forth at Health & Safety Code, section 116365.

<sup>10</sup> Cal. Health & Saf. Code, § 116365(c)(1).

<sup>11</sup> Cal Health & Safety Code, § 116365(a). The primary drinking water standard “shall be set at a level that is as close as feasible to the corresponding public health goal placing primary emphasis on the protection of public health . . . .” *Id.*

DHS has not yet completed an MCL for perchlorate. However, DHS has established a notification level<sup>12</sup> for certain contaminants, which requires timely notification of local governing bodies by drinking water systems whenever the relevant level is exceeded in a drinking water source.<sup>13</sup> Before March of 2004, the notification level for perchlorate was 4 µg/L, having been revised downward from 18 µg/L in 2002. The notification level was later revised to 6 µg/L based on the final PHG. While the state continues to develop regulatory standards for this contaminant, the issue remains in flux on a national level.<sup>14</sup>

Olin commenced replacement water service in late 2002, when the notification level for perchlorate was 4 µg/L. In April 2004, following publication of OEHHA's final PHG of 6 µg/L, Olin sought approval from the Central Coast Water Board to raise the level of contamination requiring replacement water service to 6 µg/L to match the PHG. The Board declined Olin's request and later issued the Cleanup Order to implement its determination that Olin must continue providing replacement water for wells testing at or above 4 µg/L.<sup>15</sup> Olin filed its petition with the State Water Board, objecting to the 4 µg/L "trigger" level.

## II. CONTENTIONS AND FINDINGS

Contention: Olin contends that the Central Coast Water Board abused its discretion by requiring continued water replacement service for wells with perchlorate detections based upon a 4 µg/L trigger level rather than the final PHG of 6 µg/L adopted by OEHHA.

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<sup>12</sup> The DHS notification level was previously referred to as an action level. See, Cal. Health & Saf. Code, § 116455, effective 1/1/05.

<sup>13</sup> Cal. Health & Saf. Code, §§ 116450, 116455. Notification levels are "nonregulatory, health-based advisory levels . . . for contaminants in drinking water for which maximum contaminant levels have not been established. Notification levels are established as precautionary measures . . ." Health & Saf. Code, § 116455(c)(3).

<sup>14</sup> The United States Environmental Protection Agency (U.S. EPA) issued a Draft Toxicological Health Assessment for perchlorate in 2002. The draft document indicated a preliminary goal of 1 µg/L for perchlorate in drinking water. U.S. EPA, together with several other federal agencies, referred the draft health assessment document to the National Academy of Sciences (NAS) for further review. OEHHA has reviewed the resulting NAS report issued in January 2005 and concluded that "there does not appear to be any new scientific evidence for OEHHA to revise the perchlorate risk assessment, nor alter the estimated health-protective drinking water concentration of 6 ppb (6µg/L) that is stated in the final PHG document." Memorandum from Joan E. Denton to Alan C. Lloyd, 4/1/2005.

<sup>15</sup> The Cleanup Order requires Olin and Standard Fusee to provide replacement water service for wells in which perchlorate has been detected at or above 4 µg/L at any time within the past four consecutive quarters. Cleanup Order, at Paragraph 1. The Cleanup Order also requires replacement water service for wells where perchlorate is detected below 4 µg/L, but Dischargers may cease supply with Central Coast Water Board Executive Officer concurrence if results remain below 4 µg/L for four consecutive quarters. *Id.*, at Paragraph 2.

Finding: We do not find abuse of discretion in the Central Coast Water Board's determinations. However, we do find that OEHHA is the agency charged with public health risk assessments of the nature presented here. The Water Boards should defer to OEHHA and DHS in determining the appropriate level of contamination requiring replacement drinking water service requirements.

The Central Coast Water Board's primary reason for refusing to revise the trigger level for replacement drinking water is its stated belief that a conservative approach is needed, given the prevailing uncertainty about safe level of perchlorate consumption. The Central Coast Water Board points to lack of scientific consensus as well as its desire to protect the most sensitive affected populations.<sup>16</sup> The Central Coast Water Board also claims that variations in down-gradient water quality monitoring results justify using a more conservative trigger level, to ensure that a safe level is met in all cases. Finally, the Central Coast Water Board argues that State Board Resolution 92-49, generally authorizing regional boards to require cleanup to background levels, supports requiring a more stringent water replacement level than is set forth in the PHG.<sup>17</sup>

OEHHA is the state agency responsible for performing health risk assessments for drinking water under the Safe Drinking Water Act of 1996.<sup>18</sup> The statute requires that the risk assessment be performed "using the most current principles, practices, and methods used by public health professionals who are experienced practitioners in the field of epidemiology, risk assessment, and toxicology."<sup>19</sup> Although the PHG is not a legally enforceable standard,<sup>20</sup> OEHHA's expertise and conclusions are clearly key to later development of safe drinking water standards by DHS.

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<sup>16</sup> At unsafe levels, perchlorate interferes with thyroid function. The most sensitive populations include pregnant women and their developing fetuses, lactating women, infants, and individuals with thyroid problems. *Public Health Goal for Perchlorate in Drinking Water*, OEHHA, March 2004, at 1.

<sup>17</sup> State Water Board Resolution 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code, section 13304, adopted June 18, 1992, and amended April 21, 1994 and October 2, 1996.

<sup>18</sup> Health & Saf. Code, § 116365.

<sup>19</sup> Health & Saf. Code, § 116365(c).

<sup>20</sup> "[OEHHA] and [DHS] are prohibited from imposing any mandate that requires a public water system to comply with a public health goal." Health & Saf. Code, § 116365(c)

Regional water boards have discretion to require replacement water to “affected” public water suppliers and private well owners that “meet[s] all applicable federal, state, and local drinking water standards and . . . [is of] comparable quality to that pumped by the public water system or private well owner prior to the discharge of waste.”<sup>21</sup> Wells “affected” by a discharge of waste include those wells in which water does not meet the federal, state and local drinking water standards.<sup>22</sup> Where no federal, state, or local standard yet exists, it is appropriate to use goals developed by agencies with expertise for public health determinations in deciding whether replacement drinking water is necessary. Any other approach would require regional water boards to make individual, possibly inconsistent public health and toxicological determinations or, in the alternative, to require replacement drinking water whenever there is any detection of a contaminant.<sup>23</sup> This approach ignores the expertise of OEHHA and, in the case of contaminants for which MCLs have been developed, DHS. By contrast, cleanup levels for groundwater are a separate issue and are more appropriately within the expertise and professional purview of the water boards.

While the Central Coast Water Board points to fluctuations in perchlorate detection as further justification for requiring water replacement at a lower level of contamination, reliability of data is a separate issue. Olin must meet the replacement water requirements at whatever level is determined appropriate, regardless of fluctuations. In order to ensure that any discontinuation of replacement drinking water service resulting from this Order is based upon accurate and current information, we will require that four prospective, consecutive quarters of monitoring data be provided to illustrate that a well consistently tests below the PHG. Therefore, well owners currently receiving replacement water service will not have such service discontinued as a result of the findings in this Order until four new consecutive quarters of

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<sup>21</sup> Wat. Code, § 13304(f).

<sup>22</sup> As noted in footnote 8, this Order applies only to the quality of groundwater for which replacement drinking water service is required, not to the quality of replacement drinking water provided to well owners.

<sup>23</sup> The logical result of the Central Coast Water Board’s argument that the State Water Board Res. 92-49 requirement for cleanup to background contaminant levels justifies its water replacement levels would routinely require water replacement for groundwater constituent levels that may be many times lower than that determined safe by state and federal agencies. Simply put, while cleaning up to background may be required, that does not mean that replacement water is always necessary until the cleanup is complete, regardless of the amount of contamination.

monitoring are available to show that a well tests below the PHG. The Central Coast Water Board has discretion to act to shorten this time period.<sup>24</sup>

Nothing in this Order should be read to require amendment of any pre-existing agreements by dischargers to provide replacement water at levels below PHGs. Nor does this Order prevent a public water supplier from deciding to stop service of water that is below these levels. The sole issue addressed is the determination by Regional Water Boards that wells have been “affected” and that replacement water must be ordered. Where new water replacement orders are considered, or where existing agreements or orders provide for reconsideration of replacement water levels, regional water boards should defer to OEHHA and DHS in determining safe drinking water levels. This Order applies only to requirements for water replacement and not to groundwater or soil cleanup levels required under State Water Board Resolution 92-49.<sup>25</sup> Further, this Order applies only to replacement drinking water and not to replacement water for other potentially affected beneficial uses.

Nothing in this Order shall be read to prevent a regional water board from issuing a water replacement order directing future actions preparatory to providing timely replacement water in the event that the appropriate standard is met or exceeded in the future. Regional water boards may also require that dischargers submit water replacement plans prior to documentation of contaminant levels exceeding the relevant standard. Where water quality data exhibit trends indicating the likelihood of future exceedances, it is prudent and appropriate for regional water boards to take such action before actual well exceedances occur.

### **III. CONCLUSION**

The Regional Water Board inappropriately failed to accord the deference due to OEHHA in determinations involving safe drinking water contaminant levels. The Regional Water Board has not shown why the OEHHA PHG is insufficiently protective in this case.

### **IV. ORDER**

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<sup>24</sup> Olin and the Central Coast Water Board have jointly submitted monitoring requirements for wells subject to replacement water service. Our revision of the Cleanup Order will refer to and incorporate those requirements.

<sup>25</sup> “Affected” wells may include those subject to other measures for implementing cleanup. This Order only addresses how a regional water board must determine the trigger levels for requiring safe replacement drinking water pending completion of a cleanup in compliance with Resolution 92-49. The trigger levels at issue in this Order are based on the need to protect public health. This Order does not prevent a regional water board from requiring any action that is related directly to remediation of ground water or is necessary to prevent migration of waste through ground water.

IT IS HEREBY ORDERED THAT CLEANUP AND ABATEMENT Order No. R3-2004-0101 is amended as follows:

1. Delete Finding 10 and replace with the following: “The Office of Environmental Health Hazard Assessment [OEHHA] established its public health goal of 6 ppb based upon upon the level of perchlorate in drinking water that would pose no significant health risk to individuals consuming the water on a daily basis over a lifetime. OEHHA is required to base its public health goal exclusively on public health considerations, without regard to cost impacts. Because OEHHA is the state agency responsible for such health risk assessments, it is appropriate to use the public health goal as the applicable level for determining wells requiring replacement drinking water supply. ”

2. Delete Finding 11.

3. Revise Directive 1 to read as follows: “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 greater than 6 ppb in the last twelve months regardless of past results. 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 equal to or less than 6 ppb results.”

4. Delete Directive 2 and replace with the following: “Olin shall implement monitoring requirements for wells subject to replacement water. These requirements address conditions under which monitoring may be discontinued. The requirements are incorporated and included as Attachment A.”

5. Add a new Directive 2a to read as follows: “Notwithstanding other requirements, for well owners currently receiving replacement water service, no discontinuation of that service shall occur, unless approved by the Central Coast Water Board, until four prospective quarters of monitoring show perchlorate concentrations equal to or less than 6 ppb.”

6. Revise Directive 4 to read as follows: “Following Executive Officer concurrence with the detailed Alternative Water Supply Implementation Work Plan Discharger



shall implement the plan for wells with concentrations from 6 ppb to 9.9 ppb, according to a schedule approved by the Executive Officer.”

### **CERTIFICATION**

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 19, 2005.

AYE:            Arthur G. Baggett, Jr.  
                  Peter S. Silva  
                  Richard Katz  
                  Gerald D. Secundy  
                  Tam M. Doduc

NO:             None.

ABSENT:      None.

ABSTAIN:     None.

  
Debbie Irvin  
Clerk to the Board

Attachment A

| Range   | Monitoring Approach  |
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| 5.0 to < 6.0 ppb  | Olin will sample bimonthly. After four data points, Olin shall evaluate the data using the Mann-Kendall variability analysis. <sup>1</sup> If there is no trend (NT) or if the concentration trend is increasing (I) or probably increasing (PI), Olin shall continue to sample on a bimonthly basis. If the trend is stable (S), decreasing (D) or probably decreasing (PD), then Olin will sample at least twice per year for one year (monitoring should occur during wet and dry seasons or during periods of maximum concentration changes as determined by the Mann-Kendall trend analysis). If trend is still stable (S), decreasing (D) or probably decreasing (PD), Olin will sample once in the next year. If that concentration is < 6.0 and trend remains stable (S), decreasing (D) or probably decreasing (PD), Olin may stop sampling with Executive Officer concurrence. |
| 4.0 to <5.0   | Olin will sample at least twice per year (monitoring should occur during wet and dry seasons or during presumed periods of maximum concentration changes). After four data points, Olin shall evaluate the data using the Mann-Kendall variability analysis. If there is no trend (NT) or if the concentration trend is increasing (I) or probably increasing (PI), Olin shall continue to sample on a semiannual basis, or bimonthly if the concentration exceeds 5.0. If the trend is stable (S), decreasing (D) or probably decreasing (PD), then Olin will sample once in the next year. If that concentration is < 5.0 and the trend is stable (S), decreasing (D) or probably decreasing (PD), Olin may stop sampling with Executive Officer concurrence.  |
| < 4.0 wells (other than wells that were previously in the sampling programs in the above two ranges) within 500 feet of wells that have had a 6 ppb result. | Olin shall sample semiannually for one year. If the perchlorate concentrations remain less than 4 ppb, then Olin shall sample once in the next year. If that concentration is less than 4 ppb, Olin may stop monitoring with Executive Officer concurrence.  |

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<sup>1</sup> Olin shall submit the proposed statistical analysis for review and approval by Regional Board Staff.