INFORMATION SHEET

ORDER R5-2015-XXXX
UNIVAR USA INC.
IN-SITU CHEMICAL OXIDATION GROUNDWATER REMEDIATION PROJECT
1152 G STREET, FRESNO
FRESNO COUNTY

Univar USA Inc. (Univar) is proposing in-situ chemical oxidation remediation for groundwater impacted by tetrachloroethene and its breakdown products. Oxidizing agents will be injected into groundwater to break carbon bonds in tetrachloroethene resulting in the creation of carbon dioxide gas and chloride.

Background

Univar leased property at 1152 G Street, Fresno from 1965 to 1986. An aboveground storage tank (AST) was located in the northeast corner and was used to store tetrachloroethene (PCE). The AST has since been removed. PCE was initially detected in soil samples during a 1994 assessment. Numerous assessments of soil, soil gas, and groundwater have been conducted since that time to delineate the extent of PCE in soil and groundwater.

PCE impacted groundwater forms a plume extending approximately 1,500 feet to the north and 1,800 feet to the northwest, toward City of Fresno well 22A. PCE has been detected at depths up to 250 below ground surface in the vicinity of City well 22A. Concentrations of PCE detected in City well 22A are well below State of California drinking water standards.

Univar's clean-up remedy is to inject potassium permanganate into a series of injection wells located in the area of highest concentrations of tetrachloroethene in groundwater. The potassium permanganate will break the carbon to carbon bonds and dechlorinate tetrachloroethene in groundwater. The reaction will create carbon dioxide gas and release chloride and potassium ions into groundwater. The potassium permanganate will migrate with the flow of groundwater and be consumed in reactions with volatile organic compounds and other organic compounds in the aquifer. It is anticipated that all or most of the potassium permanganate will be consumed by the time it reaches the transition zone.

A test evaluation was conducted to assess the effectiveness of using potassium permanganate at the site. Three representative formation samples were collected at depth from the site for the evaluation. The amount of potassium permanganate that was consumed by organic materials in the samples was determined during the test. The results of the evaluation indicate that potassium permanganate injection will work well at the site. Data collected during the evaluation allows the consultant to estimate the amount of potassium permanganate required.

Groundwater Conditions

Groundwater monitoring has been ongoing since at least 1996. Groundwater occurs at a depth of approximately 100 to 110 feet below ground surface. More than 45 monitoring wells are currently gauged and sampled semi-annually. The monitoring and reporting program requires sampling of the existing wells on a quarterly, semi-annual, or annual basis, depending on the specific well. Groundwater samples will be analyzed for general mineral, metal, and volatile organic constituents, along with constituents associated with the amendments to be injected.

Twenty monitoring wells outside of the treatment and transition zones or on the outside edges of the transition zone have been selected as compliance wells. Several of the compliance wells are located upgradient of Fresno City well 22A to ensure that the remediation systems do not cause impacts to that well. The compliance wells will be monitored to ensure that injected materials do not affect the beneficial uses of groundwater outside of the treatment and transition zones.

Basin Plan, Beneficial Uses, and Regulatory Considerations
The Water Quality Control Plan for the Tulare Lake Basin (second edition) (the "Basin Plan") designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the basin. The receiving water is groundwater. Beneficial uses include municipal and domestic water supply, agricultural supply, industrial service supply, industrial process supply, and water contact and non-contact water recreation. Discharges shall not cause groundwater at the compliance points to exceed drinking water primary or secondary standards unless background concentrations already exceed the primary or secondary standards. Discharges shall not cause concentrations of metals, total dissolved solids, or electrical conductivity to increase more than 20% over their background concentrations.

Antidegradation
State Water Resources Control Board Resolution 68-16 (hereafter Resolution 68-16) requires the Regional Water Board to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in State and Regional Water Board policies (e.g., quality that exceeds water quality objectives).

The Central Valley Water Board finds that these WDRs authorize limited temporal groundwater degradation, but that such degradation is consistent with Resolution 68-16 since: (1) the purpose of the discharge is to accelerate and enhance remediation of the existing groundwater pollution, and such remediation is consistent with the maximum benefit to the people of California; (2) the degradation is limited in scope and duration; (3) this Order requires use of best practicable treatment or control of the wastes to be discharged, including adequate monitoring and contingency plans to assure protection of water quality; and (4) this Order does not allow discharges of waste to exceed water quality objectives, other than the temporary exceedances that will occur as a result of the treatment process. If the monitoring conducted pursuant to the MRP shows that the discharge causes or threatens to cause degradation of water quality (other than those temporarily permitted by these WDRs), then the Discharger will be required to cease the discharge, implement source control, change the method of discharge, or take other action. A slight residual increase in salts may occur, but will be limited to a maximum 20 percent increase over background and will not be permitted to impact beneficial uses.

Proposed Order Terms and Conditions

Discharge Prohibitions, Discharge Specifications, and Provisions
The proposed Order would prohibit discharge to surface waters and water drainage courses.

Injection of substances other than those specifically allowed in the Order is prohibited.

Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by Water Code section 13050, outside of the treatment and transition zones.

The release, injection, discharge or addition of constituents from the remediation system shall not cause the groundwater at the compliance wells listed in B.1 to contain concentrations of constituents added as amendments, and by-products of the in-situ treatment process, in amounts that exceed the limits specified in the WDRs.

The release, injection, discharge or addition of constituents from a remediation system shall not cause the groundwater at the compliance wells to contain concentrations of metals, total dissolved solids, or

electrical conductivity that are more than 20% greater than their respective background concentrations, as established by the Monitoring and Reporting Program.

Monitoring Requirements

Water Code section 13267 authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. Water Code section 13268 authorizes assessment of civil administrative liability where appropriate.

The proposed Order includes discharge and groundwater monitoring. The monitoring is necessary to ensure that any potential degradation from the discharge is minimized.