

California Regional Water Quality Control Board, Los Angeles Region
January 24, 2002
449th Regular Board Meeting

ITEM: 17.1
17.2

SUBJECT: Resolution approving the Environmental Checklist and Adopting a Mitigated Negative Declaration for a Nutrient-based Solution Injection to cleanup groundwater contaminated with chlorinated volatile organic compounds (VOCs), by ITT Industries Inc. (hereinafter Discharger) at the former ITT Barton Instruments facility in the City of Industry, California.

Waste Discharge Requirements for a Nutrient-based Solution Injection, by ITT Industries Inc. at the former ITT Barton Instruments facility located at 900 South Turnbull Canyon Road, City of Industry, California.

PURPOSE: To conduct a public hearing that will allow all interested parties to submit their comments on the Mitigated Negative Declaration and Waste Discharge Requirements (File No. 102.0028). Following the hearing, staff will ask the Board to adopt the Mitigated Negative Declaration and Tentative Waste Discharge Requirements.

BACKGROUND: The Discharger owned and operated the former ITT Barton Instruments, a manufacturing plant of scientific instruments from 1977 to 1998. The plant is located at 900 South Turnbull Canyon Road, City of Industry, California in a mixed commercial-residential-industrial area. The property was transferred to Barton Instrument Systems in 1998. However, ITT Industries, Inc. has assumed environmental cleanup liability after ceasing operations at the site.

The property occupies approximately 13 acres within the Puente Valley Operable Unit. Due to facility operations, groundwater beneath the site was impacted with volatile organic compounds (VOCs) such as tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), and cis-1,2-dichloroethene (c-1,2-DCE).

The former vapor degreaser (VD) area and the former underground storage tank (UST) area have been identified as areas of concern (treatment areas) of groundwater contamination at the site. During the sampling event on July 20, 2000, VOCs concentrations in the former VD groundwater monitoring well were 1,100 µg/L of PCE, 650 µg/L of c-1,2-DCE, and 350 µg/L of TCE, whereas VOCs concentrations in the former UST groundwater monitoring well were 3,600 µg/L of PCE; 1,100 µg/L of 1,1,1-TCA; 180 µg/L of TCE and 120 µg/L of c-1,2-DCE. The California maximum contaminant levels (MCLs) for the chemicals are 5 µg/L for PCE, 6 µg/L for c-1,2-DCE, 200 µg/L for 1,1,1-TCA, and 5 µg/L for TCE.

Since 1985, the Regional Board's San Gabriel Valley Cleanup Unit has overseen assessment and cleanup activities at this site. The VOC groundwater plume covers an area of approximately 90 feet by 140 feet in the former VD area, and an area of 110 feet by 140 feet at the former UST area. The remediation plan for the site includes the removal of VOC sources from the vadose zone through a soil vapor extraction system (SVE), and the remediation of impacted groundwater using in-situ reactive zone (IRZ) technology at the former VD and UST areas.

The IRZ technology relies on enhancing the biologically-mediated reactions by supplying additional organic carbon as an energy substrate to the groundwater system and driving the oxidation/reduction potential (ORP) to a lower, more strongly reduced state. This is accomplished by supplying the groundwater system with a sucrose or carbohydrate source in the form of a mixture of molasses and water. Molasses is a cost-effective and innocuous amendment for groundwater. Indigenous heterotrophic microorganisms readily degrade the molasses carbohydrate which consist mostly of sucrose. The metabolic degradation process utilizes available dissolved oxygen contained in groundwater, and drives the system to a more anaerobic and reduced state. Fermentation of molasses ultimately results in the production of acetate and hydrogen, which serves as the most desirable source of energy for bacteria using sulfate and carbon dioxide. The reductive dechlorination process is presented in Figures 1 and 2.

The IRZ system at the former ITT Barton facility will consist of several injection wells and groundwater monitoring wells. The estimated number of injection wells in the former VD area and former UST area is 10 and 29, respectively. The Discharger proposes to inject up to 100 gallons of carbohydrate solution per well per injection event. The exact location and number of wells will be determined in the field. Figure 3 shows the tentative lay-out of the system. Existing groundwater monitoring wells, MW-6 and MW-7, in the former UST and VD areas, respectively, will be used to monitor the performance of the IRZ system. Two monitoring wells (MW-9 and MW-10) will be installed downgradient of the treatment areas to assure that groundwater off-site is not being adversely affected. Periodic monitoring allows the Discharger to adjust the concentration of the carbohydrate solution, monitor the reactions and the concentrations of VOCs.

Any injection of carbohydrate solution into the groundwater is considered a discharge of waste into the environment as defined by the California Water Code (CWC). However, the discharge of the carbohydrate solution is intended to provide more efficient remediation of chlorinated VOCs. The nearest downgradient drinking water well is Well B7C, state well number: 1S/10W-31P06S, located approximately 1 mile north of the site which is operated by the San Gabriel Valley Water Company. The use of IRZ technology will not impact the downgradient well.

Copies of the Environmental Checklist, the Mitigated Negative Declaration, and the Tentative Waste Discharge Requirements were transmitted to all agencies and persons known to be interested in the matter. In addition, the documents were posted at the City of Industry City Hall and at the Barton Instrument System facility.

PROPOSED ACTION:

The Discharger is responsible for the technology that will be used to remediate groundwater contaminated with VOCs. In addition, the Discharger will take those actions specified by the Regional Board in the waste discharge requirements for protecting water quality. Based upon the results of the attached case studies using IRZ technology, high VOCs and chromium levels were successfully remediated.

The Discharger has established a groundwater-monitoring well network (five on-site monitoring wells) to monitor any impacts to groundwater as a result of this remediation project. In addition, the Discharger will implement a pump and treat system in the event that the nutrient-based solution injection remediation plan is found to be in-effective.

REGULATORY ISSUES:

Because this project involves discharge to groundwater, waste discharge requirements are needed.

In order to comply with the California Environmental Quality Act (CEQA), the Regional Board, as the lead agency for this project under CEQA, must certify the Environmental Checklist and adopt a Mitigated Negative Declaration.

CONCLUSION:

While contaminants are being removed from the soil using the SVE systems, groundwater contamination at the site needs to be addressed. Waste Discharge Requirements will ensure that the proposed remediation technology will be protective of groundwater.

OPTIONS:

- 1) Adopt,
- 2) Adopt with modifications, or
- 3) Deny the Mitigated Negative Declaration and Waste Discharge Requirements.

RECOMMENDATION:

Adopt the resolution approving the Mitigated Negative Declaration and adopting the Waste Discharge Requirements.

ATTACHMENTS:

Figures 1 and 2 - Reductive Dechlorination Process
Figure 3 – Conceptual Layout of IRZ System
IRZ Case Summary