STATEMENT OF BASIS

for

Proposed Changes to the Remedy for Soil and Groundwater Contamination

at

Dana Companies, LLC
5253 McCurry Road
Roscoe, Illinois
ILD 006 114 169

Statement of Basis for Dana Companies, LLC Property Located in Roscoe, Illinois

INTRODUCTION

This Statement of Basis (SB) presents the proposed changes to the remedy to address remaining contaminated groundwater, soil, and indoor air at the former Warner Electric facility currently owned by Dana Companies, LLC ("Dana") located in Roscoe, Illinois. The original remedy was selected by United States Environmental Protection Agency (EPA) in February 1991. The EPA will select an amended final remedy after a 30-day public comment period and consideration of public comments.

This SB is being issued by EPA as part of its public participation responsibilities under the Resource Conservation and Recovery Act (RCRA). It summarizes information that can be found in greater detail in the document entitled, "Revised Workplan to Administrative Order on Consent – April 2009," and other pertinent documents contained in the administrative record for this site. An index to the administrative record is attached. EPA encourages the public to review these documents in order to gain a more comprehensive understanding of the RCRA corrective action activities already conducted at the Dana facility.

EPA may modify the proposed remedy or select another remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on the SB. All documents supporting this SB are contained in the Administrative Record located at the Roscoe Branch Library, 5562 Clayton Circle, Roscoe, IL, and EPA, Region 5 Records Center (7th Floor), 77 W. Jackson Boulevard, Chicago, Illinois.

PROPOSED REMEDY

EPA proposes the following remedy to address all remaining contaminated groundwater, soil, and indoor air at the Dana facility:

- Installation of a soil vapor extraction (SVE) system at the former Warner Electric Facility to reduce the mass of site-related chlorinated volatile organic compounds (CVOCs) in the vadose zone beneath the facility to a level where the remaining CVOC-affected soil represents neither an unacceptable risk to indoor air intrusion, nor an unacceptable source-loading to the groundwater flow system.

- Implementation of an enhanced bioremediation remedy to reduce the CVOC residual mass in the saturated source area near the facility and to increase the attenuation capacity of the

groundwater flow system to a level where the remaining affected groundwater does not represent an unacceptable risk to the identified receptors. The enhanced bioremediation will assist meeting risk-based cleanup criteria for non-potable groundwater use.

- Implementation of a monitored natural attenuation (MNA) approach , which in the long-term, will restore groundwater quality to potable water quality standards.

- Creation and implementation of an environmental covenant to restrict on-site groundwater use, limit site use to industrial/commercial activities, and impose controls on excavation procedures for construction workers and redevelopment workers in areas posing an unacceptable risk.

- Implementation of a modified seep sampling plan along the Rock River to ensure applicable water quality criteria are met and ecological receptors and human health are protected. The remedial objective for surface water in the Rock River is to meet applicable water quality criteria that will be protective of ecological receptors and human health.

- Financial assurance must be provided to demonstrate that Dana will have adequate funding to implement the remedy as chosen by EPA.

Because contaminant levels at the current inflow to the existing groundwater pump-and-treat system are below maximum contaminant levels (MCLs) for drinking water, the existing groundwater pump-and-treat system will be shut down; if contaminant levels downgradient of the pump subsequently elevate to exceed MCLs, the pump-and-treat system will be restarted and further corrective measures addressing groundwater contamination will be assessed.

FACILITY BACKGROUND

The Dana facility is located at 5253 McCurry Road in Roscoe, Illinois. The facility is bounded by residential property to the north of McCurry Road, by a gravel pit and agricultural land west of State Route 251, by a railroad to the east, and by agricultural land and some commercial /industrial properties to the south. The Rock River is located approximately 1.1 miles to the south/south west (see Figure 1).

Land use surrounding the Dana facility is mixed agricultural, commercial, industrial, and residential. Residents are located 500 feet to the north along McCurry Road, and this area is upgradient of groundwater flow. The residential areas south of Hononegah Road are connected to an alternative water source.

The Dana facility began operations in 1957. The Facility (formerly known as "Warner Electric Division" and "Dana Corporation") fabricated metal parts for automotive brakes and clutches. As part of the manufacturing process, metal parts were machined and degreased using

trichloroethene (TCE); 1,1,1 trichloroethane (1,1,1TCA); and methylene chloride. The Dana facility ceased operations in 2004.

SUMMARY OF FACILITY INVESTIGATIONS AND PREVOIUSLY CONDUCTED ENVIRONMENTAL REMEDIATION

In August 1983, the Illinois State Water Survey (ISWS) and the Illinois Environmental Protection Agency (IEPA) conducted a study of nitrate levels in Winnebago County. As part of that study, they tested groundwater wells, including private wells in the Hononegah Estates and Moore Haven subdivisions located in Roscoe, IL. Results of those well tests found groundwater to be contaminated with 1,1,1 TCA, TCE, and the TCE breakdown products cis1,2 dichloroethene (cis1,2DCE) and vinyl chloride. These groundwater well results led to identifying the Dana facility, approximately 1.1 miles to north/northeast of the area, as the source of the contamination. The plume of contamination extended from the Dana facility toward the Rock River, approximately 1.1 mile to the south/southwest (Figure 1). Subsequently, several hydrogeological and water quality investigations were conducted in the vicinity of the Dana facility by county and state agencies (IEPA, 1983; Wehrmann, 1984).

In 1984, IEPA entered into an agreement with Warner Electric Brake and Clutch to perform the following activities: (1) replace the water supply system in the Honenegah Country Estates and Moore Haven Subdivisions; (2) eliminate sources of contamination by removing sludges and soils from on-site lagoons and ponds; and (3) sample groundwater wells on a regular basis. In 1984, Warner installed a municipal water supply system for residents of the Hononegah Country Estates and Moorehaven subdivision, and two on-site wastewater retention ponds were closed, pursuant to an IEPA-approved closure plan. The ponds closure consisted of removal and disposal of 16,000 tons of contaminated sludges and soils which then was backfilled with clean fill material and subsequently covered with a one foot thick compacted layer placed over the surface. In addition the TCE storage tanks were emptied, the barrel storage area was closed, and the utility trenches were cleaned. The sampling of groundwater monitoring wells at the facility and near the Honenegah Country Estates and Moore Haven Subdivisions continued from 1984 through 1989

1989 Administrative Order on Consent

On December 28, 1989, EPA and Dana entered into a RCRA Administrative Order on Consent (AOC) for Corrective Action. The AOC requires Dana to implement interim measures (IMs) by performing the following activities: (1) to provide an alternative water supply to area residents impacted by Dana's contamination; (2) complete a corrective measure to reduce contaminant levels in the groundwater; and (3) meet groundwater standards at the plane of performance wells.

Dana has implemented these IMs by installing a deep water supply well that offers drinking water to residents impacted by Dana's contamination. In addition, a pump-and-treat system was installed in 1991 in the south end of the Moore Haven Subdivision on Edgemere Terrace near the

Rock River. The system was successful in reducing the contaminants in the groundwater in the area. The initial inflow concentrations for trichloroethylene (TCE) to the extraction well in 1992 was 280 parts per billion (ppb) and in March 2010 inflow concentration to the extraction well for TCE is 1.6 ppb. The Maximum Contaminant Limit (MCL) for the Safe Drinking Water Act for TCE is 5 ppb. The system continues to operate and treat water, within it's zone of influence, that is below the MCLs for all constituents. The pump-and-treat system success is measured at wells (plane of performance wells) along Hononegah Road upgradient of the system to the point where contaminant levels have reached MCLs. The plane of performance wells have not met MCLs although contamination has been reduced but has not reached MCLs. The plane of performance wells upgradient location may not be an effective test of the success of the pump and treat system.

1991 Remedy Selection

The 1989 Order provided a 30 day period for public review and comment on the corrective measures listed above, comments were received during these 30 days. The documents concerning the remedy were made available in the Roscoe Public Library. EPA responded to those comments and selected a remedy in a letter dated February 12, 1991. Nowadays, EPA's description of the selected remedy is called a "Final Decision and Response to Comments", but that terminology was not used at the time. After the pump-and-treat system began operating, Dana conducted additional investigations on various aspects of the cleanup pursuant to the 1989 Order, and these investigations are described in the next sections.

1992 Post-Closure Permit Application

In April 1992, Dana submitted a revised RCRA Part B Post Closure Permit Application to IEPA for the two hazardous waste surface impoundments located at the facility. As part of the revised application, Dana prepared a comprehensive summary of groundwater quality data accumulated through quarterly sampling during the first nine years of monitoring (1984-1992) at the facility (RMT, 1992). The report showed that Volatile Organic Compound (VOC) concentrations in on-site and off-site wells had decreased one to three orders of magnitude since implementing the initial corrective measures at the facility

2002 Groundwater and Soil Investigations

During 2002, a series of environmental investigations were conducted to better understand and characterize on-site and off-site conditions. Work was performed in accordance with the document entitled, "Workplan for Groundwater Investigation, Warner Electric Facility, Roscoe, Illinois," dated July 8, 2002. The results of this investigation indicate that several VOCs were present in the groundwater in excess of the cleanup criteria listed in the AOC requiring that the pump and treat system continue to be operated until those criteria are met. However, a comparison of these results with historical results shows that concentrations of VOCs decreased substantially since monitoring began at the site in 1987. The decreasing concentrations are likely a result of a combination of source removal, biodegradation, and the high groundwater velocity

flow rates through the area. None of the sample results suggested the presence of a remaining substantial source area of VOC contamination.

2003 Indoor Vapor Intrusion Investigation

Due to concerns that volatile compounds in groundwater may be entering area homes, EPA requested that Dana conduct a comprehensive indoor/outdoor air sampling program at six separate residences in the Hononegah Estates to assess the potential for unacceptable VOC concentrations in the residences. The source of contaminated groundwater under the residences is from the Facility. Candidate residences were selected based on their proximity to the core of affected groundwater, where concentrations exceeded the U.S. EPA's screening criteria at the water table. Figure 2 shows the locations of the six residences relative to the plume of affected groundwater. On February 18, 2003 an Availability Session and a Public Meeting were held to explain the upcoming indoor air sampling and the November 2002 groundwater sampling that was used to define the homes to be targeted for sampling.

During the November 2003 testing, indoor air samples collected over a 24-hour period were collected from the lowest living level (basement) and ground floor of each residence, as well as from immediately outside each residence. The laboratory results of these samples indicated that VOC levels in excess of the screening criteria were not detected, and that no additional work was needed to address the indoor vapor intrusion issue.

2005 On-Site Groundwater Sampling

To monitor wells at the facility over time, an additional round of on-site groundwater sampling was conducted in October 2005. Monitoring wells MW-1, MW-3AP2, MW-3P1, MW-4AP2, MW-6S, MW-7S, and MW-9S (see highlighted wells in Figure 3) showed the presence of VOCs, although the only exceedance of the cleanup criteria delineated in the AOC was a detection of TCE at MW-3AP2 (6.8 µg/L). Some monitoring wells located immediately downgradient of the former source area, showed reductions in VOC concentrations when compared with historical data.

2006 Soil-Gas Sampling Investigation

To better characterize the concentration and extent of potential source areas beneath and near the Dana facility, a passive-soil-gas (PSG) sampling program was conducted at the facility. Figure 4 depicts the PSG sample locations and the distribution of the mass total CVOCs detected during this program. PSG samples 60, 61, 62, and 73 contained the highest mass of CVOCs and are proximate to the location of the former TCE storage area and the hydraulic and cutting oils storage areas south of the building. These locations represent potential source areas. The data indicated a steep decline in CVOC mass south of the TCE storage area, with a more gradual decline to the north.

A second potential source area exists near former vapor degreaser #1231, where PSG samples 24, 25, and 29 showed a noticeable mass of TCE, and, to a lesser extent, cis-1,2-DCE. Substantial VOC mass was also detected in samples 26, 31, 33, 40, 45, and 47, located in the central portion of the building, west of the floor drain network. Historical drawings show that PSG sample locations 26, 31, 40, and 45 were installed just outside of the eastern wall of the original Warner Electric facility building. PSG samples 33, 47, and 60 were installed just outside of the eastern wall of the first expansion to the original Warner Electric facility building.

In addition to identifying the potential source areas outlined above, Figure 4 also shows several areas where little, if any, CVOC mass was detected. This includes much of the northern and eastern portions of the building, and the area south of the former tank area outside the southern wall of the building, including the wastewater treatment facility. The distribution of VOC mass detected during the PSG program correlates well with the south-southwesterly groundwater flow direction beneath the facility and VOC detections in monitoring wells MW-3AP2, MW-6, MW-7S, and MW-9S/D. The results of the PSG program were subsequently used to conduct a more focused soil and groundwater sampling program that was intended to assess the nature of impacts in the potential source areas.

2006 On-Site Soil and Groundwater Investigation

The Passive Soil Gas Survey helped identify areas to focus further soil and groundwater sampling to assess the nature of impacts in the shallow source area at the Dana Facility. As part of this effort, a series of twelve soil borings (B-11 through B-17, PSG81, PSG82, PSG83, PSG104, and one location labeled "downgradient") were drilled and sampled. Figure 5 depicts the locations of the borings. Overall, the soil sample results showed limited impacts. Figures 6 and 7 shows the distribution of VOCs in cross section. Soil samples from borings B-11 and B-12, located near the former tank area south of the building, contained elevated VOC concentrations (greater than 10 mg/kg) in shallow soil (less than 2 feet below the surface paving), and from a fine-grained silty soil layer encountered at a depth of 9 to 11.5 feet. Deep soil samples from these borings showed much lower concentrations (less than 0.02 mg/kg). The other borings also showed lower VOC concentrations (less than 0.050 mg/kg).

The shallow groundwater results show that elevated levels of cis-1,2-DCE and TCE are present in the area surrounding the former TCE storage area south of the building and along the eastern wall of the first addition to the facility. The highest concentrations of TCE form a narrow elongated zone of affected groundwater that extends from B-13 (eastern edge of first addition to the facility, north of the former tanks) to PSG-104 (south of the former tanks), with concentrations decreasing downgradient. The shallow groundwater results correlate with soil data results around the former tank storage area and with the PSG survey. Sample results from B-15 suggest that a separate, minor TCE source area may exist near vapor degreaser 1231.

To assess groundwater quality near the property boundary, a boring was advanced along the groundwater flow line downgradient from B-12 and B-13 and approximately 40 feet west of monitoring well nest MW-3AP2/MW-3P1. The groundwater sample from this boring, labeled

"DOWNGRADIENT," showed a TCE concentration (15 µg/L) above those historically detected at MW-3AP2 and well below those detected at PSG-104 during vertical groundwater profiling. Figure 10 shows the location of the "DOWNGRADIENT" sample, and the well nest MW-3AP2/MW3PI. These data, along with the groundwater results from PSG81, PSG82, PSG83, and PSG104, suggest that the affected groundwater area forms a narrow plume as it migrates downgradient from the facility. The results from location B15 also suggest that a separate, isolated source may exist in this area.

2008 Investigation and Pilot-Scale Remediation Tests

In order to test potential cleanup choices and to better define contamination location, Dana performed additional investigation work, risk evaluations, and pilot-scale remediation. Investigation activities included indoor air and sub-slab soil-gas testing at the facility, as well as groundwater screening along three separate transects in order to define the precise position of the core of affected groundwater under non-pumping conditions. Risk evaluations included the development of indoor air, groundwater, and surface water screening levels that are suitable as points of comparison for data collected during full-scale remedial actions to assess remedial success. Pilot-scale testing of technologies at the facility included testing SVE for remediation of vadose zone soil and in situ lactate/zero valent iron (ZVI) injection into shallow affected groundwater to enhance naturally occurring enhanced bioremediation. This investigatory work indicated that the remaining soil and groundwater impacts associated with the residual source area at the facility may be effectively addressed by the proposed corrective measures.

SUMMARY OF FACILITY RISKS AND CLEANUP GOALS

Groundwater (Overall)

Groundwater contamination originates from the facility where it contains TCE, 1,1,1-TCA, and their breakdown products. The contamination forms in a narrow zone in the shallow groundwater and migrates towards the Rock River, the groundwater plume is shown in Figure 8. Residents of Hononegah and Moorehaven subdivisions and businesses downgradient from the source, have groundwater under these structures in concentrations of contaminants above U.S. EPA Safe Drinking Water Standards (MCLs). However they obtain their drinking water supply from the North Park Public Water District, the District draws from deeper aquifers not the shallow groundwater impacted by the surface contamination. .

In setting groundwater cleanup objectives for the Dana facility EPA has considered three things: groundwater cleanup levels (both intermediate and long term), planes of performance (i.e. point of compliance), and length of time to complete cleanup goals.

Groundwater cleanup levels represent the specific concentrations of chemicals designed to be protective of groundwater use and other possible routes of exposure, such as contact by construction and redevelopment workers. The long term groundwater cleanup levels at the Dana

facility are derived from MCLs developed under the Safe Drinking Water Act. These are risk-based levels that ensure the groundwater's intended uses will not result in adverse health effects or an excess cancer rate. Intermediate groundwater cleanup criteria will serve as a bridge between active groundwater remediation to reduce source area concentrations, and passive MNA, which will act to restore groundwater to MCL concentrations. Because the area downgradient from the site is served by a public water supply, intermediate cleanup goals must be protective of potable groundwater exposures and must be consistent with the long-term goal of meeting potable groundwater standards through MNA.

Planes of performance (i.e. points of compliance) represent the locations where groundwater cleanup levels will be achieved. Remediation time-frames typically include both the time it would take to implement the remedy and the estimated time to achieve the groundwater cleanup levels at the relevant planes of performance. EPA expects that long term groundwater cleanup levels will be achieved in 20 years.

On-Site Groundwater

The impacted area at the facility contains contaminants in the soil and groundwater from the manufacturing process. The plane of performance for groundwater represents where groundwater cleanup levels should be achieved within a contaminated aquifer. The groundwater plane of performance at the Dana facility is at the facility property boundary. The groundwater will be monitored by three monitoring wells installed southwest of the A – A' transect that is southwest of the facility (see Figure 8).

The intermediate cleanup level for groundwater at the facility is 100 µg/L for trichloroethylene. This will be monitored at the three monitoring wells southwest of the A – A' transect. This level is derived through the use of EPA BIOCHLOR model, including both baseline and predictive models. The modeling predicts that, if the TCE concentrations were reduced to 100 µg/L at the monitoring wells installed southwest of the A – A' transect, then the TCE concentrations 600 feet downgradient, at the southwest corner of the property, would reach the 5 µg/L MCL for TCE, which is the long-term cleanup level for that contaminant. Once the 100 µg/L for trichloroethylene is reached at the three monitoring wells southwest of the A – A' transect the remedial measures at the source would be considered successful and MNA would then be the long term remedial choice for the source area with the plane of performance being the property boundary and achieving 5 µg/L MCL for TCE.

TABLE 1

Groundwater Contaminant	Highest Groundwater Result at Facility	Facility Intermediate Groundwater Cleanup Level (ppb)	Long Term Groundwater Cleanup Level (ppb)
TCE	710	100	5

Off-site Groundwater

When groundwater travels off-site from the facility boundary, it crosses Highway 251 and continues southwest towards the Rock River, crossing Hononegah Road and the Hononegah and Moorehaven Subdivisions before being captured by the recovery well on Edgemere Terrace. The contaminated groundwater is not being ingested, and so the only other potential exposure route associated with the contaminated groundwater is the non-potable use of water, through use of current residential wells, for lawn watering and swimming pools. Accordingly, residents have the potential to be exposed to CVOCs in groundwater by incidental ingestion, dermal contact, and inhalation.

To address this risk, a risk assessment was conducted using the contaminants TCE and cis-1,2-DCE to derive an intermediate cleanup criteria for residential adults and children who may be exposed to affected groundwater through incidental ingestion, dermal contact, and inhalation of vapors while swimming. The intermediate cleanup levels derived for TCE and cis-1,2-DCE are 1,900 µg/L and 6,100 µg/L, respectively. The potential use of impacted groundwater by local residents for non-potable water consumption will not result in adverse health effects because the concentrations observed both on and off-site groundwater are well below the intermediate cleanup levels.

TABLE 2

Groundwater Contaminant	Highest Historical Off-Site Groundwater Level (ppb)	Highest Current Off-Site Groundwater Level (ppb)	Off-Site Intermediate Groundwater Cleanup Level (ppb)	Long Term Groundwater Cleanup Level (ppb)
TCE	*2178	40.4	1900	5
DCE	No result available	18.5	6100	70

* Sampled in 1983

Groundwater Discharging to the Rock River

Groundwater flowing towards the Rock River is sometimes expressed as seeps along the river bank. These seeps are contributing groundwater flow to the surface water body. Sampling of groundwater discharge to surface water was conducted at eight seep locations along the Rock River in September 2009. The results of this seep sampling revealed only TCE concentrations below Intermediate Surface Water Cleanup Criteria and Long Term Surface Water Cleanup Criteria. It was determined that groundwater discharging to surface water (Rock River) did not present a risk.

TABLE 3

Intermediate Cleanup Criteria for Groundwater to Surface Water Discharge at Rock River

Groundwater Contaminant	Highest Groundwater Result in Seeps	Intermediate Surface Water Cleanup Level (ppb)	Long Term Surface Water Cleanup Level (ppb)
TCE	2.7	25	5
1,1,1-TCA	ND	76	200
Vinyl Chloride	ND	120	2
Methylene chloride	ND	340	10
Tetrachloroethylene	ND	45	5
cis 1,2 -DCE	ND	620	70
Dichloro difluoromethane	ND	1960	7000
trans 1,2 DCE	ND	970	100
1,1 DCA	ND	47	200
1,4 Dichlorobenzene	ND	9.4	75
Toluene	ND	253	2,000
Chromium	Not Analyzed	42	50

ND = Non Detect

On-site Soils and Vapors

As mentioned in the Facility Background Section, Soil samples were taken at and around the facility, including through the concrete floor of the building. These samples revealed some impacts located near the areas where solvents were used and/or stored. Currently, the Dana facility is closed. The site is fenced, and access is controlled by a locked gate. The ground surface at and around the source areas is covered with either buildings or pavement. No workers are currently employed at the site. Accordingly, pathways through which facility workers might potentially be exposed to contaminants in soil released from the site are incomplete. Although unauthorized entry to the facility might occur, potential exposure of trespassers to site-specific contaminants through direct contact with surface soil and/or inhalation of fugitive dust would not occur because the site is paved. In addition, any infrequent presence of trespassers at the site would, at most, result in minimal exposure to volatile emissions from subsurface soil and groundwater.

The buildings and pavement at the facility form a relatively impermeable surface cover above the source areas. This likely increases the distance a vapor will travel laterally by impeding vapors from escaping to the atmosphere. The proximity of the source areas to the building and the extensive surface cover (building floor and asphalt) at the facility make vapor intrusion likely.

Vapor intrusion occurs as VOCs migrate into a building via advective/convective transport following diffuse migration of VOCs through the soil column. As affected soil vapor migrates near a building floor, convective air movement within the soil column transports the vapors through cracks between the foundation and the basement slab floor. The convective migration is induced by a negative pressure within the structure caused by a combination of wind effects and stack effects due to building heating and mechanical ventilation.

The goals are no direct exposure to soil or gas contaminated above the indoor air cleanup levels. The proposed remedy is to control the source of groundwater as not to provide a source for vapor under the facility floor or a contribution to groundwater.

As mentioned in the Facility Background Section, a 2006 passive soil gas study was conducted indicating areas of elevated soil gas concentrations under the former facility. The 2006 passive soil gas study was a screening tool and was used to target the 2008 sampling. Sub-slab results taken in 2008 showed elevated readings near the TCE storage area. Samples SS-07 (530ppm for TCE), SS-08 (900ppm for TCE) and SS-9 (640 ppm for TCE), Indoor air results at the same locations show greatly reduced levels ; SS-07 (0.012 ppm for TCE), SS-08 (0.013 ppm for TCE) and SS-9 (0.016 ppm for TCE), indicating there is attenuation from the building floor. Also, a pilot study was conducted using Soil Vapor Extraction (SVE) to remove soil gas from underneath the building. This pilot test proved successful. Therefore, the building floor will be considered the plane of performance for the soil gas concentrations. The table below summarizes the industrial cleanup goals for indoor air.

TABLE 4

Industrial Cleanup Goals for Indoor Air

Indoor Air Contaminant	Highest Facility Indoor Air Level (υg/m3)	Facility (Industrial) Indoor Air Cleanup Level (υg/m3)
TCE	16	20.4
1,1,1-TCA	0.83	7300
Vinyl Chloride	ND	9.29
Methylene chloride	ND	87
Tetrachloroethylene	5.8	6.93
cis 1,2 -DCE	2.1	N/A
Dichloro difluoromethane	ND	292
trans 1,2 DCE	ND	87.6
1,1 DCA	ND	25.6
1,4 Dichlorobenzene	ND	3.72
Toluene	2.5	7300

ND = Non Detect

Off- Site Soils and Vapors

As summarized above, the potential for indoor vapor intrusion at homes downgradient from the Dana Facility was addressed in a 2003 investigation that was conducted at six separate residences in Hononegah Estates. During the November 2003 testing, indoor air samples were collected from the lowest living level (basement) and ground floor, as well as outside each residence. There were no detections in excess of the screening criteria established for the investigation. These results represent a sample set collected over the most impacted residential area and screened using residential standards. Based on these findings, no additional work is currently anticipated to assess these issues.

SCOPE OF CORRECTIVE ACTION

Corrective measures are necessary to address contamination present in groundwater and soil, and potentially indoor air, at the Dana facility, as well as groundwater contamination downgradient of the facility and potential contamination to the Rock River.

Contaminated groundwater is a threat because of the long-term potential for contact and inhalation of vapors from groundwater by construction and redevelopment workers, and possible future public use. The immediate cleanup objectives are to remediate groundwater contamination at the source to protect indoor workers, and construction and redevelopment workers, and to reduce the source of the plume. The long-term cleanup objective is to reduce the contaminant concentrations throughout-the-plume to achieve protective groundwater cleanup levels, MCLs, for the local aquifer within a reasonable time-frame (i.e. 20 years).

Areas of contaminated soil pose a risk due to the long-term potential for contact/inhalation by workers and impacts on indoor air, and act as potential source areas for contaminants migrating to groundwater. The immediate cleanup objective is to remediate soil contaminant sources by using soil vapor extraction to protect indoor workers, and construction and redevelopment workers. This objective requires environmental covenants to manage site use. The long-term cleanup objectives are to reduce soil contaminant concentrations at the facility to eliminate migration to groundwater and to expedite the return of the aquifer to its maximum beneficial use.

The existing pump and treat system has now reached the end of it's effectiveness, as evidenced by the fact that it is currently drawing groundwater with contaminant concentrations below EPA's established Maximum Contaminant Levels. EPA's new proposed remedy envisions phasing out operation of the pump and treat system and focusing on addressing the source areas near the facility and monitoring the groundwater and groundwater/surface water seep locations downgradient.

SUMMARY OF ALTERNATIVES

1. No Action Alternative

The no action alternative was evaluated as a baseline for comparison to other alternatives. No action would be taken to remediate groundwater, soils, or vapors that contain constituent concentrations exceeding applicable standards at or beyond the Plane of Performance.

2. Continued Pump and Treat Alternative

The Continued Pump and Treat Alternative is to leave the Pump and Treat System in place and operating and to not address the source area contamination near the facility with an engineering solution.

3. SVE/Enhanced Bioremediation/MNA Alternative

The use of Soil Vapor Extraction (SVE) would use a vacuum system to collect and to remediate vapors from soil underneath the Dana Facility. This will also lessen the soil contamination contribution to groundwater contamination. Enhanced Bioremediation at and near the Dana facility will reduce the groundwater contamination in that area. Enhanced Bioremediation consists of injecting compounds into the groundwater to use the natural bacteria in the environment to clean the contaminants. Currently, degradation by natural bacteria of some contaminants in the groundwater is taking place and "enhancing" that process by providing food for the bacteria population will help it happen faster. In addition, lactate and zero valent iron will also be injected into the subsurface to act on the chlorinated contaminants to break them down. The long term remediation will utilize MNA to monitor the natural degradation of contamination in groundwater.

Groundwater monitoring near the Rock River and seep sampling at the Rock River will insure no continued migration of the plume. Implementing an institutional control to limit groundwater use at the site and to restrict land use to commercial/industrial on the facility property and restriction on excavations are needed to protect workers. Finally, a financial assurance mechanism to insure Dana has the money to implement the remedy now and in the future is also important part of the proposed remedy.

DESCRIPTION OF PROPOSED REMEDY

Corrective measures are necessary to address remaining contamination present in groundwater, soil, and indoor air in the vicinity of the Dana facility.

Soil Vapor Extraction

Soil Vapor Extraction (SVE) is the removal of soil vapor from below the ground surface. A pilot test was conducted on a SVE system in 2008, portions of the facility were used to test the viability of SVE and the pilot test results show that SVE works well in extracting TCE and chlorinated compounds from below the concrete slab at the facility, The SVE system provides a vacuum on individual extraction points through the facility floor. For this site, the points are located within the former Dana/Warner Electric building in areas where solvents were used and investigations revealed contamination below the floor. Portions of the SVE extraction system have removed vapor in some areas of the facility. The SVE will continue to operate until the remaining soil vapor does not pose an unacceptable risk to indoor air intrusion, or represent an unacceptable source-loading to the groundwater flow system. It is anticipated it will take 3 to 5 years to reach risk based goals for indoor air cleanup.

Enhanced Bioremediation

Enhanced bioremediation means feeding the microbes that are already degrading the contaminants in the groundwater to enhance their number and effect on the contaminant. The source of the microbial food is a sugar (lactate), along with zero valence iron, yeast extract, and sodium sulfite. The injections will focus on the affected groundwater near the TCE storage area as well as other impacted areas near the western end of the facility. Pilot tests of the injections confirm its effectiveness, and some of the injections have already been completed. Four groundwater monitoring wells (source area monitoring wells) downgradient from the TCE storage area will be sampled to insure the effectiveness of this remedy. In the intermediate term, enhanced bioremediation will assist Dana in meeting the risk-based cleanup criteria for non-potable groundwater use.

Monitored Natural Attenuation

MNA, the “natural attenuation process” includes a variety of physical, chemical,or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. The goal is to restore the aquifer to drinking water standards. Eleven specific monitoring wells will be sampled to ensure the effectiveness the MNA remedy. It is anticipated from the current contaminant levels and the aquifer flow rate that in 10 to 20 years drinking water standards will be reached.

Seep Sampling along the Rock River

The groundwater remediation system currently collects and treats the affected groundwater prior to its discharge to the Rock River. The proposed remedy is to operate the currently active groundwater remediation system until it can be shown that the groundwater flowing naturally without the pumping and treatment poses no unacceptable risk to the public or the environment.

The current inflow to the pump and treat system is below the MCLs. The current data supports the shutdown of the pump and treat system based on the groundwater data.
The plane of performance for the groundwater/surface water interface (i.e. the location where groundwater results meet water quality standards) is at the monitoring wells along Edgemere Terrace downgradient of the pumping well and upgradient of the Rock River (shown as Plane of Performance # 3 on Figure 8). To address potential contamination to surface water at the groundwater/surface water interface, seeps along the Rock River will be sampled annually for two years to ensure contamination levels in the surface water remain protective of ecological receptors and human health. Seep sampling will take place when Rock River levels are low enough to allow flow from seeps.

Institutional Control

An environmental covenant will be implemented to restrict on-site groundwater use, limit site use to industrial/commercial activities, and impose controls on excavation procedures for construction workers and redevelopment workers in areas posing an unacceptable risk. It is anticipated the environmental covenant will be put in place in a timely manner.

Financial Assurance

Dana will be required to provide financial assurance to ensure that the remedy can be implemented over its lifetime of approximately 20 years. Portions of the remedy that are not already in place need to have cost estimates. The cost estimates will be required to be updated annually. The acceptable types of financial assurance may include trust fund, surety bond, letter of credit, financial test and corporate guarantee.

EVALUATION OF PROPOSED REMEDY AND ALTERNATIVES

This section presents the process used to evaluate the three cleanup alternatives and the results of the evaluation for contaminated groundwater. The evaluation criteria used are described in the May 1, 1996, Advance Notice of Proposed Rulemaking (ANPR) for Corrective Action at Hazardous Waste Management Facilities 61 Federal Register 19432. Although the rule was never published as a final rule, we have determined that these criteria are appropriate for selecting corrective measures at this facility. The ANPR criteria are applied in a two-phased evaluation: Proposed remedies are screened to see if they meet the four threshold criteria. The remedies that meet the threshold criteria are then evaluated using five balancing criteria to identify the remedy that provides the best relative combination of attributes.
The threshold criteria require that all remedies: (1) be protective of human health and the environment; (2) attain media cleanup standards (concentration levels of hazardous constituents identified by U.S. EPA as protective of human health and the environment); (3) control the source(s) of releases of hazardous waste (including hazardous constituents) that pose threats to human health and the environment; and (4) comply with applicable standards for waste management. The cleanup standards for the contaminated groundwater at the Facility are Safe

Drinking Water Act Maximum Contaminant Levels (MCLs). The balancing criteria are: (1) long-term reliability and effectiveness; (2) reduction of toxicity, mobility, or volume of wastes; (3) short-term effectiveness; (4) implementability; and (5) cost.

The threshold criteria have been evaluated by U.S. EPA for all the proposed remedies. Alternative 1, the no action alternative, and Alternative 2, the continued pump and treat alternative do not meet all of the threshold criteria and are not considered for evaluation by the balancing criteria. Alternative 1 does not protect human health and the environment, control the source, attain any cleanup standards, or propose any waste management. Alternative 2 does not control the continuing source of releases at the Dana facility. U.S. EPA determined Alternative 3 meets the threshold criteria and evaluation under the balancing criteria finds it the best relative to the balancing criteria as well.

Threshold Criteria

Protection of Human Health and the Environment

The overall protection of human health is addressed effectively for groundwater by source-area removal of contaminants at the facility, monitoring of groundwater, and implementation of institutional controls. Source removal through enhanced bioremediation using injection will reduce contaminants in subsurface soils and the water table to expedite groundwater cleanup. Monitoring wells within and at the perimeter of the groundwater contaminant plumes will protect water-well users in the area and will allow U.S. EPA to assess the effectiveness of natural attenuation. Institutional controls will restrict land use and groundwater usage, and, combined with the proposed treatment of soil and groundwater using enhanced bioremediation and SVE technology, will effectively protect human health. Both SVE and enhanced bioremediation have been effective in the past in achieving cleanup to the levels needed at the site. Source areas of contamination will be effectively addressed by the SVE treatment of soil gas and enhanced bioremediation which treats the contaminated shallow groundwater.

Attainment of Media Cleanup Standards

Source areas of contamination are addressed by the treatment of soil, and contaminated shallow groundwater by enhanced bioremediation. The standards for intermediate and long term goals for off-site, on-site groundwater, surface water, and indoor air are documented in the Tables 1, 2, 3 and 4 in this Statement of Basis and verifiable through long term monitoring. The remedies selected are capable of attaining the goals in Tables 1, 2, 3 and 4. Groundwater, surface water and indoor air will be monitored to assess trends in and ensure the attainment of groundwater cleanup goals within a reasonable time-frame.

Controlling the Sources of Release

The existing pump and treat system was effective at removing contamination, but is no longer effective. SVE and enhanced bioremediation will control the source materials remaining under the surface, eventually leading to cleanup of the site. This remedy choice provides an effective source control program

Proper Management of Remediation Waste

Both technologies are accepted for treatment of soils and groundwater and involve minimal handling of waste. Vapors extracted will be captured and disposed of properly.

Balancing Criteria

Long-term Reliability and Effectiveness

Reliability of the proposed remedy is evaluated through O&M requirements, demonstrated effectiveness of MNA, and achievement of intermediate and long term goals for off-site, on-site groundwater, surface water, and indoor air. Enhanced bioremediation through injection and the SVE technology are proven technologies and have been assessed in field pilot tests at the site before full-scale implementation. Enhanced bioremediation enhances the bioremediation which breaks down the contaminants into harmless components. The SVE technology will reduce the mass of the contaminants and remove them from the subsurface. The groundwater remedy will be monitored to ensure reliability. In the alternative, if groundwater cleanup levels are not achieved within a reasonable time-frame, a contingent remedy proven to cleanup groundwater will be used. Contingent remedies may include in-situ chemical oxidation (ISCO), thermal treatment, permeable reactive barriers, physical containment, or excavation.

Reduction of Toxicity, Mobility or Volume of Waste

Treatment of contaminant mass from on-site source areas will reduce the volume and prevent further migration of contaminants. Monitoring will assess the reduction in toxicity of contaminants in groundwater.

Short-term Effectiveness

The enhanced bioremediation through injection and the SVE technology proposed will be monitored to ensure the attainment of immediate and intermediate goals. In addition these technologies have been shown in the short term to be effective in pilot tests conducted at the site.

Implementability

The enhanced bioremediation and SVE technology are well proven and pilot tests have adequately assessed their implementability. If necessary, State permits will be obtained for

enhanced bioremediation through injection. Institutional controls in the form of environmental covenants will be placed on the deed to restrict land use, groundwater use, and excavation activities.

Cost

The estimated cost of the total proposed remedy is $992,000.00. Portions of the remedy already in place have used a portion of that cost estimate. Cost estimates will be required to be updated annually.

Based on information currently available, EPA believes the proposed remedy provides the most cost-effective combination of components, with respect to all media, that fully ensures the protection of human health and the environment. All applicable standards regarding groundwater protection, worker protection, and on-site/off-site waste management will be complied with during the implementation of the remedy.

PUBLIC PARTICIPATION

U.S. EPA seeks input from the local community on the proposed remedy to address contaminated groundwater, soil, and indoor air at the Dana facility. There will be a 30-day public comment period for the local community to participate in the final remedy selection. In addition, a public meeting can be requested by contacting U.S. EPA

The administrative record for the Dana facility is available at the following locations:

Roscoe Branch Library
5562 Clayton Circle
Roscoe, IL 61073
(815) 623-6266

U.S. Environmental Protection Agency, Region 5
RCRA Records Center
77 West Jackson Boulevard, 7th Floor
Chicago, Illinois 60604-3590
(312) 886-0902
Hours: Mon-Fri, 8:00 a.m. - 4:00 p.m.

After consideration of public comments on the proposed remedy, EPA will select a final remedy and document its selection in a document entitled, "Final Decision and Response to Comments." In addition, public comments will be summarized and responses provided. The Final Decision and Response to Comments will be drafted at the conclusion of the public comment period and incorporated into the administrative record.

To send written comments or request technical information on the Dana facility, please contact:

Mr. Christopher Black
EPA Project Coordinator
U.S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Corrective Action Section, LU-9J
Chicago, Illinois 60604-3590
(312) 886-1451
E-mail: black.christopher@epa.gov

To request information on the public comment period for the proposed remedy at the Dana facility, please contact:

Ms. Terri Rancher
Community Relations Coordinator
U.S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Internal Services Section, LP-7J
Chicago, Illinois 60604-3590
(312) 886-4188

E-mail: rancher.terri@epa.gov

FIGURES