UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

W.R. GRACE & CO. - CONN.
COLUMBIA
HOWARD COUNTY, MARYLAND

MDD074933961

U.S. EPA, REGION III
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UNDER RCRA SECTION 3008(u)

W.R. GRACE & CO. - CONN.
COLUMBIA, HOWARD COUNTY, MARYLAND

I. INTRODUCTION

The United States Environmental Protection Agency ("EPA") has prepared this Statement of Basis ("SB") for the W.R. Grace & Co. - Conn. ("W.R. Grace") Washington Research Center ("Facility") located in Columbia, Howard County, Maryland. The purpose of this SB is to explain EPA's proposed remedy for the Facility; provide a summary of investigation results used in the remedy selection process, and to solicit public comments on the proposed remedy prior to EPA making its final remedy decision.

With this SB, EPA is proposing to remediate groundwater contamination at the Facility through a combination of groundwater treatment and monitoring and monitored natural attenuation. EPA will consider and address all comments submitted in response to its proposed remedy described in this SB. EPA may modify the proposed remedy or select another remedy based on public comments and/or new information.

The Final Remedy will be described in a Final Decision and Response to Comments. EPA anticipates implementing the Final Remedy through a permit modification to the existing corrective action permit (the "Permit") issued by EPA to W.R. Grace on July 10, 1992 under Section 3004(u) of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. Section 6924(u). The Permit, which on its terms expired on August 14, 2002, has been administratively extended by EPA until the effective date of a new or modified corrective action permit.

II. FACILITY BACKGROUND

The Facility is located in Columbia, Maryland, northeast of Route 32 and north/northwest of Cedar Lane. The Facility consists of approximately 125 acres, including landscaped grassy areas; office, research and support buildings; two ponds, and wooded areas. The Middle Patuxent River is located just east of the Facility. See Attachment 1 for a Facility map.

W.R. Grace operated a research and development facility, known as the Washington Research Center, at the Facility from the late 1950s until the late 1990s, when W.R. Grace's Davison Chemical Division and Davison Chemical corporate headquarters moved to the Facility.

During the 1960s, W.R. Grace burned and disposed of wastes in an area referred to as the Former Landfill Area located in the northeast area of the Facility. The Former Landfill Area covers approximately 7000 square feet. In 1985, W.R. Grace removed and disposed of waste

from the Former Landfill Area and closed the landfill.

W.R. Grace used a former drum storage area, which is located west and north of Building 16, for the collection, staging and storage of drummed solvent wastes. Leaking drums in the storage area are believed to have been the source of groundwater contamination at the Facility. In 1986, W.R. Grace detected VOCs, including trichloroethene ("TCE") and its degradation products, in drinking water wells SW8 and SW9 at the Facility. Those wells were subsequently shut down and the Facility is now supplied with public water.

III. SUMMARY OF ENVIRONMENTAL INVESTIGATIONS

Between 1985 and 1991, to better understand site geology and hydrogeology, W.R. Grace completed several field investigations and installed groundwater monitoring wells at the Facility. In 1995, in accordance with the Permit, W.R. Grace conducted a RCRA Facility Investigation ("RFI"). The purpose of the RFI was to determine fully the nature and extent of any releases of hazardous wastes or hazardous constituents from the Facility. During the RFI, W.R. Grace identified two **solid waste management units** ("**SWMUs**") at the Facility: the Former Landfill Area (SWMU #1) and the Main Site (SWMU #2) which includes the former drum storage area; Building 16 and a pond.

The following summarizes W.R. Grace's environmental investigations of the Facility. For a more comprehensive description of the RCRA activities that have been conducted at the Facility, EPA encourages the public to review the Administrative Record located at the Howard County Central Library and at EPA Region III offices in Philadelphia. The addresses of those locations are provided in Section VIII, herein.

A. Groundwater Investigation

1. Main Site

In 1987, W.R. Grace conducted groundwater sampling at the Main Site and found the following VOCs at levels above the Maximum Contaminant Level ("MCL") established by the Safe Drinking Water Act, 42 U.S.C. Section 300g-1 in Facility groundwater: trichloroethene ("TCE"); 1,1-dichloroethene ("1,1-DCE"); 1,1,1-trichloroethane ("1,1,1-TCA"), and trans-1,2-dichloroethene ("trans-1,2-DCE"). The maximum concentrations of those contaminants found in groundwater associated with the Main Site are summarized in Table 1, below.

Table 1
(Main Site 1987)

CONTAMINANT	MCL	Well No. MW8
TCE	5 ug/L	10,300 ug/L
1,1 -DCE	7 ug/L	920 ug/L
1,1,1-TCA	200 ug/L	4200 ug/L
trans-1,2-DCE	100 ug/L	1300 ug/L

In 1989, W.R. Grace installed a groundwater recovery and treatment system at the Facility to address groundwater contamination associated with the Main Site. The system consists of five (5) recovery wells connected to the granular activated carbon ("GAC") treatment system. W.R. Grace discharges treated water under a National Pollutant Discharge Elimination System ("**NPDES**") permit issued by the Maryland Department of the Environmental ("MDE"). W.R. Grace is currently recovering and treating approximately 70,000 gallons per day ("**gpd**"), under its NPDES permit and a State of Maryland Water Appropriation and Use Permit. As discussed in Section III.B, immediately below, the source area has been addressed and the treatment system has improved ground water quality.

As part of the EPA-approved RFI workplan, in 1995 W.R. Grace installed additional groundwater monitoring wells at the Facility and collected groundwater samples from the new and already existing wells. Table 2, below, summarizes the analytical results for those contaminants which were in concentrations in excess of their respective MCLs.

Table 2
(Main Site 1995)

CONTAMINANT	MCL	Well No. MW3	Well No. MW5	Well No. MW7	Well No. MW8	Well No. MW9	Well No. MW17	Well No. MW22
TCE (ug/L)	5 ug/L	1400	86	19	200	6	590	130
1,1 -DCE (ug/L)	7 ug/L				12		15	
1,1,1-TCA (ug/L)	200 ug/L	260						
vinyl chloride (ug/L)	2 ug/L		8					

2. Former Landfill Area

In 1995 W.R. Grace conducted groundwater sampling in the area of the Former Landfill Area and found tetrachloroethene ("PCE"), 1,1,2,2-tetrachloroethane ("1,1,2,2-PCA") and TCE above their respective MCLs in Facility groundwater. The maximum concentrations of those contaminates found in groundwater are summarized in Table 3, below.

Table 3
(1995 Former Landfill Area)

CONTAMINANT	MCL	RBC	Well No. MW13	Well No. MW19

PCE	5 ug/L	0.1 ug/L		160 ug/L
1,1,2,2- PCA	N/A	0.053 ug/L	1,300 ug/L	500 ug/L
TCE	5 ug/L	0.026 ug/L	120 ug/L	130 ug/L

W.R. Grace has relied on natural attenuation processes to address the groundwater contamination associated with the Former Landfill Area. Groundwater monitoring is confirming the reliability and effectiveness of the natural attenuation processes at the Facility.

B. Soil Investigation

1. Main Site

In 1990, as part of interim measures under the Permit, W.R. Grace installed a soil vapor extraction system ("SVES") at the Main Site in the area of Building 16. The purpose of the SVES was to remediate VOCs in the soil, which, in turn, reduced VOCs in the groundwater. W.R. Grace operated the SVES until 1997 when groundwater data showed 1,1-dichloroethane at 1.1 ug/L and 1,1,1-trichloroethane at 0.034 ug/L, well below their respective MCLs of 7 ug/L and 200 ug/L. EPA approved the abandoning of the wells associated with the SVES, and the system was dismantled in September 1997. The SVES was installed to address contamination in the area of Building 16 while the groundwater recovery system is addressing the contamination for the entire Main Site.

2. Former Landfill Area

In 1991, as part of the RFI, W.R. Grace conducted a soil investigation in the Former Landfill Area. Soil boring samples detected TCE, 1,1,1-TCA, 1,3-dichlorobenzene, 1,1,2,2-PCA, and PCE in on-site soils. See Table 4, below, for the maximum concentrations of those contaminants found in soils. Although concentrations of those contaminants exceeded soil screening levels ("SSLs"), analytical results were not above Region III's risk-based concentration ("RBC").

There is no threat of exposure for direct contact with the soil based on sampling done at the Facility.

Table 4
(1991 Soil Sampling Event of Former Landfill Area)

CONTAMINANT	RBC	SSL	Soil Boring SB-1	Soil Boring SB-2	Soil Boring SB-3
TCE	1.6 mg/kg	0.000013 mg/kg	0.011		
1,1,1-TCA	22,000 mg/kg	1.6 mg/kg		0.2	
1,3-dichlorobenzene	230 mg/kg	0.015 mg/kg	0.019		
1,1,2,2-PCA	3.2 mg/kg	0.000034 mg/kg)		0.049	
PCE	1.2 mg/kg	0.00023 mg/kg			0.064

C. Surface Water and Stream Sediment Investigation

W.R. Grace investigated surface water at the Facility to determine whether it is being impacted by contaminated groundwater. TCE was detected in the stream leading from the former firewater pond at the Main Site to the Middle Patuxent River in concentrations of less than 50 ug/L. W.R. Grace determined that there is no impact to the pond or the river into which

the stream flows.

W.R. Grace also assessed potential impacts to sediment from the presence of VOCs and determined that there are no significant impacts to sediments.

D. Drinking water survey

In December 1986, W.R. Grace identified several VOCs, including TCE, above their respective MCLs in on-site water supply wells SW8 and SW9. As stated in Section II, above, W.R. Grace no longer uses those wells for water supply. The Howard County Water and Sewer District provides potable water to the Facility.

Drinking water wells in the vicinity of the Facility have not been impacted by Facility related groundwater contamination. In response to the detection of TCE in W.R. Grace's supply wells, the Howard County Health Department conducted an extensive domestic well sampling and analysis program of neighboring properties. 1,1,1- TCA was detected in a cluster of wells approximately 1/4 mile from the Facility, with clean wells between this cluster and the Facility. It was later determined that the 1,1,1-TCA contamination was caused by a separate residential source.

E. Ecological Investigation

W.R. Grace conducted an Ecological Risk Assessment at the Facility to determine whether chemical constituents detected at the Facility pose a potential current or future risk to ecological receptors. The ecological risk assessment shows no significant ecological impact concerns and no further ecological evaluation is recommended for the Facility.

IV. SUMMARY OF FACILITY RISKS

W.R. Grace submitted a human health risk assessment to EPA in December 1997. The data identified constituents of concern ("COCs") at the Facility, along with some exposure pathways. EPA has evaluated the submitted data, and has determined that: 1) for surface water, the highest detected concentrations of Facility related compounds in surface water do not pose a significant risk to human health (i.e., considerably below one in a million lifetime risk for carcinogens, and no adverse effect for non-carcinogens); 2) for direct contact with soils, the highest detected concentrations of chemicals do not pose a significant risk to human health; and 3) for groundwater, there is no risk related to groundwater exposure, since there are no anticipated current or future receptors to groundwater, either on or immediately adjacent to the Facility (between the Facility and the Middle Patuxent River).

V. PROPOSED CORRECTIVE MEASURES

Following the RFI, W.R. Grace completed a Corrective Measures Study ("CMS"). The

CMS evaluated corrective measure alternatives to address contamination identified during the RFI. EPA approved the CMS on April 5, 2006.

In this SB, EPA is proposing to select as the final remedy a combination of corrective measures that W.R. Grace has designed and is now implementing at the Facility as interim measures under the Permit. Under the interim measure provisions of its Permit, W.R. Grace maintained and operated the groundwater treatment and recovery system and the SVES at the Facility. These interim measures have reduced levels of soil and groundwater contamination at the Facility. The analytical results from the most recent sampling events, which occurred in the Spring and Fall 2005, for the Main Site showed TCE and 1,1-DCE at concentrations of 89.8 ug/L and 1.5 ug/L, respectively, and for the Former Landfill Area showed PCE and 1,1,2,2-PCA at concentrations of 130 ug/L and 150 ug/L, respectively.

For soils, EPA is proposing no further action because there is no threat of exposure from direct contact with Facility soils.

For groundwater, the Facility's groundwater cleanup standards consist of the MCLs for TCE; 1,1,1-TCA; 1,3-dichlorobenzene; 1,1,2,2-PCA; 1,1 DCE; trans-1,2-DCE; PCE, and vinyl chloride. See Attachment 3 for a summary of the cleanup standards. The proposed corrective measures for the Main Site and the Former Landfill Area are summarized as follows:

A. Main Site

W.R. Grace will continue to operate the groundwater recovery and treatment system by withdrawing, treating and discharging approximately 70,000 gpd of groundwater from five recovery wells (RW1, RW3, RW8, RW9, and RW17) until the Groundwater Cleanup Standards are achieved and maintained at the Facility or until EPA determines that an alternative remedy is necessary to achieve and maintain the Groundwater Cleanup Standards for the Facility. W.R. Grace will perform annual and semi-annual sampling of the recovery wells to gauge the effectiveness of the recovery treatment system in controlling and remediating the impacted bedrock groundwater. EPA will oversee the treatment and monitoring activities and evaluate the continued effectiveness of W.R. Grace's groundwater recovery and treatment program.

B. Former Landfill Area

W.R. Grace will remediate groundwater in the Former Landfill Area using monitored natural attenuation ("MNA"). MNA would consist of allowing VOC concentrations in the groundwater to decrease through naturally-occurring processes such as biodegradation, dilution and dispersion. W.R. Grace would perform annual and semi-annual monitoring of the wells to gauge the effectiveness of the MNA.

While on-site groundwater is not currently used as a drinking water source and W.R. Grace has no plans for such future use, to provide additional protection, EPA proposes to prohibit, through a modification to the Permit, the use and/or development of on-site wells for drinking water or other domestic uses at the Facility. W.R. Grace shall also submit to EPA for

review and approval a notice to be filed with the Recorder's Office, Registry of Deeds, or other office where land ownership and transfer records are maintained for the Facility ("Title Notice"). The Title Notice shall provide notice to all successors-in-title that the Facility is subject to a RCRA Corrective Action permit and shall recite the prohibition against the development of on-site wells for drinking water or other domestic use at the Facility. The prohibition will be effective as long as necessary to prevent exposure while the plume is being remediated.

For surface waters and sediments, EPA is proposing no further action because EPA has determined that there are no significant impacts to surface waters or sediments.

VI. EVALUATION OF CRITERIA

This section provides a description of the criteria EPA uses to evaluate proposed final remedies under the Corrective Action Program. The criteria are considered in two phases. In the first phase, EPA evaluates three remedy threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

A. Threshold Criteria

EPA's evaluation of the threshold criteria follows:

1. Protect human health and the environment

For groundwater related to the Main Site, the on-site groundwater recovery and treatment system, which W.R. Grace has been operating at the Facility for nearly 17 years, has reduced the mass of contamination remaining on-site and has prevented further migration of contaminants in the groundwater. The proposed ongoing monitoring program will ensure long-term protectiveness to human health and the environment.

For the groundwater related to the Former Landfill Area, concentrations have decreased through W.R. Grace's reliance on natural attenuation processes. The proposed ongoing monitoring program will ensure long-term protectiveness of human health and the environment.

From an ecological standpoint, EPA has no evidence that there are impacts to surface water or soils at the Facility.

2. Achieve media cleanup objectives

VOC concentrations in the groundwater have steadily declined since W.R. Grace began operating the groundwater recovery and treatment system at the Main Site and has been monitoring the natural attenuation process at the Former Landfill Area.

3. Control the source(s)

With respect to the Main Site, W.R. Grace removed the source of contaminants from the soil and installed and maintained an SVES, thereby, eliminating, to the extent practicable, further releases of hazardous constituents from on-site soils as well as the source of the groundwater contamination. With respect to the Former Landfill Area, W.R. Grace's groundwater recovery and treatment system has reduced the mass of VOC contamination in the groundwater and has minimized the future migration of contaminants in the groundwater.

B. Balancing Criteria

EPA is satisfied that the proposed remedy is protective of human health and the environment; and, therefore, a complete evaluation of the balancing criteria is unnecessary. Nonetheless, EPA presents the seven criteria below to illustrate the suitability of the proposed remedy:

1. Long-Term Reliability and Effectiveness

W.R. Grace's interim measures have provided a permanent, effective remedy to address the groundwater contamination. Groundwater monitoring is confirming the reliability and effectiveness of the groundwater recovery and treatment system and natural attenuation processes at the Facility. EPA is proposing to keep the recovery and treatment system running until the Groundwater Cleanup Standards are achieved and maintained at the Facility.

EPA also considers the prohibition of on-site groundwater use for drinking purposes as a long-term component of the remedy. W.R. Grace has stopped using groundwater at the Facility for domestic use and EPA's proposed remedy will require institutional controls to prohibit the development of on-site wells for drinking water or other domestic uses at the Facility.

2. Reduction of Toxicity, Mobility, or Volume of Wastes

Groundwater monitoring data indicate that the groundwater recovery and treatment system and natural processes at the Facility are reducing the toxicity of the VOCs. Continued monitoring is expected to confirm this trend.

3. Short-Term Effectiveness

The short-term effectiveness of a remedy is related to the risks posed to the community and workers involved in the design, construction and implementation of the remedy. The short-term risks posed by the proposed remedy for the Facility are minimal. With respect to groundwater, the levels of contamination at the Facility are being addressed because they exceed the long-term exposure represented by anyone drinking the water for a period of years. The only

potential short-term exposures to groundwater at the Facility is to workers taking environmental samples or to workers excavating soil in the vicinity of the contaminated plume. Pursuant to the Permit, W.R. Grace has submitted a Health and Safety Plan to EPA that provides for proper worker training and protective clothing if groundwater exposure is expected. It is also relevant to note that the current levels of groundwater contamination do not represent an immediate threat to anyone who may be exposed during routine sampling or construction activities.

4. Implementability

Implementability includes the technical and administrative feasibility of constructing and operating the proposed remedy. The proposed remedy for the Facility is both technically and administratively feasible. The groundwater monitoring technology and protocol are already in place and have been approved by EPA. Further, EPA proposes to implement the proposed remedy through a permit modification which will include institutional controls.

5. Cost

W.R. Grace has already expended capital costs in implementing the above described interim measures at the Facility. The additional cost required by operation and maintenance is an efficient use of W.R. Grace's resources.

6. Community Acceptance

The local community's acceptance of EPA's proposed remedy will be evaluated after the public comment period and will be described in the Final Decision and Response to Comments.

7. State Acceptance

MDE's acceptance of EPA's proposed remedy will be evaluated after the public comment period and will be described in the Final Decision and Response to Comments.

VII. ENVIRONMENTAL INDICATORS

EPA has established two environmental indicators that are designated to measure the human health and groundwater impacts of RCRA facilities. These two indicators use environmental data and apply a decision matrix to determine that human health impacts are "under control" and that groundwater contamination is "under control". W.R. Grace met these indicators at the Facility in 2001. EPA believes that these environmental indicators provide additional evidence that the actions completed and proposed for the Facility have been effective and will protect human health and groundwater at the Facility in the long-term.

VIII. PUBLIC PARTICIPATION

On July 13, 2006, EPA placed an announcement in the Columbia Flier to notify the public of EPA's proposed remedy for the Facility and of the location of the Administrative Record. Copies of this Statement of Basis will be mailed to anyone who requests a copy. The Administrative Record, including this Statement of Basis, is available for review during business hours at the following locations:

U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103
Telephone Number: (215) 814-3433
Attn: Mrs. Estena A. McGhee (3WC23)

and

Howard County Central Library
10375 Little Patuxent Parkway
Columbia, Maryland 21044
Telephone Number: 410-313-7800

EPA is requesting comments from the public on EPA's proposed remedy. The public comment period will last thirty (30) calendar days beginning on July 13, 2006 and ending on August 14, 2006. Comments on, or questions regarding, EPA's preliminary identification of a preferred remedy may be submitted to:

Mrs. Estena A. McGhee (3WC23)
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103
(215) 814-3433
FAX (215) 814-3113

Following the thirty (30) day public comment period, EPA will hold a public hearing if one is requested, on EPA's preferred remedy if sufficient public interest indicates that a meeting would be valuable for distributing information and communicating ideas. If, on the basis of public comments or other relevant information, significant changes are proposed to be made to the corrective measures alternative identified by EPA in this Statement of Basis, EPA may seek additional public comments. After evaluation of all public comments, EPA will issue a Final Decision and Response to Comments which identifies the final selected remedy and address all

comments received during the public comment period. EPA anticipates implementing the final remedy through a permit modification to the Facility's existing corrective action permit.

_____ _____

Date

James J. Burke, Director
Waste & Chemicals Management Division
EPA Region III

Attachment 2
GLOSSARY

COC - constituents of concern

GPD - gallons/day

Maximum Contaminant Level (MCL) - MCLs are established by the Safe Drinking Water Act, 42 U.S.C. Section 300g-1. An MCL reflects health factors and represents the maximum permissible level of a contaminant in water delivered to any user of a public water system.

MGD - million gallons/day

NPDES - National Pollution Discharge Elimination Standards promulgated pursuant to the Clean Water Act, 42 U.S.C. Section 402.

RCRA - Resource Conservation and Recovery Act, which was enacted in 1976 and amended in 1984, directed EPA to develop and implement a program to protect human health and the environment from improper hazardous waste management practices. The program is designed to control the management of hazardous waste from its generation to its disposal.

Howard County Central Library - Library where the Administrative Record is located, 10375 Little Patuxent Parkway, Columbia, MD 21044

Solid Waste Management Unit (SWMU) - includes any unit used for the collection, source separation, storage, transportation, transfer, processing, treatment or disposal of solid waste, including hazardous wastes, whether such facility is associated with facilities generating such wastes or otherwise.

Attachment 3
Summary of cleanup standards for groundwater constituents of concern

Contaminant	MCL (ug/L)
trichloroethene (“TCE”)	5
1,1-dichloroethene (“1,1-DCE”)	7
1,1,1-trichloroethane (“1,1,1-TCA”)	200
trans-1,2-dichloroethene (“trans-1,2-DCE”)	100
tetrachloroethene (“PCE”)	5
1,1,2,2-tetrachloroethane (“1,1,2,2-PCA”)	n/a
Vinyl Chloride	2