

BASF Corporation

Route 60 East
Williamsburg, Virginia 23187
Congressional District 3
EPA ID #: VAD990710642
Last Updated 07/07/2009

BASF Corporation – below



1. Developed portion of subject property
2. James River
3. Entrance Road
4. Rail Spur
5. Virginia Power Easement

Current RCRA CA Activities

The U. S. Environmental Protection Agency (EPA) has delegated the Virginia Department of Environmental Quality (DEQ) as the lead agency for oversight of technical and administrative Corrective Action (CA) work at the BASF facility under the Resource Conservation and Recovery Act (RCRA). This facility is one of EPA Region III's high priority RCRA corrective action sites.

The DEQ conducted an Environmental Indicator (EI) inspection at this facility. The Environmental Indicator addressing Human Exposures and dated September 30, 2003, states that current human exposures are under control. The Environmental Indicator addressing Groundwater and dated September 27, 2004, states that current groundwater exposures are under control.

The following documents have been reviewed or are currently under review by DEQ:

1) *Groundwater Remediation Plan* dated September 15, 2003, 2) Comments provided by BASF and dated November 19, 2003 on DEQ's review (dated October 15, 2003) of the *Groundwater Remediation Plan*, 3) *Remedial Action Work Plan –PCB Soil Removal* dated September 15, 2003, 4) *Site-wide Soil Risk Assessment* dated September 15, 2003, 5) *Supplemental Soil Investigation Report* dated September 15, 2003, 6) *Area 1A Closure Report* dated August 6, 2003, 7) *Area 1B Closure Report* dated December 23, 2003, 8) *Area 1C Closure Report* dated August 1, 2003, 9) *Area 1D Closure Report* dated October 2, 2003, 10) *Area 1E Closure Report* dated July 11, 2003, 11) *Remedial Action Workplan Addendum – PAH and Mercury Soil Removal* dated January 16, 2004, 12) *Soil Removal Certification Report* dated June 8, 2004, 13) *Sub-Slab Soil Investigation Report* dated February 4, 2005, 14) *Semi-Annual Progress Report 9, January through July 2008* and *Semi-Annual Progress Report 10, August through December 2008* – both including the following in the title, *Groundwater Remediation in the Main Industrial Area* and dated November 13, 2008, and April 3, 2009, respectively 15) *Building 203 June 2003 Indoor Air Sampling Results and Comparison to Regulatory Standards*, 16) *2008 Annual Compliance Groundwater Monitoring Report* dated September 2008, 17) *Response to VDEQ Letter Dated September 2005 – Site Characterization Report-Area 2 Truswood Property, Corrective Action Plan* dated November 15, 2005, 18) *2007 Annual Compliance Groundwater Monitoring Report* dated September 2007, 19) *SSL Development Summary Response Document* dated April 30, 2008, 20) *Analyte List Evolution Summary Response Document*, dated May 16, 2008, 21) Response received March 20, 2009, to VDEQ Letter dated October 8, 2008, Concerning the *Analyte List Evolution Summary Response Document*, dated May 16, 2008, 22) *Truswood Soil Corrective Action Plan Addendum* dated July 18, 2008, 22) Response received April 8, 2009, to VDEQ E-mail Letter dated September 16, 2008, concerning the *Truswood Soil Corrective Action Plan Addendum* dated July 18, 2008, 23) *Site-Wide Soil Risk Assessment Summary Response Document - Volumes 1 and 2*, both dated September 23, 2008, 24) *WWTP Summary Response Document – Area 4C* dated September 23, 2008, and 25) PDF Data File received April 8, 2009, addressing the *WWTP Summary Response Document – Area 4C* dated September 23, 2008.

The on-going site-wide Corrective Action investigations and evaluations of the developed areas of the BASF site will further establish the nature and extent of contamination in all media and the rate of migration of contamination of groundwater from the developed portions of the site. The site-wide Corrective Action investigations and evaluations will incorporate a comprehensive risk assessment to evaluate potential risk to human health and the environment of all impacted media from the developed parcel areas.

Site Description

The company manufactured acrylic fibers, acrylic spun yarns, and anti-static non-filament yarns for use in apparel and home furnishings. Since 1989, BASF has been investigating and remediating the contamination at the site. BASF intends to either sell or lease the site for redevelopment, especially the areas bordering the James River.

The BASF, Williamsburg, Virginia site is located in James City County, Virginia approximately one mile west of the point where U.S. Route 60 passes through the community of Lee Hall. The site is bounded on the west by the James River, on the east by Wood Creek, and on the south by undeveloped land, wetlands, and Skiffes Creek. The Site occupies approximately 700 acres, with manufacturing facilities limited to approximately 10 percent of the total site area. The developed portion of the site is approximately 303 acres. Approximately 397 acres of the property is considered undeveloped.

The BASF site was previously owned by Dow Chemicals. In 1958, Dow initiated production of acrylic fibers at the site. The facility became part of a joint venture by DOW and BASF in 1966 and was known as the Dow-Badische Corporation. BASF acquired the site from DOW in 1978, and continued production of acrylic products (acrylic fibers, acrylic spun yarns, and anti-static non-filament yarns) for use in apparel and home furnishings until 1989. In 1989, the industrial portion of the facility was sold to Mann Industries. Mann Industries maintained production of acrylic fibers until the Company went into receivership in 1993. The facility has been inactive since that time and has been in the process of being dismantled.

In 1993, Area 2 of the BASF facility was sold by Mann Industries to Commonwealth Yarn. At present, Area 2 is referred to as the Truswood Property. BASF is under a Facility Lead Agreement (FLA) with EPA to address Corrective Action requirements in Area 2. Commonwealth Yarn filed for bankruptcy in 2000, and Area 2 was sold to Truswood Associates, Inc. in 2001. Area 2 was sold to the Jamestown Management Company, LLC in 2007.

At the present time, the BASF facility is subject to Corrective Action under section 3008 of the RCRA and the lead Corrective Action authority is EPA Region III with assistance from Virginia's DEQ. The EPA has delegated the Virginia DEQ as the lead agency for oversight of technical and administrative CA work at the BASF facility.

During former operations, fiber-spun yarns and anti-static, non-filament yarns were manufactured and used in the production of carpets and other home products. These acrylic-based yarns were produced by using hydrogen peroxide to polymerize acrylonitrile to produce polyacrylonitrile. The polyacrylonitrile was then extruded through a spinnerette into a bath of zinc chloride solution. Acrylic fibers were then produced from a solution of polyacrylonitrile and zinc chloride.

The chemicals of concern utilized in major quantities in the production process included acrylonitrile, methyl methacrylate, and zinc chloride. Chemicals used in lesser quantities included chlorinated solvents used for maintenance and analytical activity, and dyes utilized in the production process. Several laboratories at the facility were utilized in support of research and development (R&D) activities, technical product support and quality control. Waste chemicals from the laboratories were disposed at an on-site industrial waste-water treatment system through a dedicated chemical sewer line. This wastewater treatment plant operated and

discharged to State waters under a Virginia Pollutant Discharge Elimination System (VPDES) Permit.

According to Virginia's Department of Waste Management's (DWM) (predecessor to the DEQ), Notice of Termination of Interim Status, dated November 13, 1987, BASF held interim status from November 19, 1980, until November 13, 1987, to operate a hazardous waste management facility subject to RCRA, promulgated by EPA. The facility qualified for interim status for storage in containers, which is conferred by the Act and allows a facility to operate until final disposition of its permit application. By letter dated October 10, 1985, the facility certified closure completion of the drum storage area located in Area 3C. According to the November 13, 1987, Notice of Termination of Interim Status, the Department conducted a final closure inspection of the drum storage area on January 10, 1986. By letter dated July 9, 1987, BASF indicated that it no longer intended to operate as a hazardous waste management facility requiring a permit and it would not be submitting a permit application. The DWM issued a Notice of Termination of Interim Status to BASF that became effective on November 13, 1987.

BASF has, and is currently, investigating and remediating soil and groundwater at the facility. The environmental conditions at the site are being addressed under the Virginia DEQ Voluntary Remediation Program, EPA's RCRA Corrective Action Program, the Virginia DEQ Office of Hazardous Waste (RCRA) Corrective Action Program, and Virginia's Tidewater Regional Office Enforcement Program, and under the State Water Control Board.

Numerous reports were submitted to EPA and the DEQ for review and approval addressing parcels 1A through 1E. These documents include:

- Site Characterization Report (Areas 1A through 1E), dated July 11, 2001
- Area 1A Closure Report, dated August 6, 2003
- Area 1B Closure Report, dated September 25, 2002
- Area 1C Closure Report, dated August 1, 2003
- Area 1D Closure Report, dated October 2, 2003
- Area 1E Closure Report, dated July 11, 2003
- Response to comments correspondence (Revisions to Area 1 Closure Reports and Risk Assessments), dated December 15, 2005
- Risk Assessment of the Area 1A Recreational Area, dated June 24, 2003
- Risk Assessment of the Area 1B Wooded Area North and East of Wastewater Treatment Plant, dated September 19, 2003
- Risk Assessment of the Area 1C Riverfront and Wooded Area Adjacent to the Million Gallon Tank, dated April 4, 2003
- Risk Assessment of the Area 1D Landfill Riverfront Area, dated September 11, 2003
- Risk Assessment of Area 1E South of the Landfill, dated June 24, 2003
- Supplemental Soil Investigation Report, dated September 15, 2003
- Soil Removal Certification Report, dated June 8, 2004
- Remedial Action Work Plan Addendum – PAH and Mercury Soil Removal, dated January 16, 2004
- Remedial Action Work Plan – PCB Soil Removal, dated September 15, 2003

The following general information supports granting a no further action NFA determination for Areas 1A, 1B, 1C, 1D, and 1E for unrestricted residential usage for soils. In addition, this

information supports granting a no further action determination for Areas 1C and 1E for unrestricted residential usage for groundwater.

Areas 1A, 1B, 1C, 1D and 1E were investigated during the Site Characterization Investigation, which consisted of site-wide soil and groundwater sampling. Sampling locations were selected based on the historic land-use activities, BASF employee interviews, a review of historical aerial photographs, and soil and groundwater sampling conducted in these areas of the Site. Additional sampling was conducted in these areas during the Supplemental Soil Investigation to characterize the areal and vertical extent of constituent concentrations, as warranted, based upon the findings of the Site Characterization Investigation. The results of these investigations were incorporated into the individual Closure Reports and Risk Assessments for Areas 1A through 1E.

Based on the results of the Site Characterization and Supplemental Soil Investigation, soil removal activities were conducted to address impacted soils from Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). The removal activities included the excavation of soil containing polychlorinated biphenyls (PCBs) in Area 1C and for polynuclear aromatic hydrocarbons (PAHs) in Area 1A. The soil excavations were completed on March 24, 2004.

The groundwater beneath Area 1A is potentially impacted by groundwater from Area 2, the Truswood Property. Past groundwater monitoring events indicate impacts to the groundwater beneath Areas 1B and 1D. The source of the groundwater impact to Area 1B appears to be Area 4C, the Wastewater Treatment Plant. The source of the groundwater impact to Area 1D appears to be Area 4B, the Main Landfill Area. The status of the groundwater beneath Areas 1A, 1B and 1D will be evaluated further, and therefore; unrestricted residential usage of the groundwater beneath these areas cannot be granted at this time.

Environmental conditions at the North Recreational Area Landfill, a 1.5-acre landfill originally located in Area 1A, and now identified as Area 4A, North Landfill, are being addressed by operation and maintenance of a "phytcover" of hybrid poplar trees to limit infiltration of rainwater and to minimize potential migration of groundwater from the SWMU. The 1.5 acre landfill is enclosed by a chain-link fence as an engineered control measure to limit access to this parcel. This landfill has been initially addressed under DEQ's VRP.

Area 4A will be further evaluated under the EPA and the DEQ under RCRA corrective action. In addition, Area 4A will be held in perpetuity by BASF.

Based on the results of the soil and groundwater investigations, interviews of BASF employees, and aerial photographs, EPA and DEQ determined that no hazardous waste constituents or hazardous wastes were handled in Areas 1A, 1B, 1C, 1D, and 1E except at those locations known to have been contaminated and which have been remediated by soil removal actions described above.

The rationale, evidence, and data supporting the recommendation of no further action (NFA) with respect to soils for the undeveloped parcel Areas 1A, 1B, 1C, 1D, and 1E, and the recommendation of NFA with respect to groundwater for parcel Areas 1C and 1E of the BASF site was summarized in the Statement of Basis associated with the Public Notice, dated August 14, 2008, of the proposed NFA determination under the RCRA.

The on-going site-wide Corrective Action investigations and evaluations of the developed areas of the BASF site will further establish the nature and extent of contamination in all media and the rate of migration of contamination of groundwater from the developed portions of the site. The site-wide Corrective Action investigations and evaluations will incorporate a comprehensive risk assessment to evaluate potential risk to human health and the environment of all impacted media from the developed parcel areas.

The BASF facility is further evaluating the environmental data and providing summary and detailed reports as needed, to the DEQ, along with information related with the site risk assessment associated with the Parcels Areas under RCRA CA as follows:

Areas 1A, 1B, and 1D – Groundwater and Ecological Risk Assessment remain only – 209 acres.

Area 2A – Truswood Property – 19.7 acres.

Area 3A – Office Area – 32.2 acres.

Area 3B – Maintenance Area – 2.3 acres.

Area 3 C – Utilities Area – 9.3 acres.

Area 3C-1- Manufacturing Area and Electrical Substation Area – 26.2 acres.

Area 4A – North Landfill Area – 14.3 acres.

Area 4B – Main Landfill Area – 97.6 acres.

Area 4 C – Wastewater Treatment Plant – 29.8 acres.

Site remediation, engineering controls, and institutional controls will be required, as needed, under RCRA CA to be protective of human health and the environment for the parcels at the facility site.

RCRA CA Milestones

On August 14, 2008, the U.S. Environmental Protection Agency (EPA) issued a Public Notice in the *Daily Press*, announcing its proposed no further action (NFA) determination under the Resource Conservation and Recovery Act, as amended (RCRA), for the undeveloped parcel areas, Areas 1A, 1B, 1C, 1D, and 1E, of the BASF, Williamsburg, Virginia facility. The USEPA proposed NFA for soils at undeveloped Areas 1A through 1E, and groundwater in the undeveloped Areas 1C and 1E. The public comment period lasted 45 days and ended September 29, 2008. Information regarding the regarding EPA's proposed action was available on EPA's website at www.epa.gov/reg3wcmd/public_notices.htm. The Administrative Record, which contains all the information considered in EPA's proposed decision, was also available at U.S. EPA Region 3, 1650 Arch Street, Philadelphia, PA. 19103. The Administrative Record was also available at the Newport News City Library, 2510 Wickham Avenue, Newport News, VA. Library hours are Monday –Thursday from 9–9, Friday and Saturday from 9-6.

The proposed NFA for the undeveloped parcel areas was summarized in the Statement of Basis. The Statement of Basis summarizes the Administrative Record and the DEQ's and the EPA's evaluations and findings and the proposal regarding the applicable parcel areas at the BASF facility site. Based upon the Statement of Basis, the EPA recommended the position of no further action (NFA) with respect to soils for the undeveloped parcel Areas 1A, 1B, 1C, 1D, and 1E, and NFA with respect to groundwater for parcel Areas 1C and 1E of the BASF site (See Figures 1A and 1B in the March 12, 2008 Corrective Action - Statement of Basis - Technical

Support Document). It should be noted that the investigations and evaluations of the developed areas of the BASF site are on-going under site-wide Corrective Action under the RCRA.

The undeveloped parcel areas at the BASF site comprise approximately 397 total acres of the total 700 acre facility site and are as follows: Area 1A, the Recreational Area, 110 acres; Area 1B, the Wooded Area North and East of the Waste Water Treatment Plant, 60 acres; Area 1C, the Riverfront and Wooded Area Adjacent to the Million Gallon Tank, 94 acres; Area 1D, the Landfill Riverfront Area, 39 acres and Area 1E, South of the Landfill, 94 acres.

The EPA issued a Final Determination of no further action (NFA) for soils at undeveloped Areas 1A through 1E, and groundwater in the undeveloped Areas 1C and 1E on October 10, 2008.

Areas 4A – North Landfill, 4B – Main Landfill, and 4C – Wastewater Treatment Plant were added to the site-wide RCRA Corrective Action as the State Water Control Board Consent Orders were terminated for these areas. The EPA has concurred with the DEQ that the Areas 4A, 4B, and 4C were subject to site-wide CA under the RCRA.

On July 30, 2008, a meeting was held at the DEQ's Central Office with, BASF, BASF's consultants, and DEQ in attendance in order to discuss the overall progress and path forward with respect to the corrective action at the facility as it pertains to all environmental media.

The DEQ's review comments addressing the *SSL Development Summary Response Document* dated April 30, 2008, were sent to the facility in an e-mail dated July 22, 2008. In addition, the DEQ's comments addressing the *Truswood Soil Corrective Action Plan Addendum*, dated July 16, 2008, were sent to the facility in an e-mail dated September 16, 2008. BASF's *Analyte List Evolution Summary Document* dated May 16, 2008, was approved in a letter dated October 8, 2008, and the approval letter also requested an updated target analyte list (TAL).

On November 18, 2008, a meeting was held at the DEQ's Central office with BASF, BASF's consultants, and the DEQ in order to provide an update of CA activities and issues at the facility. The above meeting was mainly to provide an evaluation update of the status of the groundwater corrective action at the facility and to discuss several other topics regarding remediation at the site. The DEQ stated at this latter meeting that it would further evaluate the *Site – Wide Soil Risk Assessment Summary Document* upon receipt of BASF's latest iteration of the *SSL Development Summary Response Document* (the latest *SSL Development Summary Response Document* was received April 8, 2009, and is currently under review). In addition, the DEQ stated at the November 18, 2008, meeting that it would resume review of the *WWTP Summary Response Document, Area 4C* dated October 10, 2008, upon receipt of the additional closure data for environmental media that BASF stated would be forthcoming (the additional closure data for environmental media was received on April 8, 2009, and is currently under review).

In response to the meeting on November 18, 2008, the DEQ developed a draft list of action items for the DEQ and BASF as documented in a DEQ e-mail, dated November 19, 2008, which was sent to the facility representatives. (The proposed timetables for deliverables identified in the above e-mail were considered tentative.)

In a letter dated April 27, 2009, the DEQ gave a final approval of the *Analyte List Evolution*

Summary Response Document, dated May 16, 2008, inclusive of an updated Target Analyte List (TAL) (the updated TAL was received by the DEQ on March 20, 2009).

On May 7, 2009, a meeting was held at the DEQ's Central office with BASF, BASF's consultants, and the DEQ in order to provide an update of CA activities and issues at the facility. The above meeting was mainly to provide an evaluation update of the status of the groundwater corrective action at the facility and to discuss several other topics regarding remediation at the site. At the meeting, it was determined that the DEQ would provide a letter of concurrence to (1) allow the facility to transition from enhanced reductive dechlorination to monitored natural attenuation to address ground water remediation in Areas 2 and 3 and (2) recognize that the plume originating in Area 2 and flowing into Area 1A will be handled under the remaining groundwater CA associated with Area 1A vs. Area 2.

In a letter dated June 4, 2009, and received on June 9, 2009, BASF formally stated the use designations for all of the parcels at the facility: residential and industrial. The facility intends that all the remaining industrial parcels at the site will be remediated to the designated criteria and standards for the risk screening and the quantitative risk assessment in regards to industrial use for soil media.

Environmental Indicator Status

Under the Government Performance and Results Act (GPRA), EPA has set national goals to address high priority RCRA Corrective Action facilities by the year 2008. EPA is evaluating two key indicators for each facility: Current Human Exposures Under Control and Migration of Contaminated Groundwater Under Control. This facility is one of EPA Region III's high priority facilities and falls under this initiative.

The DEQ's current evaluation of Environmental Indicators for this facility is as follows:

- *Human Exposures Controlled Determination:* The DEQ has made the EI determination of "yes, that current human exposures are under control." The above determination is based upon the DEQ's Current Human Health Environmental Indicator (HHEI) Determination Report, CA725, dated September 30, 2003. This above HHEI determination is considered current, effective July 7, 2009.
- *Release to Groundwater Controlled Determination:* The DEQ has made the EI determination of "yes, that migration of contaminated groundwater is under control," based upon the review of CA information for the CCP site contained in the EI determination Report, CA750, dated September 27, 2004. The above EI determination indicates that the migration of "contaminated" groundwater is believed to be under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater." This EI determination is considered current, effective July 7, 2009.

Contaminants

The main contaminants known to be present include benzene, 1, 1-dichloroethene, 1, 4-dioxane, cis-1, 2-dichloroethene, tetrachloroethene, vinyl chloride, and zinc.

Community Involvement

Citizens' questions and concerns may be directed to the contact below. Also, the Administrative Record which contains all documents and information regarding the RCRA CA program for this facility are available for public review at the following location(s):

Virginia Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219

The EPA will issue a public notice of a tentative determination and solicit comments prior to making a final Agency determination regarding final corrective action remedies at the facility. At the time of proposed agency determinations regarding corrective action remedies at the facility, an Administrative Record will be made available at a local repository to provide the local community ready access to the CA related documentation.

On August 14, 2008, the U.S. Environmental Protection Agency (EPA) issued a Public Notice in the Daily Press, announcing its proposed no further action (NFA) determination under the Resource Conservation and Recovery Act, as amended (RCRA), for the undeveloped parcel areas, Areas 1A, 1B, 1C, 1D, and 1E, of the BASF, Williamsburg, Virginia facility. The USEPA proposed NFA for soils at undeveloped Areas 1A through 1E, and groundwater in the undeveloped Areas 1C and 1E (397 acres of the 700 acre facility site). The public comment period lasted 45 days and ended September 29, 2008. Information regarding the regarding EPA's proposed action was available on EPA's website at www.epa.gov/reg3wcmd/public_notices.htm.

The proposed NFA for the undeveloped parcel areas was summarized in the Statement of Basis. The Statement of Basis summarizes the Administrative Record and the DEQ's and the EPA's evaluations and findings and the proposal regarding the applicable parcel areas at the BASF facility site. The Statement of Basis and the Administrative Record, which contains all the information considered in EPA's proposed decision was available at U.S. EPA Region 3, 1650 Arch Street, Philadelphia, PA. 19103. It was also available at the Newport News City Library, 2510 Wickham Avenue, Newport News, VA. Library hours are Monday –Thursday 9–9, Friday and Saturday 9-6.

Government Contacts

The EPA is the lead authority for the BASF site. The EPA has delegated the DEQ as the technical and administrative lead for CA for this project. Please contact the state project manager listed below for details on this project or the contents of this fact sheet.

DEQ Project Manager

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EPA Project Manager

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For more information about EPA's corrective action program, including Environmental Indicators, please visit our site at: www.epa.gov/reg3wcmd/correctiveaction.htm

Facility Contact

BASF Facility Contact

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Fact Sheet Update

The previous fact sheet was updated January 2009. The next update is scheduled for January 2010. Previous fact sheets may be obtained through the listed contacts.