



GREAT PLAINS SYNFUELS PLANT CORRECTIVE ACTION FACT SHEET

North Dakota Department Of Health
Division Of Waste Management
By: Derek Hall

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Revision: 11/2018

1. **FACILITY NAME** - Great Plains Synfuels Plant - Dakota Gasification Company (DGC)
2. **State/EPA ID#** - NDD000690594
3. **ADDRESS AND LOCATION** -
420 County Road 26
Beulah, ND 58523
(located 7 miles NW of Beulah, ND)
4. **REFINERY CONTACT** – Daniel Whitley, Environmental Engineer Supervisor
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5. **STATE/TRIBE CONTACT** - Derek Hall
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6. **LEAD AGENCY** - North Dakota Department of Health, Division of Waste Management
7. **SETTING AND OPERATIONS HISTORY**

The Great Plains Synfuels Plant is located approximately 7.5 miles northwest of the city of Beulah, North Dakota. The facility lies within the Knife River drainage basin in the Missouri Plateau section of the Great Plains Region. The facility is constructed on approximately 535 acres of land.

In the 1970's, a consortium of energy companies obtained federally guaranteed loans to finance the construction of the Great Plains Synfuels Plant. Operations began in 1984. The consortium abandoned the plant in 1985, and the US Department of Energy (DOE) assumed ownership in 1986. In 1988, the DOE sold the plant to the Dakota Gasification Company, a wholly-owned subsidiary of Basin Electric Power Cooperative (BEPC).

The facility is co-located with the Antelope Valley Station, which is a coal-fired steam electric generation plant also owned by BEPC and Freedom Mine, operated by Coteau Properties, a subsidiary of the North American Coal Corporation.

Operations at the facility produce a synthetic natural gas from lignite coal. The coal gasification process involves the breaking down of the molecular structure of coal to produce carbon monoxide and hydrogen, that are in turn combined to produce methane.

Co-products are removed from the raw gas-liquor by various process units (tars and oils, phenols, anhydrous ammonia) and are either sold as products or used in fuels in the plant boilers to generate steam. Other co-products, such as naphtha, sulfur, urea,

krypton and xenon gases, liquid nitrogen, cresylic acid, ammonium sulfate, and carbon dioxide, are recovered in different areas of the plant. Some of these products are being sold, such as carbon dioxide, which is being used in Canada for secondary oil recovery in petroleum production, and urea pellets, which are manufactured for use as agricultural fertilizer.

8. **REGULATORY INSTRUMENT (PERMIT/ORDER)**

INSTRUMENT: Hazardous waste storage (containers/containment building) and corrective action permit.

ISSUED BY: NDDoH

DATE: Permit renewed August 2, 2016.

9. **REGULATED UNITS**

There are two RCRA-regulated hazardous waste management units onsite. These are the Container Storage Area and Bulk Storage Facility. The Container Storage Area is a building utilized for storing containerized solid and liquid hazardous wastes. The Bulk Storage Facility is a containment building utilized to store non-liquid solid and hazardous wastes, along with universal wastes.

10. **WASTE GENERATION/TREATMENT/DISPOSAL PRACTICES**

Wastes generated during facility operation include: lab solvent wastes (D001), heavy metal wastes (D009), acetone/toluene/acetonitrile (D001), mineral spirits (D001), spent caustic/acid (D003), waste 1,1,1-trichloroethane (D), spent shift catalyst (D), waste lab chemicals (various D and U listings) and process cleanouts (Bevill exempt wastes).

DGC operates a special waste landfill for the coal ash and other process wastes generated during the coal conversion process. Much of the non-hazardous waste generated onsite is subsequently disposed in the special waste landfill, including Bevill exempt wastes. Bevill exempt wastes are certain high volume, low toxicity wastes produced by the industry. DGC produces two Bevill exempt wastes, one non-wastewater and one wastewater. The non-wastewaters include the coal gasification ash, boiler cleanout and other process unit cleanouts. The wastewater stream includes wastewaters discharged and managed by the oily water sewer system.

11. **POTENTIAL FOR RELEASES**

The RCRA Facility Assessment (RFA), dated February 1992, identified twenty-two Solid Waste Management Units (SWMU's), and five Areas of Concern (AOC's). In 1995, an additional AOC, the Rectisol Area (1400 Area), was identified. The September 1998 RCRA Facility Investigation Report (RFI) eliminated 17 of the SWMU's from the list. Four more SWMU's were removed from the list in the May 2007 RFI Addendum. A site-wide ground water monitoring plan and oily water sewer monitoring plan were established with the approval of the Corrective Measure Study (CMS) final report in August 2009. Two new AOC's, the Phenosolvan Unit (1600 Area) A and B trains, were discovered in May 2009 and September 2016 respectively. A voluntary Corrective Measures Implementation (CMI) Work Plan for cleanup of the 1600 Unit A train was approved in January 2011. An addendum to the CMI Work Plan for the 1600 Unit B train area is currently in process.

12. **CORRECTIVE ACTION STATUS AND STABILIZATION ACTIVITIES**

A. Stabilization measures needed? Yes

B. Stabilization measures implemented? Yes (If yes, list measures)

In August 1994, the Fire Training Area (SWMU #13) was surveyed. In September 1994, 750 cubic yards of contaminated soils/scoria were removed and land-farmed in a permitted special waste landfill.

In July 1995, the Oily Water Sewer (SWMU #6) was surveyed using a robotically operated video camera. Based upon the results of the video data, approximately 1000 feet of corroded piping was replaced during the summer of 1996.

In September 1997, DGC installed two recovery wells located in the Tank Farm (Areas #1810/1820) and Rectisol (Area #1400) Areas. These recovery wells capture contaminated ground water and direct it to the oily water process sewer which is connected to the oily water treatment system.

In October 1997, the area surrounding the Ash Water Sumps (SWMU #17) was covered with concrete. This allowed for the collection of ash water runoff from disposal vehicles to be captured rather than allowed to infiltrate to ground water.

Contaminant recovery in the Rectisol and Tank Farm Areas was discontinued in 2009. Monitoring wells continue to be tested on a quarterly basis. Natural Bio-attenuation continues to play a significant part in contaminant removal throughout the facility and, in fact, has been selected by the Department as the final remedy "No Action" for three of the AOC's, the Rectisol Area, Rail Loading Area, and Tank Farm due to the nature of the contaminant.

In July 2011, a recovery well and organic air stripper were brought online to pump and treat ground water impacted with Isopropyl ether (IPE) and Benzene in the 1600 A Unit Phenosolvan area; it is currently in operation.

- C. Have all necessary stabilization measures been completed (for all areas/units)? Yes
- D. Current human exposures under control? Yes
- E. Current ground water releases under control? Yes
- F. RFI imposed for all areas/units? Yes - for those needing investigation
- G. RFI workplan approved? Yes
- H. RFI final report approved? Yes 1/08
- I. CMS Workplan approved? Yes 6/08
- J. CMS final report approved? Yes 9/09
- K. Was a human health risk assessment done (or is it being done)? Yes
- L. Was an ecological risk assessment done (or is it being done)? Yes
- M. Final Remedy selected? Yes 10/09
- N. Describe final remedy selected: "No Action"
- O. Has a TI waiver been requested? No
- P. CMI initiated? Yes 1/11
- Q. CMI completed? No
- R. Other relevant corrective action status information: None

13. **COMMUNITY INVOLVEMENT**

Public notices were advertised in local papers and on radio during the permit public comment period.