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STUDY PLAN
SCREENING SITE INSPECTION, PHASE II
UNIROYAL INC. UNIROYAL CHEMICAL CO.
GASTONIA, GASTON COUNTY, NORTH CAROLINA
EPA ID #: NCD003164464

Prepared Under
TDD No. F4-9007-25
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

CERCLA

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

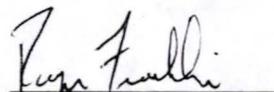
AUGUST 1, 1990

NUS CORPORATION
SUPERFUND DIVISION

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Regional Project Manager

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STUDY PLAN
SCREENING SITE INSPECTION, PHASE II
UNIROYAL INC. UNIROYAL CHEMICAL COMPANY
GASTONIA, GASTON COUNTY, NORTH CAROLINA
EPA ID #NCD003164464
TDD NO. F4-9007-25

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) has been tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI) at the Uniroyal Inc. Uniroyal Chemical Company facility in Gaston County, North Carolina. The inspection will be performed under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Tasks will be performed to satisfy the requirements stated in Phase II of Technical Directive Document (TDD) number F4-9007-25.

1.1 Objectives

The objectives of this Phase II inspection will be to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection will seek to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation will be made regarding future activities at the site.

Specific elements are:

- Obtain information to prepare a site-specific preliminary HRS
- Provide EPA the necessary information to make decisions on any other actions warranted at the site.

1.2 Scope of Work

The scope of this investigation will include the following activities:

- Obtain and review background materials relevant to HRS scoring of site.
- Obtain aerial photographs and maps of site, if possible
- Obtain information on local water systems
- Evaluate target populations associated with the groundwater, surface water, air and onsite exposure pathways
- Conduct a survey of private wells
- Determine location and distance to nearest potable well
- Develop a site sketch
- Conduct a geophysical screening of site to determine whether buried drums may be present, (if applicable)
- Collect environmental samples

1.3 Schedule

To be determined.

1.4 Personnel

Project Manager - Eric Corbin

Other personnel as required

1.5 Permits and Authorization Requirements

EPA is responsible for obtaining access to the site and permission to take photographs of site. In addition, EPA is responsible for all permits which may be required to accomplish this task.

1.6 Site History and Description

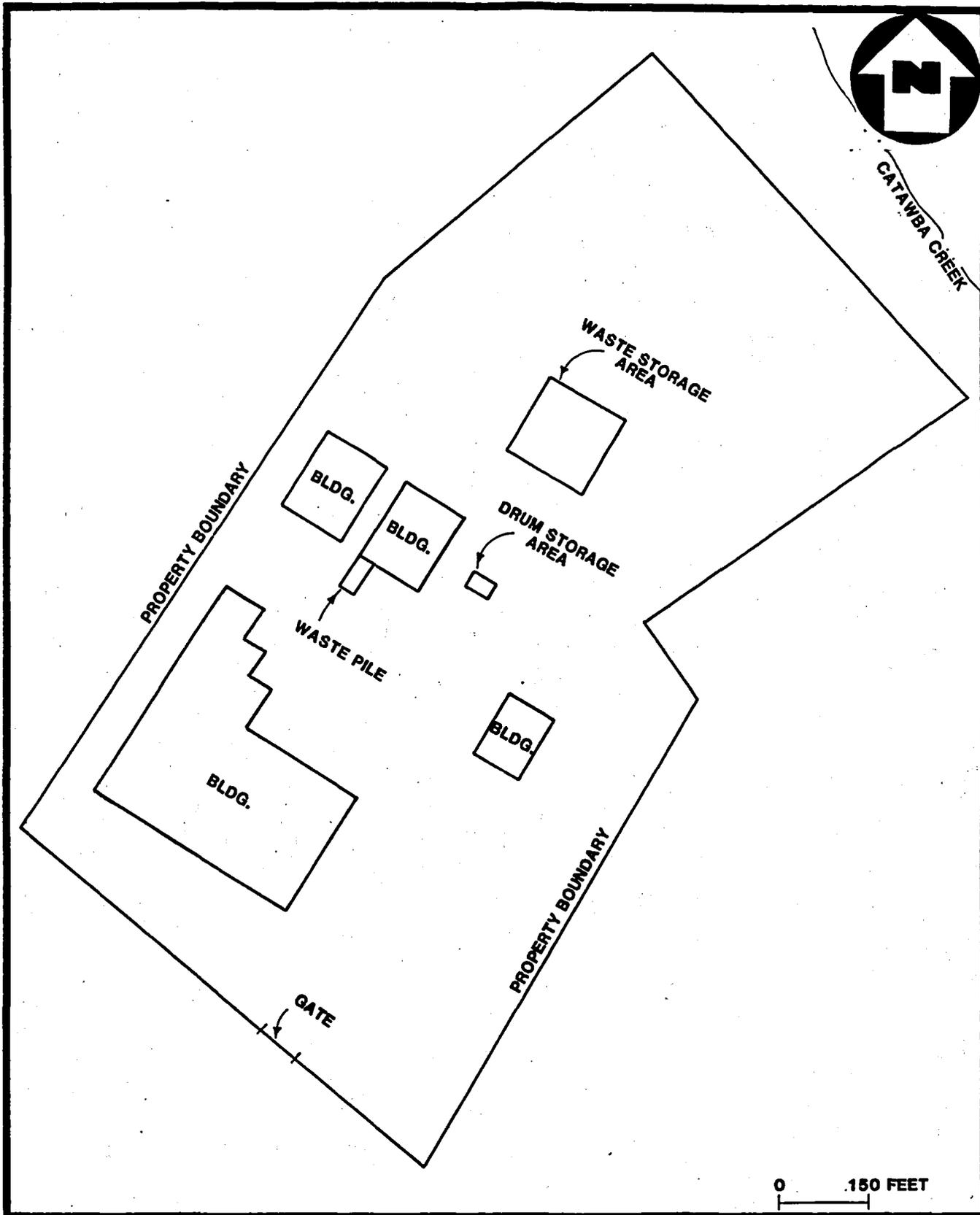
The Uniroyal Inc. Uniroyal Chemical Division facility is situated on an 8.75-acre tract of property located at 214 East Ruby Street on the southeast side of Gastonia (Ref. 1). The site location is shown on Figure 1 and the site layout is shown on Figure 2. The facility has manufactured herbicides, growth regulants and fungicides, rubber labels, and plastic drum covers since 1955 (Refs. 2, 3). An unknown quantity of hazardous waste has been generated from filtering processes as well as from the handling of waste bags and containers for raw materials (Refs. 3, 4). Approximately 79,000 pounds of thiuram, maleic hydrazide, and phthalic anhydride were stored in a waste pile at the facility until 1983 (Ref. 2). In 1974, an accidental spill involving 25 gallons of dinitro butyl phenol resulted in a release to the Gastonia municipal sewer system. A fish kill in Catawba Creek resulted from the spill, and Uniroyal Chemical was held responsible for the cost of an investigation and replacing the fish (Ref. 5).

Uniroyal Chemical filed a Part A hazardous waste permit application as a storage facility in November 1980 (Ref. 6). The North Carolina Department of Human Resources advised the company to delete all of its waste from the application with exception of ignitable and toxic waste (Ref. 7). Uniroyal Chemical asked to be deleted as a storage facility in September 1983 (Ref. 8). In December 1983, the company was deleted as a storage facility (Ref. 9). The state of North Carolina denied Uniroyal a permit as a TSD facility in September 1984 (Ref. 10). Uniroyal is currently listed as a generator (Ref. 11).

1.7 Regional Hydrogeology

The Uniroyal facility is situated within the Piedmont Physiographic Province and Piedmont-Blue Ridge hydrogeologic regime. This regime is characterized by a thick layer of residual soil overlying fractured crystalline and metamorphosed sedimentary rocks (Refs. 12, pp. 18, 19; 13, p. 251, 252). The topography of the area is characterized by gently rolling hills and local relief within 1 mile of the facility ranges from 690 to 810 feet above sea level (Ref. 1).

Geologically, the facility is located in the Kings Mountain Belt which consists of foliated and massive granitic rock of Pennsylvanian and Permian age (Ref. 16). Specifically, the facility is located on the



**SITE LAYOUT MAP
 UNIROYAL INC. UNIROYAL CHEMICAL CO.
 GASTONIA, GASTON COUNTY, NORTH CAROLINA**

FIGURE 2



boundary zone of mica gneisses and granite (Ref. 17, p. 48). The crystalline rock is overlain by a weathered rock and residual soil layer. This layer ranges from zero feet thick on hilltops to 150 feet thick in draws and valleys (Ref. 18, p. 8).

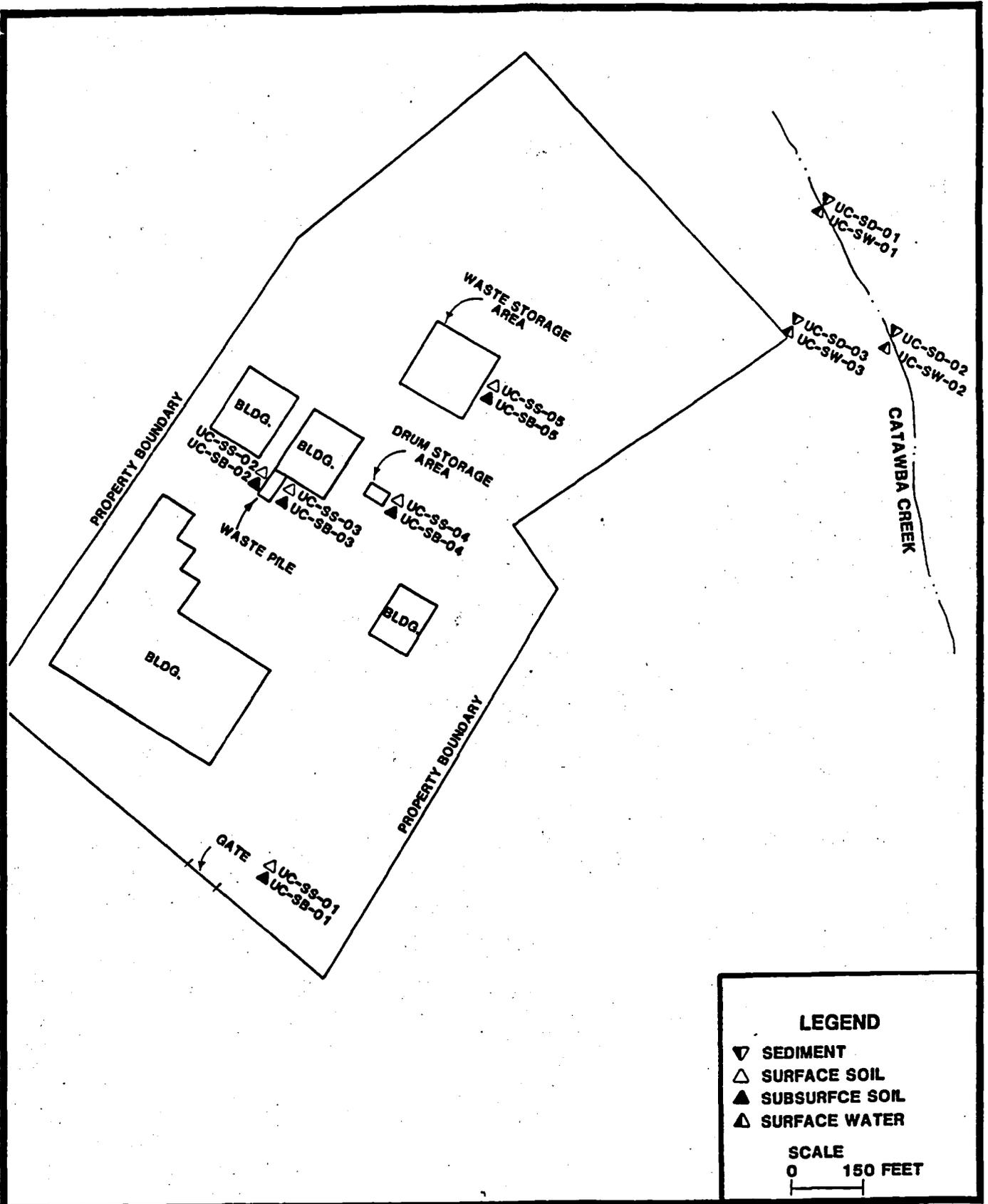
The aquifer normally used in the Gastonia area is the residual soil/crystalline rock aquifer system. This aquifer is generally found 75-200 feet below land surface (bls) (Ref. 19, pp. 330, 331). Several wells located within 1 mile of the facility are completed in granite. These wells range from 120 to 185 feet deep. Two of the wells have water levels of 30 feet bls (Ref. 17, pp. 50, 55, 56). In general, the groundwater level reflects the topography. In valleys, the water level is at or near land surface while on slopes and hills, the water level can be 10 to 100 feet bls (Ref. 18, p. 11). Generally, the residual soil and bedrock are hydraulically interconnected and artesian conditions are absent. In some places however, the density of the bedrock can cause some local artesian conditions to develop (Ref. 20, p. 32). The unsaturated zone of the residual soil represents the layer of lowest hydraulic conductivity between the aquifer and the surface. Soils of this type have been shown to have hydraulic conductivities that range from 1×10^{-3} to 1×10^{-5} cm/sec (Ref. 21).

2.0 SAMPLING INVESTIGATION

The sampling investigation will include the collection of soil, sediment and surface water samples. Tentative sampling locations will be discussed in the following sections; however, all sampling locations are subject to change depending upon field conditions. Samples will be analyzed for extractable and purgeable organic compounds, pesticides, PCBs, cyanides, and metals included in the USEPA Target Compound List (TCL). Analyses will be performed under the Contract Laboratory Program (CLP). The anticipated sample locations are shown on Figure 3, and the sample codes, descriptions, and rationale are presented in Table 1.

2.1 Surface Soil Sampling

It is anticipated that five surface soil samples will be collected during this investigation. One of these samples, UC-SS-01 will be designated as a background sample. The remaining four surface soil samples will be collected from strategic locations on the facility property.



**SAMPLE LOCATION MAP
 UNIROYAL INC. UNIROYAL CHEMICAL CO.
 GASTONIA, GASTON COUNTY, NORTH CAROLINA**

FIGURE 3



TABLE 1

SAMPLE CODES LOCATIONS AND RATIONALE
 UNIROYAL INC. UNIROYAL CHEMICAL COMPANY
 GASTONIA, GASTON COUNTY, NORTH CAROLINA

Sample Code	Sample Type	Location	Rationale
UC-SS-01	Surface Soil	Background; to be collected south of facility	To determine background conditions
UC-SS-02	Surface Soil	Onsite; from waste pile area	To identify potential waste disposal areas
UC-SS-03	Surface Soil	Onsite; from waste pile area	To identify potential waste disposal areas
UC-SS-04	Surface Soil	Onsite, for drum storage area	To identify potential waste disposal areas
UC-SS-05	Surface Soil	Onsite, from waste storage area	To identify potential waste disposal areas
UC-SB-01	Subsurface Soil	Background; to be collected south of facility	To determine background conditions
UC-SB-02	Subsurface Soil	Onsite; from waste pile area	To identify potential waste disposal areas
UC-SB-03	Subsurface Soil	Onsite, from waste pile area	To identify potential waste disposal areas
UC-SB-04	Subsurface Soil	Onsite, from drum storage area	To identify potential waste disposal areas
UC-SB-05	Subsurface Soil	Onsite; from waste storage area	To identify potential waste disposal areas
UC-SD-01	Sediment	Upstream of facility on Catawba Creek	To determine upstream conditions
UC-SD-02	Sediment	Downstream of facility on Catawba Creek	To determine downstream conditions
UC-SD-03	Sediment	In drainage pathway downslope of facility leading to Catawba Creek	To determine conditions downslope of facility
UC-SW-01	Surface Water	Background; upstream of facility on Catawba Creek	To determine upstream conditions

UC - Uniroyal Inc. Uniroyal Chemical Co.
 SS - Surface Soil
 SB - Subsurface Soil
 SD - Sediment
 SW - Surface Water

TABLE 1

SAMPLE CODES LOCATIONS AND RATIONALE
UNIROYAL INC. UNIROYAL CHEMICAL COMPANY
GASTONIA, GASTON COUNTY, NORTH CAROLINA

Sample Code	Sample Type	Location	Rationale
UC-SW-02	Surface Water	Downstream of facility on Catawba Creek	To determine downstream conditions
UC-SW-03	Surface Water	In drainage pathway downslope of facility leading to Catawba Creek	To determine conditions downslope of facility

- UC - Uniroyal Inc. Uniroyal Chemical Co.
- SS - Surface Soil
- SB - Subsurface Soil
- SD - Sediment
- SW - Surface Water

2.2 Subsurface Soil Sampling

It is anticipated that five subsurface soil samples will be collected from identical locations as surface soil samples. These subsurface soil samples will be collected from depths of 2 feet or more below land surface (bls). A background sample UC-SB-01, will be collected from the same location designated for background surface soil sample UC-SS-01.

2.3 Sediment/Surface Water Sampling

It is anticipated that three sediment and surface water samples will be collected during this investigation. One of these samples, UC-SD-01 will be collected upstream of the facility on Catawba Creek and will be designated as a background sample. The two remaining samples will be collected at locations considered downslope or downstream of the facility. A surface water sample will be collected from the facility drainage area if present.

2.4 Analytical and Container Requirements

Sample containers used will be in accordance with the requirements specified in the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986. The following is a description of the analysis and types of containers required.

<u>Analyses</u>	<u>Container</u>	<u>Preservatives**</u>
Ext. Organics, Water	1 gal., amber glass*	None
Volatile Organics, Water	40 ml., glass vial*	4 drops conc. HCL to pH <2
Metals, Water	1 liter, plastic	50% HNO ₃ to pH <2
Cyanide, Water	1 liter, plastic	NaOH to pH >12
Ext. Organics, Soil/Sediment	8 oz., glass*	None

Volatile Organics Soil/Sediment	4 oz., glass*	None
Inorganics, Soil/Sediment	8 oz., glass*	None

- * Sample container lids are lined with teflon.
- ** All samples will be iced to 4°C upon collection.

2.5 Methodology

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation will be in accordance with the standard operating procedures as specified in Section 3 and 4 of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986.

All laboratory analyses and laboratory quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified in the Analytical Support Branch Operations and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division; revised June 1, 1985 or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the contract analytical laboratory program.

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1. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of North Carolina: Bessemer City (1973), Gastonia South (1973), Gastonia North (1970), Kings Mountain (1971), Mount Holly (1970), and Belmont (1973).
2. EPA General Information (EPA Form 3510-1) for Uniroyal Inc., Gastonia, North Carolina. Filed by Robert J. Mazaika, Director of Manufacturing and Engineering for Uniroyal Inc.
3. Potential Hazardous Waste Site Preliminary Assessment (Form 2070-12), Part 1-Site Information and Assessment for Uniroyal Chemical. Filed by O.W. Strickland, North Carolina Department of Health Services, Solid and Hazardous Waste Management Branch.
4. Larry Fox, North Carolina Department of Health Services (RCRA Section), RCRA Inspection Form, November 12, 1986.
5. John Robinson, Environmental Engineer, Uniroyal Chemical, letter to Lenox Bramble, North Carolina Department of Health Services, October 25, 1984. Subject: Chemical spill.
6. O.W. Strickland, Head, Solid and Hazardous Waste Management Branch, North Carolina Department of Health Services, letter to John Robinson, Uniroyal Chemical, June 19, 1984. Subject: Part A application.
7. John Robinson, Technical Supervisor, Uniroyal Chemical, letter to Jerry Rhodes, Environmental Chemist, North Carolina Solid and Hazardous Waste Management Branch, January 3, 1983. Subject: Change in Part A application.
8. Larry Fox, North Carolina Department of Health Services, RCRA Generator Inspection Form - Part 262, November 22, 1983.
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September 22, 1989

Mr. A.R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Subject: Screening Site Inspection, Phase 1
Uniroyal Inc./Uniroyal Chemical Division
Gastonia, Gaston County, North Carolina
EPA ID No. NCD003164464
TDD No. F4-8902-62



Dear Mr. Hanke:

FIT 4 conducted a Screening Site Inspection of the Uniroyal Inc./Uniroyal Chemical Division facility in Gastonia, Gaston County, North Carolina. Phase 1 included a review of EPA and state file material, a target survey, and an offsite reconnaissance of the facility and the surrounding area.

The 8.75-acre Uniroyal Chemical facility is located at 214 East Ruby Street on the east side of Gastonia. The facility has manufactured herbicides, growth regulants and fungicides, rubber labels, and plastic drum covers since 1955 (Refs. 1, 2). An unknown quantity of hazardous waste has been generated from filtering processes as well as the handling of waste bags and containers for raw materials (Refs. 2, 3). Approximately 79,000 pounds of thiuram, maleic hydrazide, and phthalic anhydride were stored in a waste pile at the facility until 1983 (Ref. 1). In 1974, an accidental spill involving 25 gallons of dinitro butyl phenol resulted in a release to the Gastonia municipal sewer system. A fish kill in Catawba Creek resulted from the spill, and Uniroyal Chemical was held responsible for the cost of an investigation and replacing the fish (Ref. 4).

Uniroyal Chemical filed a Part A hazardous waste permit application as a storage facility in November 1980 (Ref. 5). The North Carolina Department of Human Resources advised the company to delete all of its waste from the application with the exception of ignitable and toxic waste (Ref. 6). Uniroyal Chemical asked to be deleted as a storage facility in September 1983 (Ref. 7). In December 1983, the company was deleted as a storage facility (Ref. 8). The state of North Carolina denied Uniroyal a permit as a TSD facility in September 1984 (Ref. 9). Uniroyal is currently listed as a generator (Ref. 10).

Gaston County, North Carolina lies in the Piedmont Physiographic Province in the south-central portion of the state. The facility is located in gently rolling hills with local elevations ranging from 690 to 1200 feet above sea level (Ref. 11). Net annual precipitation is approximately 6 inches (Ref. 12). The Uniroyal Chemical facility is situated in the Kings Mountain Belt (Ref. 13, p. 19). Mica schist, granite, hornblende gneiss, diorite, and quartzite are the dominant rock types in the Kings Mountain Belt. Locally, massive granitic rocks underlie the facility (Ref. 14). These fractured, crystalline rocks are overlain by a layer of residual soil and saprolite known as the regolith. The thickness of the regolith ranges from 150 feet in draws and valleys to several feet or zero on hilltops (Ref. 15, p. 8).

Mr. A. R. Hanke
Environmental Protection Agency
TDD No. F4-8902-62
September 22, 1989 - page two

The crystalline rock aquifer is the aquifer of concern in the area of the facility. This aquifer is composed of regolith hydraulically connected with fractures in the crystalline rocks. The crystalline rock aquifer is generally an unconfined aquifer; however, artesian or confined conditions may occur in the deep fractures (Ref. 16, pp. 30-32).

Recharge to the aquifer results from the infiltration of rainfall into the regolith and the fractures in the crystalline rocks. Water levels near streams and rivers are usually several feet from the surface. Depth to the water table in the area of the facility is approximately 25 feet below land surface (bls) (Ref. 13, p. 30). Water in the fractures rarely exceeds a depth of 300 to 400 feet bls. Groundwater flow is generally away from topographic highs and towards streams and rivers (Ref. 15, pp. 1-11). The average depth of wells in the granitic rocks of Gaston County is 165 feet below land surface while the average yield is 18 gallons per minute (Ref. 18, p. 49). The hydraulic conductivity of the crystalline rock aquifer ranges from 1×10^{-6} to 1×10^{-2} cm/sec (Ref. 17, p. 29).

A large portion of the people living within a 4-mile radius of the facility are served by two, upgradient surface water intakes owned and operated by the city of Gastonia. One intake is located on the South Fork Catawba River while the other is located on Rankin Lake (Ref. 17). The closest surface water to the facility is Catawba Creek, located approximately 500 feet north of the facility. Catawba Creek flows southeasterly for approximately 12 miles, where it flows into Lake Wylie. The 15-mile surface water pathway ends on Lake Wylie. Lake Wylie is used for recreational purposes.

An estimated 3,387 people drink groundwater from community well systems within 3 miles of the Uniroyal facility. An additional 1,454 people drink groundwater from community well systems located 3 to 4 miles from the facility. Therefore, the total population drinking groundwater from community wells within a 4-mile radius of Uniroyal Chemical is 4,841 people (Refs. 11, 19). The number of people drinking groundwater from private wells within 3 miles of the facility was estimated from U.S. Geological Survey topographic maps to be 410. An additional 1,117 people drink groundwater from private wells located 3 to 4 miles from the facility. Therefore, an estimated 1,527 people drink groundwater from private wells within a 4-mile radius of the facility. The closest well to the facility is a private well, and it is estimated to be 7,920 feet away from the facility (Ref. 11).

There are 4 schools located within a 1-mile radius of the facility (Ref. 11). The facility is fenced and is not accessible to the public (Ref. 17). A species of millipede is a state-designated endangered species found in Gaston County (Ref. 20). There are no critical habitats in Gaston County (Ref. 21).

Based on the file review, the target survey, and the enclosures, Phase II of the Screening Site Inspection is recommended for the Uniroyal Inc./Uniroyal Chemical facility on a high-priority basis. Please contact me if you have any questions regarding this matter.

Very truly yours,


McKenzie Mallary
Project Manager

Approved:



Enclosures

cc: Kelly Cain

References

1. EPA General Information (EPA Form 3510-1) for Uniroyal Inc., Gastonia, North Carolina. Filed by Robert J. Mazaika, Director of Manufacturing and Engineering for Uniroyal Inc.,
2. Potential Hazardous Waste Site Preliminary Assessment (Form 2070-12), Part 1 - Site Information and Assessment for Uniroyal Chemical. Filed by O.W. Strickland, North Carolina Dept. of Health Services, Solid and Hazardous Waste Management Branch,
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