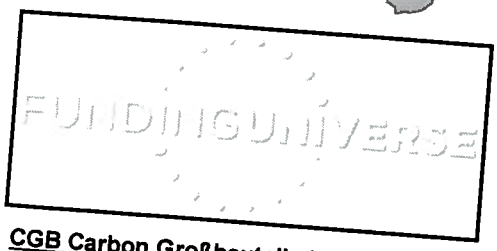




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# Hercules Inc.

**Address:**
Hercules Plaza
1313 North Market Street
Wilmington, Delaware 19894-0001
U.S.A.

**Telephone:** (302) 594-5000
**Fax:** (302) 594-5400
http://www.herc.com

**Statistics:**
**Public Company**
**Incorporated:** 1912 as Hercules Powder Company
**Employees:** 5,116
**Sales:** $1.85 billion (2003)
**Stock Exchanges:** New York
**Ticker Symbol:** HPC
**NAIC:** 325520 Adhesive Manufacturing; 325510 Paint and Coating Manufacturing; 325998 All Other Miscellaneous Chemical Product and Preparation Manufacturing

**Company Perspectives:**
At Hercules, we strive to increase our competitive advantage through work process redesign; understand and meet our customer requirements; create more efficient and cost effective business processes throughout the Company; utilize and develop the skills and energy of all employees to achieve continuous improvement; reinforce our Company-wide applications knowledge and strength to add value through innovation to our customer's products and operations; focus on our business, manufacturing, application, and technology strengths in several key markets including pulp and paper, coatings and adhesives, food, pharmaceuticals and personal care, construction and hygiene; and strengthen the growth and profitability of our businesses through product and service extensions combined with small bolt-on acquisitions that fit closely with our product and market positions and make excellent short and long term financial sense.

**Key Dates:**

**1912:** Hercules Power Company is formed as a result of a court-ordered breakup of Du Pont.
**1916:** The company signs a contract to supply the Britain with acetone.
**1920:** The manufacture of cotton cellulose begins.
**1959:** Hercules diversifies into rocket fuels and propulsion systems.
**1968:** The company changes its name to Hercules Inc.
**1989:** Hercules acquires full ownership of the Aqualon Group.
**1998:** BetzDearborn Inc. is acquired.
**2000:** CP Kelco is formed.
**2003:** International Specialty Products Inc. wages an unsuccessful proxy fight.
**2004:** Hercules' stake in CP Kelco is sold.

**Company History:**

Hercules Inc. manufactures specialty chemicals and materials used in the pulp and paper, food, pharmaceuticals, personal care, paints and adhesives, and construction materials industries. The company has four main divisions. Aqualon is a leading provider of products that are used to change the physical properties of water-based systems. FiberVisions holds a leading industry position as a producer of thermal bond polypropylene staple fiber and various textile fibers. Hercules' Pinova division is the only pale wood rosin derivatives producer in the world. Its Pulp and Paper unit supplies the industry with performance, process, and water treatment solutions. Challenges in the late 1990s and early 2000s forced Hercules to restructure and sell off various assets. The company successfully fought off a proxy fight waged by International Specialty Products Inc. in 2003.

**Early History**

The Hercules Powder Company was one of the several small explosives companies acquired by the Du Pont Company in the 1880s. By the beginning of the 20th century, Du Pont had absorbed so many of its competitors that it was producing two-thirds of the dynamite and gunpowder sold in the United States. In 1912, a federal court, citing the Sherman Anti-Trust Act, ordered Du Pont broken up. It was through this court-ordered action that the Hercules Powder Company was reborn, a manufacturer of explosives ostensibly separate from Du Pont.

The division of the Du Pont Company into Du Pont, Atlas Powder Company, and Hercules Powder Company was intended to foster competition in the explosives industry, but in reality the antitrust agreement allowed the connection between Hercules and the parent company to remain intact. The new company was staffed by executives who had been transplanted from the Du Pont headquarters across the street into the main offices of Hercules in Wilmington, Delaware. As *Fortune* magazine remarked in 1935, "The Hercules headquarters is in Wilmington and breathes heavily Dupontizied air." Not only did the Du Pont family retain a substantial financial interest in Hercules, but as late as 1970 the president of Hercules was related to the Du Pont family.

The Hercules Powder Company was set up as a fully developed business entity, complete with several explosives factories, a healthy segment of the explosives market, and a $5 million "loan" in its treasury. It operated successfully and made a profit from its very first year. Given its early advantage, it is not surprising that Hercules developed into one of the larger chemical companies in the United States.

Hercules began as an explosives company serving the mining industry, gun owners, and the military. In the first month of operation, its facility in Hazardville, New Jersey, exploded. Hercules had plants up and down the East Coast, however, and the loss of the Hazardville plant was not financially disastrous. Like other manufacturers of explosives, Hercules preferred many small plants to a few large ones. Due to the company's risks involved in product transportation, these plants were located in proximity to customers, rather than near the source of raw materials.

The company's first big break came in 1916 when Hercules signed a lucrative contract to supply Britain with acetone, a contract that stipulated, however, that no known sources of acetone be used. Hercules sent ships out to the Pacific to harvest giant kelp, which was used to produce the solvent Britain needed. That same year, Hercules paid large dividends on its stock shares. The company also benefited from its sale of gunpowder to the army.

In 1920, Hercules began to manufacture cotton cellulose from the lint left over from cotton seeds once the

high-quality cotton has been extracted. Cotton cellulose is a fiber that has hundreds of industrial uses. When treated with nitroglycerine it becomes nitrocellulose, important in the production of lacquers and plastics. Hercules quickly became the world's leading maker of cotton cellulose. This early effort at diversification in no way threatened Du Pont, which also manufactured nitrocellulose but only for its own uses.

**Expansion into Naval Stores in the 1920s-30s**

Throughout its history, Hercules proved successful at transforming a previously worthless substance into something useful. However, for every time Hercules succeeded in this kind of endeavor, there were prior failures. The company's foray into naval stores is an example of this. Naval stores is a term that refers to products derived from tree sap and recalls the early use of pitch to caulk boats. Gums, turpentine, and various adhesives are all referred to as naval stores. In 1920, a Senate committee predicted that the virgin pine forests from which high-quality naval stores were derived would soon be exhausted and that there would be no naval stores industry left in the United States. The management at Hercules saw, or thought it saw, a chance to corner the naval stores market.

Hercules joined forces with Yaryan, one of the few companies that distilled rosin from tree stumps rather than pitch. After buying rights to pull stumps and building a new rosin distilling plant, Hercules quickly became the world's largest producer of naval stores. However, a problem soon arose: the expected shortage of naval stores never materialized. Hercules, the Senate Committee, and the naval stores industry overlooked the fact that pine trees grow back rather quickly and that with proper management there would be plenty of pitch. Hercules was stuck with fields full of stumps, facilities to process the stumps, and a large amount of inferior turpentine. Turpentine derived from stumps is dark in color and hence unsuitable for some uses in finishing and painting furniture.

Endowed with sufficient capital (a legacy from Du Pont), Hercules was able to salvage its naval stores division by developing a paler turpentine and convincing its customers that wood (as opposed to pitch) naval stores were a bargain. In 1935, naval stores, the second largest of the company's investments, provided the smallest percentage of company sales. Naval stores and products derived from them eventually became a mainstay of the company, albeit one with slow growth. Not until the mid-1970s did the naval stores division emerge as a profitable endeavor. It was its explosives division which ensured the company's financial stability throughout the Depression.

By 1935, Hercules had five divisions: explosives, naval stores, nitrocellulose, chemical cotton, and paper products. Chemical cotton is made from the short fibers of cotton unsuitable for weaving which are then pressed into sheets and sold to industries as a source of cellulose. The paper products division began in 1931 with the purchase of Paper Makers Chemical Corporation, which provided 70 percent of U.S. demand for the rosin "sizing" used to stiffen paper.

At the time of America's entrance into World War II, Hercules was the country's largest producer of naval stores and the third-largest producer of explosives. Business was good during the war, and company coffers were stuffed with both legitimate and illicit gains. Hercules, Atlas, and Du Pont were convicted of a joint price-fixing scheme, and Du Pont was assessed a $40,000 dollar fine. Hercules' annual reports during this period concentrated on plans for reducing the company's staff once the war ended because the demands of the war had swelled the company's workforce to twice its previous size.

**Postwar Diversification**

Three years after the war ended, Hercules emerged from what a later industry analyst called "a big sleep." The demand for nitrocellulose, paper chemicals, and naval stores, products Hercules was depending on in peacetime, was growing at a snail's pace. Sales were averaging an unremarkable $200 million a year. However, in the 1950s the company entered two markets it would later dominate: DMT and polypropylene.

Consistent with its "waste not, want not" approach to new chemicals, Hercules began to use waste gases from refineries to manufacture polypropylene, an increasingly important type of plastic. Polypropylene was used for food packaging, among other things. DMT is the chemical base for polyester fiber and was sold as a commodity to both chemical and polyester makers, including Du Pont. Besides these new products Hercules continued to look for new uses for naval stores from which it already derived chemicals used in insecticides, textiles, paints, and rubber.

Between 1955 and 1963, Hercules saw its sales double, due in large part to government contracts. In 1959, Hercules diversified into rocket fuels and propulsion systems for the Polaris, Minuteman, and Honest John missiles. Sales of

aerospace equipment and fuels accounted for almost 10 percent of sales in 1961, 15 percent in 1962, and 25 percent in 1963. Throughout the Vietnam War, Hercules continued to derive approximately 25 percent of its profits from rocket fuels, anti-personnel weapons, and specialty chemicals such as Agent Orange and napalm.

The man who presided over Hercules in the 1960s was George Thouron, a relative of the Du Ponts. He described Hercules' policy towards expansion as "sticking close to profit-producing fields." A profile in *Fortune* magazine described Thouron as a quiet man. As the article noted, "his main interest is in his prize Guernsey cattle."

Thouron knew that the war in Vietnam would not last forever and undertook an ambitious reorientation of the company toward the production of plastics, polyester, and other petrochemicals. A contemporary observer remarked that "few companies have expanded further or faster than Hercules Inc." Herculon, the company's synthetic fabric, had garnered almost 11 percent of the market for upholstery material. A water soluble gum called CMC also made money for the company. CMC was as versatile as Herculon was stain-resistant: it made its way into products as diverse as ice cream, embalming fluid, diet products, and vaginal jelly. "From womb to tomb," one company pundit quipped. In 1968, the company changed its name from Hercules Powder Company to Hercules Inc.

The 1960s and early 1970s were an auspicious time for Hercules. Although the foray into plastics had required large capital and research expenditures that depressed earnings, Hercules remained a profitable and steadily growing company. High inflation actually helped the synthetics industry since the prices of natural fibers outpaced the cost of synthetics.

**Overcoming Challenges in the 1970s**

In 1973, however, Hercules learned that oil can be economically as volatile as nitroglycerin. The Arab oil embargo was a disaster for the petrochemical industry, and if the embargo were not enough, two years later the demand for naval stores crashed just months after a rosin shortage had been predicted. Hercules, anticipating a shortage, had ordered millions of pounds of rosin at twice the usual price. Around the time that the first rosin-laden ships arrived it became clear that Hercules' customers, also fearful of a shortage, were overstocked with the material. The rosin problem, combined with a drop in the fibers market, caused sales to drop 90 percent. Hercules stock went down 17 percent. The year 1975 was not a good one for most chemical companies, but the difficulties that Hercules experienced were more than its share.

Werner Brown was the company's president during these years. In 1977, he was promoted and chose Alexander Giacco to be the next president. Hercules had become an inordinately large company; its overheads and the size of its workforce were both excessive. In his first year as president, Giacco fired or forced into retirement 700 middle managers and three executive vice-presidents. Giacco had a managerial style that differed from that of the mild-mannered Brown, and his restructuring of the company reflected that. Giacco streamlined Hercules to make it more of a monarchy. "He runs the company like an extension of himself," said one analyst. In order to stay in touch with the various divisions, Giacco invested in advanced communications equipment and computers. He also reduced the managerial levels between himself and the foremen from 12 to six. His position in the company is suggested by his description of a new product. "I heard Gene Shalit say that candy wrapping paper made too much crinkling noise in movie houses. So we developed a candy wrapper that has no crinkle."

In many ways, Giacco's plan for Hercules resembled the strategy his mentor, Werner Brown, mapped out in the early 1970s: shift from commodity to value-added (specialty) chemicals, get rid of unprofitable divisions, and derive more profits from existing product lines. Giacco also led the company away from its longstanding tradition of basic chemical research into more immediately profitable, application-based inquiry. After the fiasco in 1975, when two unrelated markets crashed at the same time, Hercules has experimented with the proper combination of products taking to heart the teachings of economist Charles Reeder: "There's a simple two word answer to why chemical company earnings vary all over the lot. The words are 'product mix.'"

This product mix had eluded Hercules. One thing was certain, however: Hercules' mix would not include petrochemicals. In 1975, 43 percent of its fixable assets were in petrochemicals, but within a decade these assets were liquidated. Naval stores, responsible in 1985 for a decline in operating profits, also fell out of favor. Demand for CMC, the binding agent, declined because the oil industry was not using it for drilling. Propylene fibers and film, food flavors and fragrances (relatively new ventures), paper chemicals, aerospace, and graphite fibers were included in the future recipe for success. The company's plants for manufacturing DMT and explosives were among two

dozen sold between 1975 and 1985.

One shining success during this period was the growth of the stagnant polypropylene market. Hercules entered into a joint venture with the Italian firm Montedison, with whom it had previously teamed up in the pharmaceutical company Adria Labs, in order to take advantage of Montedison's newly developed, extremely efficient process for manufacturing polypropylene. Because the material cost so little, Giacco promoted the use of it to replace other materials in all types of products, including cigarette filters. It was mixed with polyethylene to produce a synthetic wood pulp replacement.

The company's herbicide business, maintained during the 1960s, was not profitable and its liabilities continued to haunt Hercules well after it closed the Reasor-Hill plant in Jacksonville, Arkansas. After five years of class action litigation on behalf of U.S. veterans exposed to Agent Orange, the company paid $18 million in 1983 to settle claims in the case. Its product's extremely low levels of the impurity dioxin, which was perceived to be the primary pathogen in Agent Orange, mitigated the portion Hercules paid of the total $180 million settlement with several other manufacturers.

The overall success in its aerospace business segued nicely with its line of graphite composites, which had steadily gained acceptance during the 1970s to become a mainstay in high performance aircraft. In 1986, Dick Rutan and Jeana Yeager flew the company's Magnamite carbon composites into the history book when their experimental craft the Voyager circled the globe.

**Management Changes in the Late 1980s-90s**

David Hollingsworth succeeded Giacco as chairman and CEO in 1987. After Hollingsworth sold the company's share of the HIMONT polypropylene venture to Montedison, Giacco resigned from the board, offended at the loss of a sure growth center. As in the last period after the top office changed hands, several poorly performing, mature businesses were sold off. Advanced materials and flavors and food ingredients--particularly natural additives based on pectin and carrageenan--were the focus of intended growth. In 1989, the company bought out Henkel KgaA's share of the Aqualon Group, formed in 1986 to make cellulose derivatives and water-soluble polymers.

The 1990s were another period of readjustment. Hercules impressed investors with its 1991 introduction of Slendid, a fat substitute made from citrus pectin (it would first be used in a commercial product five years later, in J.R. Simplot frozen French fries). However, its aerospace unit, which surged forward in the late 1970s, suffered serious setbacks in its program to develop engines for the Titan IV program. Overall, the year was a disappointing start for a new CEO, Tom Gossage. He would devote the next five years to enhancing the company's value to shareholders and succeeded in building Hercules' market value to nearly three times what it was when his tenure began (from $1.6 billion to $4.4 billion).

In 1996, another CEO, R. Keith Elliott, took the reins at Hercules. The company's successful composites business was sold to Hexcel Corporation that year. A new, lower cost carrageenan plant was being built in the Philippines. Hercules entered a joint venture of its polypropylene fiber business with Jacob Holm & Sons A/S (Denmark) in 1997. Earlier it had signed agreements to co-produce hydrogenated hydrocarbon resins in China with the Beijing Yanshan Petrochemical Company. One of the smaller CMC subsidiaries, Aqualon do Brasil, was sold to Grupo Gusmao dos Santos. In 1997, Hercules and its partner Mallinckrodt Inc. sold their Tastemaker venture to Roche for $1.1 billion.

**Obstacles in the Late 1990s and Beyond**

The late 1990s and early 2000s were tumultuous times for Hercules. The company made several moves that proved to be problematic. In 1998, the company acquired BetzDearborn Inc. for $2.4 billion and the assumption of $700 million in debt. The deal was designed to bolster Hercules' paper chemicals business and give it a foothold in the water and industrial process treatment industry. Benefits of the merger failed to reach fruition and company debt continued to grow. As such, Hercules decided to sell the water treatment portion of BetzDearborn to GE Specialty Materials for $1.8 billion in 2001. It also sold the majority of its resin assets that year.

In another move to reduce debt, the company joined with Monsanto Company to create CP Kelco, a venture that combined both Hercules' and Monsanto's food gums business. Problems arose, however, when CP Kelco filed $430 million suit against Pharmacia, the former parent company of Monsanto, claiming its food gum business was

undervalued at the time of its formation in 2000. Hercules decided to sell its 28.6 percent stake in CP Kelco in 2004.

Management changes also continued during this time period. Elliott was replaced by COO Vincent Corbo in 1999. Corbo resigned in 2000, and the company tapped former CEO Gossage to lead the company. William Joyce was named CEO the following year. Joyce's short career with Hercules was marred by a vicious proxy fight waged by International Specialty Products Inc. (ISP) and its chairman Samuel J. Heyman. ISP held a 10 percent stake in Hercules and fought to gain control of the company's board of directors in 2003. Heyman was publicly critical of Joyce and the company's decision to sell BetzDearborn, claiming Joyce had not acted in the company's best interest. Despite ISP's efforts, Hercules managed to maintain control of its board and remained intact. Heyman resigned from the board and ISP eventually sold most of its shares.

In late 2003, Joyce left Hercules to head up Nalco Company. John K. Wulff was named chairman while Craig A. Rogerson assumed the role as president and CEO. The past several years had been challenging, but Hercules now operated as a slimmer, more efficient company and earned a profit in 2003--a good sign that business was back on track. Nevertheless, the company and its peers in the chemical industry faced several obstacles. Wavering demand and high energy and raw material costs would no doubt keep Hercules on its toes in the years to come.

**Principal Divisions:** Pulp & Paper; Aqualon; FiberVisions; Pinova.

**Principal Competitors:** Akzo Nobel N.V.; The Dow Chemical Company; Rhodia.



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**Source:** *International Directory of Company Histories*, Vol. 66. St. James Press, 2004.

# The Story of Agent Orange

U.S. Veteran Dispatch Staff Report
November 1990 Issue

It is the war that will not end. It is the war that continues to stalk and claim its victims decades after the last shots were fired. It is the war of rainbow herbicides, Agents Orange, Blue, White, Purple, Green and Pink.

This never-ending legacy of the war in Vietnam has created among many veterans and their families deep feelings of mistrust of the U.S. government for its lack of honesty in studying the effects of the rainbow herbicides, particularly Agent Orange, and its conscious effort to cover up information and rig test results with which it does not agree.

## STUDY CANCELED

On August 2, 1990, two veteran's groups filed suit in U.S. District Court in Washington, D.C., charging that federal scientists canceled an Agent Orange study mandated by Congress in 1979 because of pressure from the White House.

The four year, $43 million study was canceled, according to the Centers for Disease Control (CDC) in Atlanta, because it could not accurately determine which veterans were exposed to the herbicide used to destroy vegetation in Vietnam.

The American Legion, Vietnam Veterans of America and other veteran's groups are charging a massive government cover-up on the issue of herbicide exposure because of the hundreds of millions of dollars in health care and disability claims that would have to be paid.

The results of the scientific studies are rigged, claim many veterans, to exonerate the government which conducted the spraying and the chemical companies which produced the herbicides. Until there is a true study of the effects of Agent Orange, say the veterans - a study devoid of government interference and political considerations, the war of the rainbow herbicides will go on.

Charges of a White House cover-up have been substantiated by a report from the House Government Operations Committee. That report, released August 9, 1990, charges that officials in the Reagan administration purposely "controlled and obstructed" a federal Agent Orange study in 1987 because it did not want to admit government liability in cases involving the toxic herbicides.

Government and industry cover-ups on Agent Orange are nothing new, though. They have been going on since before the herbicide was introduced in the jungles of Vietnam in the early 1960s.

## PLANTS GIVEN CANCER

Agent Orange had its genesis as a defoliant in an obscure laboratory at the University of Chicago during World War II. Working on experimental plant growth at the time, Professor E.J. Kraus, chairman of the school's botany department, discovered that he could regulate the growth of plants through the infusion of various hormones. Among the discoveries he made was that certain broadleaf vegetation could be killed by causing the plants to experience sudden, uncontrolled growth. It was similar to giving the plants cancer by introducing specific chemicals. In some

instances, deterioration of the vegetation was noticed within 24-48 hours of the Introduction of the chemicals.

Kraus found that heavy doses of the chemical 2,4-dichlorophenoxyacetic acid (2,4-D) could induce these growth spurts. Thinking this discovery might be of some use in the war effort, Kraus contacted the War Department. Army scientists tested the plant hormones but found no use for them before the end of the war.

Civilian scientists, however, found Kraus' plant hormones to be of use in everyday life after the war. Chemical sprays that included 2,4-D were put on the market for use in controlling weeds in yards, along roads and railroad rights of way.

## ARMY EXPERIMENTS WITH DEADLY DEFOLIANTS

The Army continued to experiment with 2,4-D during the 1950s and late in the decade found a potent combination of chemicals which quickly found its way into the Army's chemical arsenal.

Army scientists found that by mixing 2,4-D and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and spraying it on plants, there would be an almost immediate negative effect on the foliage. What they didn't realize, or chose to ignore, was that 2,4,5-T contained dioxin, a useless by-product of herbicide production. It would be twenty more years until concern was raised about dioxin, a chemical the Environmental Protection Agency (EPA) would later call "one of the most perplexing and potentially dangerous" known to man.

According to the Encyclopedia Britannica, "The toxicity of dioxin renders it capable of killing some species of newborn mammals and fish at levels of five parts per trillion (or one ounce in six million tons). Less than two millionths of an ounce will kill a mouse. Its toxic properties are enhanced by the fact that it can pass into the body through all major routes of entry, including the skin (by direct contact), the lungs (by inhaling dust, fumes or vapors), or through the mouth. Entry through any of these routes contributes to the total body burden. Dioxin is so toxic, according to the encyclopedia, because of this: "Contained in cell membranes are protein molecules, called receptors, that normally function to move substances into the cell. Dioxin avidly binds to these receptors and, as a result, is rapidly transported into the cytoplasm and nucleus of the cell, where it causes changes in cellular procession."

After minimal experimentation in 1961, a variety of chemical agents was shipped to Vietnam to aid in anti-guerilla efforts. The chemicals were to be used to destroy food sources and eliminate foliage that concealed enemy troop movements.

## RAINBOW HERBICIDES

The various chemicals were labeled by color-coded stripes on the barrels, an arsenal of herbicides known by the colors of the rainbow, including Agent Blue (which contained arsenic), Agent White, Agent Purple, and the lethal combination of 2,4-D and 2,4,5-T, Agent Orange.

On January 13, 1962, three U.S. Air Force C-123s left Tan Son Nhut airfield to begin Operation Hades (later called Operation Ranch Hand), the defoliation of portions of South Vietnam's heavily forested countryside in which Viet Cong guerrillas could easily hide. By September, 1962, the spraying program had intensified, despite an early lack of success, as U.S. officials targeted the Ca Mau Peninsula, a scene of heavy communist activity. Ranch Hand aircraft sprayed more than 9,000 acres of mangrove forests there, defoliating approximately 95 percent of the targeted area. That mission was deemed a success and full approval was given for continuation of Operation Ranch Hand as the U.S. stepped up its involvement in Vietnam.

## SIX TO TWENTY-FIVE TIMES STRONGER THAN RECOMMENDED

Over the next nine years, an estimated 12 million gallons of Agent Orange were sprayed throughout Vietnam. The U.S. military command in Vietnam insisted publicly the defoliation program was militarily successful and had little adverse impact on the economy of the villagers who came into contact with it.

up to 1991 was it still being Produced at Hercules?

Although the herbicides were widely used in the United States, they usually were heavily diluted with water or oil. In Vietnam, military applications were sprayed at the rate of three gallons per acre and contained approximately 12 pounds of 2,4-D and 13.8 pounds of 2,3,5-T.

The military sprayed herbicides in Vietnam six to 25 times the rate suggested by the manufacturer.

In 1962, 15,000 gallons of herbicide were sprayed throughout Vietnam. The following year that amount nearly quadrupled, as 59,000 gallons of chemicals were poured into the forests and streams. The amounts increased significantly after that: 175,000 gallons in 1964, 621,000 gallons in 1965 and 2.28 million gallons in 1966.

The pilots who flew these missions became so proficient at their jobs that it would take only a few minutes after reaching their target areas to dump their 1,000-gallon loads before turning for home. Flying over portions of South Vietnam, Laos and Cambodia that had been sprayed, the pilots could see the effects of their work. Many of them adopted a grim fatalism about the job. Over the door of the ready room for Ranch Hand pilots at Tan Son Nhut Airport near Saigon hung this sign: "Only You Can Prevent Forests."

## MAKERS KNEW OF DANGER TO HUMANS

Unknown to the tens of thousands of American soldiers and Vietnamese civilians who were living, eating and bathing in a virtual omnipresent mist of the rainbow herbicides, the makers of these chemicals were well aware of their long-term toxic effects, but sought to suppress the information from the government and the public, fearing negative backlash.

Of particular concern to the chemical companies was Agent Orange, which contained dioxin. Publicly, the chemical companies said dioxin occurred naturally in the environment and was not harmful to humans.

Privately, they knew otherwise.

A February 22, 1965 Dow Chemical Corporation internal memorandum provided a summary of a meeting in which 13 executives discussed the potential hazards of dioxin in 2,4,5-T. Following that meeting, Dow officials decided to meet with other makers of the chemical and formulate a stance on Agent Orange and dioxin.

In March 1965, Dow official V.K. Rowe convened a meeting of executives of Monsanto, Hooker Chemical, which operated the Love Canal dump, Diamond Alkali, the forerunner of Diamond-Shamrock, and the Hercules Powder Co., which later became Hercules, Inc.

According to documents uncovered only years later, the purpose of this meeting was "to discuss the toxicological problems caused by the presence of certain highly toxic impurities" in samples of 2,4,5-T. The primary "highly toxic impurity" was 2,3,7,8 TCDD, one of 75 dioxin compounds.

## CONCERN OVER DIOXINS KEPT QUIET

Three months later, Rowe sent a memo to Ross Mulholland, a manager with Dow in Canada, informing him that dioxin "is exceptionally toxic, it has a tremendous potential for producing chloracne (a skin disorder similar to acne) and systemic injury." Rowe ordered Mulholland in a postscript to the letter that "Under no circumstances may this letter be reproduced, shown or sent to anyone outside of Dow." Among those in attendance at one of the meetings of chemical company officials was John Frawley, a toxicologist for Hercules, Inc. In an internal memorandum for Hercules officials, Frawley wrote in 1965 that Dow was concerned the government might learn of a Dow study showing that dioxin caused severe liver damage in rabbits. Dow was concerned, according to Frawley, that "the whole industry will suffer." Frawley said he came away from the meeting with the feeling that "Dow was extremely frightened that this situation might explode" and lead to government restrictions.

The concern over dioxins was kept quiet and largely out of the public view. The U.S. government and the chemical companies presented a united front on the issue of defoliation, claiming it was militarily necessary to deprive the Viet Cong of hiding places and food sources and that it caused no adverse economic or health effects to those who came into contact with the rainbow herbicides, particularly Agent Orange.

## AIR FORCE KNEW OF HEALTH DANGER

But, scientists involved in Operation Ranch Hand and documents uncovered recently in the National Archives present a somewhat different picture. There are strong indications that not only were military officials aware as early as 1967 of the limited effectiveness of chemical defoliation, they knew of potential long-term health risks of frequent spraying and sought to keep that information from the public by managing news reports.

Dr. James Clary was an Air Force scientist in Vietnam who helped write the history of Operation Ranch Hand. Clary says the Air Force knew Agent Orange was far

more hazardous to the health of humans than anyone would admit at the time.

"When we (military scientists) initiated the herbicide program in the 1960s," Clary wrote in a 1988 letter to a member of Congress investigating Agent Orange, "we were aware of the potential for damage due to dioxin contamination in the herbicide. We were even aware that the `military' formulation had a higher dioxin concentration than the `civilian' version, due to the lower cost and speed of manufacture. However, because the material was to be used on the `enemy,' none of us were overly concerned. We never considered a scenario in which our own personnel would become contaminated with the herbicide. And, if we had, we would have expected our own government to give assistance to veterans so contaminated."

## MILITARY DOWNPLAYS USE OF HERBICIDES

Aware of the concern over the use of herbicides in Vietnam, particularly the use of Agent Orange, the U.S. Military Assistance Command, Vietnam (MACV), attempted to put the proper public relations spin on information concerning Operation Ranch Hand by announcing a "revision" in its policy on the use of herbicides.

It was not so much a revision of the policy as it was an appearance of a revision of the policy as it was an appearance of revision, as is evident in a memorandum signed by Gen. R.W. Komer, deputy to Gen. William Westmoreland for civil operations and RD support (CORDS).

"The purpose of this exercise would be to meet criticisms of excessive use of defoliants by clarifying that they will no longer be used in large areas, while in reality not restricting our use of defoliants (since they are not now normally used in this area anyway). In addition, there would be an escape clause . . . which would permit the use of defoliants even in the prohibited area provided that a strong case could be made to MACV/JGS.

"Appearing to restrict the use of defoliants in this manner would (a) help meet US and Vietnamese criticism of these operations; (b) increase peasant confidence so that they would grow more rice; (c) be of psywar (psychological warfare) value by suggesting that large areas were sufficiently pacified by now that large scale defoliants use was no longer necessary."

But the idea that the spraying of herbicides could be confined to a limited area as suggested in this memo was known to be futile as early as 1962.

## MIST DRIFT

One of the first defoliation efforts of Operation Ranch Hand was near a rubber plantation in January, 1962.

According to an unsigned U.S. Army memorandum dated January 24, 1966, titled "Use of Herbicides in Vietnam," studies showed that within a week of spraying, the trees in the plantation "showed considerable leaf fall."

"The injury to the young rubber trees occurred even though the plantation was located some 500 yards away and upwind of the target at the time of the spray delivery."

The memo went on to say that "vapors of the chemical were strong enough in concentration to cause this injury to the rubber." These vapors, "appear to come from `mist drift' or from vaporization either in the atmosphere or after the spray has settled on the vegetation."

The issue of "mist drift" continued to plague the defoliation program. How far would it drift? How fast? Wind speed and direction were of major concerns in answering these questions. Yet, there were other questions, many of which could not be answered.

What happened in humid weather?

How quickly did the chemicals diffuse in the atmosphere or were they carried into the clouds and dropped dozens of miles away? How long would the rainbow herbicides linger in the air or on the ground once they were sprayed?

A November 8, 1967 memorandum from Eugene M. Locke, deputy U.S. ambassador in Saigon, once again addressed the problem of "mist drift" and "significant damage" to rubber plantations from spraying earlier in the year.

According to Locke, "the herbicide damage resulted from a navigational error; some

trees in another plantation had been defoliated deliberately in order to enhance the security of a U.S. military camp. The bulk of the herbicide damage must be attributed, however, to the drift of herbicide through the atmosphere. This drift occurs (a) after the spray is released from the aircraft and before it reaches the ground, and/or (b) when herbicide that has already reached the ground vaporizes during the heat of the day, is carried aloft, then moved by surface winds and eventually deposited elsewhere.

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"There is a lack of agreement within the Mission regarding the distances over which the two kinds of drift can occur. When properly released (as required at 150 feet above the target, with winds of no more than 10 mph blowing away from nearby plantations) herbicide spray should fall with reasonable accuracy upon its intended target. The range of drift of vaporized herbicide, however, has not been scientifically established at the present time. In recognition of this phenomenon and to minimize it, current procedures require that missions may be flown only during inversion conditions, i.e., when the temperature on the land and in the atmosphere produces downward currents of air. Estimates within the Mission of vaporized herbicide drift range from only negligible drift to distances of up to 10 kilometers and more."

Ten kilometers and more. More than six miles. In essence, troops operating more than six miles from defoliation operations could find themselves, their water and their food doused with chemical agents, including dioxin-laced Agent Orange. And they wouldn't even know it.

More than four months later, on March 23, 1968, Gen. A.R. Brownfield, then Army Chief of Staff, sent a message to all senior U.S. advisors in the four Corps Tactical Zones (CTZ) of Vietnam.

Brownfield ordered that "helicopter spray operations will not be conducted when ground temperatures are greater that 85 (degrees) Fahrenheit and wind speed in excess of 10 mph."

But the concern was not for any troops operating in the areas of spraying, as was evident in the memo, but for the rubber plantations. The message ordered that "a buffer distance of at least two (2) kilometers from active rubber plantation must be maintained." No such considerations were given for the troops operating in the area.

PROJECT PINK ROSE

One of the U.S. government's worst planned and executed efforts to use herbicides was a secret operation known as "Project Pink Rose."

According to a recently declassified report on "Project Pink Rose," the operation had its genesis in September 1965 when the Joint Chiefs of Staff received a recommendation from the Commander in Chief Pacific "to develop a capability to destroy by fire large areas of forest and jungle growth in Southeast Asia."

On March 11, 1966, a test operation known as "Hot Tip" was documented at Chu Pong mountain near Pleiku when 15 B-52s dropped incendiaries on a defoliated area. According to the declassified memo, "results were inconclusive but sufficient fire did develop to indicate that this technique might be operationally functional."

What neither the government nor the chemical companies told anyone was that burning dioxins significantly increases the toxicity of the dioxins. So, not only was the government introducing cancer causing chemicals into the war, it was increasing their toxicity by burning them.

Nevertheless, "Project Pink Rose" continued. was this Produce At Hercules

In November, 1966, three free strike target areas were selected: one in War Zone D and two in War Zone C. Each target was a box seven kilometers square. The target areas were double and triple canopy jungle. The areas were heavily prepped with defoliants, the government dumping 255,000 gallons on the test sites.

The three sites were bombed individually, one on January 18, 1967, another January 28, 1967 and the last on April 4, 1967. According to the memo, "the order and dates of strikes were changed to properly phase Pink Rose operations with concurrent ground operations."

Which means that U.S. and Vietnamese troops were living and fighting in these test sites on which 255,000 gallons of cancer causing defoliants had been dumped.

The results of "Project Pink Rose" were less than favorable.

According to the memo, "The Pink Rose technique is ineffective as a means of removing the forest crown canopy."

The conclusion: "Further testing of the Pink Rose technique in South Vietnam under the existing concept be terminated."

## DEFOLIANTS DUMPED ON PEOPLE AND INTO WATER SUPPLIES

In addition to the planned dumps of herbicides, accidental and intentional dumps of defoliants over populated areas and into the water supplies was not unusual, according to government documents.

A memorandum for the record dated October 31, 1967, and signed by Col. W.T. Moseley, chief of MACV's Chemical Operations Division, reported an emergency dump of herbicide far from the intended target.

At approximately 1120 hours, October 29, 1967, aircraft #576 made an emergency dump of herbicide in Long Khanh Province due to failure of one engine and loss of power in the other. Approximately 1,000 gallons of herbicide WHITE were dumped from an altitude of 2,500 feet.

No mention was made of wind speed or direction, but chemicals dropped from that height had the potential to drift a long way.

Another memorandum for the record, this one dated January 8, 1968 and signed by Col. John Moran, chief Chemical Operations Division of MACV, also reported an emergency dump of herbicide, this time into a major river near Saigon.

"At approximately 1015 hours, January 6, 1968, aircraft #633 made an emergency dump over the Dong Nai River approximately 15 kilometers east of Saigon when the aircraft experienced severe engine vibration and loss of power. Approximately 1,000 gallons of herbicide ORANGE were dumped from an altitude of 3,500 feet."

## CHEMICAL COMPANY EMPLOYEES DEVELOP SKIN PROBLEMS

The chemical companies continued to insist that the herbicides in general, and Agent Orange in particular, had no adverse effects on humans. This despite Dow's concerns about human exposure to Agent Orange expressed internally in 1965 but hidden from the government. And this despite evidence at the plants producing Agent Orange that workers exposed to it suffered unusual health problems.

The Diamond Alkali Co. in Newark, New Jersey, was one of the major producers of Agent Orange for the government. Spurred by Pentagon officials to make their production schedules to "help the war effort," patriotic employees at Diamond Alkali eagerly sought to fill their quotas.

But some of Diamond Alkali's employees began suffering what were described as "painful and disfiguring" skin diseases, according to the doctor who treated more than 50 of the employees in the early and mid 1960s.

"They (the employees) were aware of what was going on," said Dr. Roger Brodkin, head of dermatology at the University of Medicine and Dentistry of New Jersey.

"No one worried much about the skin disease because everyone was determined to make production schedules."

Brodkin said he alerted state health officials of the problem, but got little response.

"They came out, all of them, said Brodkin. "They looked around and they said, `Ah hah,' and left. Nothing was done."

Brodkin later discovered that many of Diamond Alkali's employees involved in the manufacture of Agent Orange were suffering a variety of ailments.

"We discovered that not only were these people getting skin disease, but they were also showing some indication of liver damage," he said.

It was not until 1983 that the state of New Jersey got around to testing the soil around the plant. It found hazardous levels of dioxin.

New Jersey Gov. Thomas Kean urged residents living within 300 yards of the plant

to move. is this what you done? is this why every one re locate wi And we move into the contamenated Area. unac

It was not until 1968 that scientists began raising some concerns about the use of the rainbow herbicides in Vietnam.

## STATE DEPARTMENT EXONERATES CHEMICAL COMPANIES

Part of their concern came following a November 1967 study by Yale University botany Professor Arthur Galston. Galston did some experiments with Agent Orange and other herbicides to determine whether they were dangerous to humans and animals. Galston was unable to come to any definite conclusions on Agent Orange, but advised that continued use of it might "be harmful" and have unforeseen consequences.

The American Association for the Advancement of Science (AAAS) in the summer of 1968 sent a letter to the Secretaries of State and Defense urging a study to determine the ecological effects of herbicide spraying in Vietnam.

That letter prompted a cable from Secretary of State Dean Rusk to the U.S. Embassy in Saigon. The cable, dated August 26, 1968, sought additional information but informed embassy officials of the tactic State was going to take in its reply to the AAAS.

"The Department of State's proposed reply notes that the limited investigations of the ecological problem which have been conducted by agencies of the USG thus far have failed to reveal serious ecological disturbances, but acknowledges that the long-term effect of herbicides can be determined definitively only by long-term studies."

Rusk suggested releasing "certain non-sensitive" portions of a study on the ecological effects of herbicide spraying in Vietnam done earlier that year by Dr. Fred H. Tschirley, then assistant chief of the Corps Protection Research Branch, Corps Research Division of the U.S. Department of Agriculture in Beltsville, Maryland. Tschirley went to Vietnam under the auspices of the State Department early in 1968 and returned with exactly the report the U.S. government and the chemical companies wanted.

Tschirley foresaw no long-term ecological impact on Vietnam as a result of the herbicide spraying. In addition, in his report of April 1968, later reprinted in part in the February 21, 1969 issue of Science magazine, Tschirley exonerated the chemical companies. why

"The herbicides used in Vietnam are only moderately toxic to warm-blooded animals," Tschirley wrote. "None deserves a lengthy discussion except for Agent Blue (cacodylic acid), which contains arsenic."

This despite evidence within the chemical companies that dioxin, the most toxic ingredient in Agent Orange, was responsible for health problems in laboratory animals and workers at the plants that produced the chemical.

"There is no evidence," Tschirley wrote, "to suggest that the herbicides used in Vietnam will cause toxicity problems for man or animals."

Rusk urged Tschirley's report be made public. In his cable to Saigon, he wrote: "Its publication would not only help avoid some awkwardness for Tschirley, but would provide us with valuable documentation to demonstrate that the USG is taking a responsible approach to the herbicide program and that independent investigation has substantiated the Midwest Institute's findings that there have been no serious adverse ecological consequences."

What Rusk did not mention was that Tschirley's report had been heavily edited, in essence changing its findings.

## USE OF CHEMICALS CONTINUES IN VIETNAM

While the debate over the danger of Agent Orange and dioxin heated up in scientific circles, the U.S. Air Force continued flying defoliation sorties. And the troops on the ground continued to live in the chemical mist of the rainbow herbicides. They slept with it, drank it in their water, ate it in their food and breathed it when it dropped out of the air in a fine, white pungent mist.

Some of the troops in Vietnam used the empty Agent Orange drums for barbecue pits. Others stored watermelons and potatoes in them. Still others rigged the residue laden drums for showers.

Former Marine Danny Gene Jordan remembers sitting on Hill 549 near Khe Sanh in the spring of 1968, waiting for night and cooking his C-rations. Jordan had been in country just a few weeks and was still learning his way around, so he wasn't sure why the five C-123s approaching his unit would be flying so low and in formation.

"They're defoliating," one of his buddies told him.

Then came the mist, like clouds floating out of the back of the C-123s, soaking the men, their clothes and their food. For the next two weeks, the men of Jordan's unit suffered nausea and diarrhea. Jordan returned from Vietnam with an unusual amount of dioxin in his system. More than 15 years later, he still had 50 parts per trillion, considered abnormally high. He also had two sons born with deformed arms and hands.

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The spraying continued unabated in 1968, even though, according to military records, it apparently was having minimal effects on the enemy. A series of memorandums uncovered in the National Archives and now declassified indicate that defoliation killed a lot of plants, but had little real effect on military operations.

ADVANTAGES VERSES DISADVANTAGES DISCUSSED

As early as 1967 it had become clear that herbicide spraying was having few of the desired effects. According to an undated and unsigned USMACV memorandum, Rand Corporation studies in October 1967, concluded "that the crops destruction effort may well be counterproductive."

According to the memo, "The peasant, who is the target of our long range pacification objectives, bears the brunt of the crop destruction effort and does not like it."

Col. John Moran, chief of the Chemical Operations Division of MACV, wrote a memorandum dated October 3, 1968, and titled "Advantages and Disadvantages of the Use of Herbicides in Vietnam" that provides some key insights into the defoliation program.

"The effect of defoliation on the enemy, in itself, is of little military value," Moran wrote. "Its military potential is realized only when it is channeled into selected targets and combined with combat power to restrain the enemy from using an area or pay the cost in men and material from accurately delivered firepower."

Disadvantages of defoliation were more numerous, according to the memorandum.

"The herbicide program carries with it the potential for causing serious adverse impacts in the economic, social and psychological fields," Moran wrote.

Ecologically, according to the memorandum, "Semideciduous forests, especially in War Zone C and D, have been severely affected. The regeneration of these forests could be seriously retarded by repeated applications of herbicide."

An unsigned, undated memorandum written sometime late in 1968 provided even more details about the negative impact of defoliation.

Regarding the effect of VC/NVA combat and infiltration capability, the memo reported that "Very few PWs who have infiltrated even mention the effects of US herbicide operations. Some state that they have seen areas where the vegetation has been killed, but do not mention any infiltration problems caused by the defoliation. There are indications that US herbicide operations have had a negligible effect on NVA infiltration and combat operations."

The psychological effects of defoliation, according to the memorandum, were twofold; they either hardened the resolve of the VC/NVA or angered the Vietnamese farmers whose crops were destroyed.

"Some enemy soldiers may become more dedicated to the elimination of those who `ravage the countryside.' In addition, Allied herbicide operations may provide good material for enemy propaganda efforts aimed at fermenting an anti-US/GVN (Government of Vietnam) attitude among the population."

The reaction of the civilians affected by herbicide spraying is even more noticeable according to the memo.

"The obvious reaction of the peasant whose labors have been destroyed is one of bitterness and hatred. He will frequently direct this hatred toward both the US/GVN, for accomplishing the destruction, and the VC/NVA, for bringing it about. If he has

previously leaned toward the VC, he is likely to side with them completely after the crop destruction. He is aided in making this decision by the incessant propaganda of the VC cadre who decry the `barbarous crimes perpetrated by the Americans and their lackeys.'"

So, while Operation Ranch Hand provided no long or short term military benefits, it also provided neither long nor short term psychological benefits. If anything, it embittered the civilian population of Vietnam and drove it closer to the Viet Cong and NVA. And no one yet was sure what eventually would be the effect on the health of those exposed to the chemicals. Operation Ranch Hand was shown by late 1968 to be a bankrupt strategy, one devoid of good sense, good planning or good intentions.

## ORANGE AEROSOL DISCOVERED

Meanwhile, the military continued to learn just how toxic Agent Orange could be. On October 23, 1969, an urgent message was sent from Fort Detrick, Maryland, to MACV concerning cleaning of drums containing herbicides. The message provided detailed instructions on how to clean the drums and warned that it was particularly important to clean Agent Orange drums.

"Using the (Agent) Orange drums for storing petroleum products without thoroughly cleaning of them can result in creation of an orange aerosol when the contaminated petroleum products are consumed in internal combustion engines. The Orange aerosol thus generated can be most devastating to vegetation in the vicinity of engines. Some critics claim that some of the damage to vegetation along Saigon streets can be attributed to this source. White and Blue residues are less of a problem in this regard since they are not volatile."

Not only was Agent Orange being sprayed from aircraft, but it was unwittingly being sprayed out of the exhausts of trucks, jeeps and gasoline generators.

In March 1969, Lt. Col. Jim Corey, deputy chief of CORDS in I Corps reported to his boss, R.M. Urquhart, unusual defoliation in Da Nang.

"A large number of beautiful shade trees along the streets in the city of Da Nang are dead or dying," Corey wrote. "This damage appears to be entirely a result of defoliation chemicals."

There was no evidence of insect or fungus damage to the vegetation, according to the memo.

"In every instance of tree and garden plot damage," Corey wrote, "empty defoliant barrels are either present in the area or have been transported along the route of the damage."

The use of herbicides was not confined to the jungles. It was widely used to suppress vegetation around the perimeters of military bases and, in many instances, the interiors of those bases.

## LAB TESTS ON ANIMALS CURTAIL SOME USE OF AGENT ORANGE

Nevertheless, the use of Agent Orange throughout Vietnam was widespread through much of 1969. Then, late in the year a study done by Bionetics Research Laboratories showed that dioxin caused deaths and stillbirths in laboratory animals. The tests revealed that as little as two parts of dioxin per trillion in the bloodstream was sufficient to cause deaths and abnormal births. And some GIs were returning home from Vietnam with 50 parts per trillion, and more, in their bloodstream.

When the report was released by the Food and Drug Administration, the White House, on October 29, 1969, ordered a partial curtailment of the use of Agent Orange in Vietnam.

On November 4, 1969, a message went out from Joint Chiefs of Staff to Commander in Chief Pacific (CINCPAC) and MACV.

"A report prepared for the National Institute of Health presents evidence that 2,4,5-T can cause malformation of offspring and stillbirths in mice, when given in relatively high doses. This material is present in the defoliant (Agent) Orange.

"Pending decision by the appropriate department on whether this herbicide can remain on the domestic market, defoliation missions in South Vietnam using Orange should be targeted only for areas remote from population. Normal use of White or Blue herbicides can continue, but large scale substitution of Blue for Orange will not be permitted."

USE OF AGENT ORANGE FINALLY ENDED

Despite the order, some troops continued to use Agent Orange when they ran out of the other rainbow herbicides. Finally, in early 1971, the U.S. Surgeon General prohibited the use of Agent Orange for home use because of possible harmful effects on humans and on June 30, 1971, all United States defoliation operations in Vietnam were brought to an end.

VETS BEGIN DEVELOPING HEALTH PROBLEMS

As soldiers who had served in Vietnam attempted to settle back into civilian life following their tours, some of them began to develop unusual health problems. There were skin and liver diseases and what seemed to be an abnormal number of cancers to soft tissue organs such as the lungs and stomach. There also seemed to be an unusually high number of birth defects among children born to Vietnam veterans who had been exposed to Agent Orange. Some veterans experienced wild mood swings, while others developed a painful skin rash known as chloracne. Many of these veterans were found to have high levels of dioxin in their blood, but scientists and the U.S. government insisted there was no link between their illnesses and Agent Orange.

In the mid 1970s, there was renewed interest in dioxin and its effects on human health following an industrial accident in Seveso, Italy, in which dioxin was released into the air, causing animal deaths and human sickness.

EPA BANS USE OF AGENT ORANGE IN U.S.

Then, in 1979, the Environmental Protection Agency banned the use of Agent Orange in the United States when a large number of stillbirths were reported among mothers in Oregon, where the chemical had been heavily used.

While veterans clamored for help from the Veterans Administration, the government responded either slowly, or not at all. In 1979, a National Veterans Task Force on Agent Orange was formed and legislation finally was passed by Congress at the urging of Rep. Tom Daschle (D-SD), a Vietnam veteran who became a U.S. Senator, to commission a large scale epidemiological study of veterans who had been exposed to the herbicide.

That proved to be only the beginning of the battle over Agent Orange.

Over the next four years, the VA examined an estimated 200,000 veterans for medical problems they claimed stemmed from Agent Orange and other herbicides used in Vietnam. But many of those examined were dissatisfied with their examinations. They claimed the exams were done poorly and often in haste by unqualified medical personnel. Many veterans also claimed that the VA seemed to have a mind set to ignore or debunk Agent Orange connected disability complaints.

**CLASS ACTION SUIT FILED**

Fed up with what they perceived as government inaction on the Agent Orange issue, veterans filed a class action lawsuit in 1982 against the chemical companies that had made Agent Orange. Among the companies named were Dow Chemical Co. of Midland, Michigan; Monsanto Co. of St. Louis, Missouri; Diamond Shamrock Corp. of Dallas, Texas; Hercules Inc. of Wilmington, Delaware; Uniroyal Inc. of Middlebury, Connecticut; Thompson Chemical Corp. of Newark, New Jersey and the T.H. Agriculture and Nutrition Co. of Kansas City, Missouri.

By the early 1980s, some of the chemical companies' dirty little secrets about dioxin were beginning to leak out.

TIMES BEACH

Times Beach was an idyllic little community of about 2,200 residents in the rolling farmlands of eastern Missouri 20 miles southwest of St. Louis. It was an ideal place to live and raise children, with plenty of open spaces, two story wood frame houses, quiet streets and none of the pollution, poverty or crime of the inner city.

Or so it seemed.

Unknown to the residents of Times Beach, for several years in the mid 1970s, dioxin laced oil had been sprayed on the town's roads to keep down the dust. Times Beach was one of 28 eastern Missouri communities where the spraying had been done. But none of the others had the levels of dioxin contamination of Times Beach, parts of which had dioxin levels of 33,000 parts per billion, or 33,000 times more toxic than the EPA's level of acceptance.

The contamination was so bad that the government decided the only way to save the town's residents from further damage from dioxin was to buy them out and move them out.

In early 1983, the U.S. government spent $33 million buying the 801 homes and businesses in Times Beach and relocating its 2,200 residents. The entire town was fenced in and guards were brought in to keep out the curious. "Caution, Hazardous Waste Site, Dioxin Contamination," read the signs leading into Times Beach.

What had been a comfortable little community became a ghost town. It remains a ghost town today because of dioxin contamination.

So, while the government was paying off the residents of Times Beach because of dioxin contamination, it continued to deny that Vietnam veterans who had been exposed to Agent Orange and its dioxin were at risk.

## AMA DOWNPLAYS DIOXIN DANGER

While the government was busily buying up Times Beach and evacuating its residents, the American Medical Association was coming under attack from environmental health specialists for its stance on dioxin. In its June 1983 convention, the AMA adopted a resolution calling for a public information campaign on dioxin to "prevent irrational reaction and unjustified public fright."

"The news media have made dioxin the focus of a witch hunt by disseminating rumors, hearsay and unconfirmed, unscientific reports," the resolution read, in part.

That position was overwhelmingly supported by President Ronald Reagan in a speech at the AMA convention, calling the resolution "a positive step toward a more reasonable public debate" on the issue.

But Dr. Samuel Epstein, professor of occupational and environmental medicine at the University of Illinois Medical Center in Chicago, called the AMA "incompetent and ignorant" for its stance on dioxin.

"The AMA's contribution in this area is a profound disservice and consistent with their established record of extreme conservatism and lack of information and demonstrated lack of concern for preventive medicine," said Epstein.

And Dr. Paul Wiesner, an assistant director of the CDC said that "Evidence is increasing that there is an association with a rare form of tumor called soft tissue sarcoma after occupational exposure (to dioxin)."

## STUDIES CONTRADICTORY AND CONFUSING

By 1983, the results of studies of Agent Orange and dioxin exposure began to trickle in. They were, for the most part, contradictory and confusing. A series of studies conducted between 1974 and 1983 by Dr. Lennart Hardell, the so called Swedish studies, showed a link between exposure to Agent Orange and soft tissue sarcomas and non-Hodgkin's lymphoma. And in July 1983, the Department of Health and Human Services (HHS) released a report citing "an association" between dioxin exposure and incidence of soft tissue sarcoma.

"The early warning sign has gone up," said Dr. Edward Brandt, Jr., assistant secretary of the HHS.

This was also the year of the Times Beach buy out and growing nationwide concern over dioxin. Few people knew what it was and only Vietnam veterans and researchers knew what it could do to the human body.

In December 1983, the EPA announced a nationwide plan to clean up more than 200 dioxin contaminated sites, including 50 plants where 2,4,5-T had been manufactured. The cost of the cleanup was put at $250 million and was expected to take four years.

But barely two months later, in February, 1984, the U.S. Air Force released the first part of a three part study on Operation Ranch Hand pilots and crewmen. It concluded that the 1,269 pilots and crewmen involved in the herbicide spraying program in Vietnam suffered no higher death or serious illness rates than the general population.

But to Vietnam veterans, studying aircrews who had handled drums of Agent Orange, and not the soldiers exposed to it, was like testing the crew of the Enola Gay for the effects of radiation, not the survivors of Hiroshima.

Said Maj. Gen. Murphy Chesney, deputy Air Force Surgeon General: "Do I worry as a physician because we used it? The answer is no. I say war is hell, you've got to win it. Agent Orange was a war agent. It was used to protect our ground troops. It saved millions of lives possibly, thousands, anyway, in Vietnam."

MACV memorandums written during the war did not support Chesney's claims that Agent Orange saved lives, but no one questioned him on his conclusions because those documents were still classified.

The VA, meanwhile, continued to dismiss veterans health complaints if they dealt with exposure to Agent Orange.

"A lot of veterans are scared because of early news reports of physical damage, while some among any large number of people are going to have health problems such as a matter of routine natural incidence," said Dr. Barclay Shepard, director of Agent Orange Studies for the VA. "Put that together with disillusionment over the Vietnam War and anger with the government and there is little wonder that many veterans truly believe that they have in some way been hurt. But the evidence has not supported a cause and effect relationship."

LAWSUIT SETTLED - VETS WIN, BUT LOSE

Then on May 7, 1984, came the news that the Agent Orange lawsuit, filed two years earlier, had been settled. Prodded by U.S. District Judge Jack B. Weinstein, attorneys for the veterans and the chemical companies reached an agreement at 4 a.m. the morning the case was to go to trial. At that time, 15,000 veterans and their relatives were involved in the suit, but about 250,000 subsequently filed claims.

Under the terms of the settlement, the Vietnam veterans who claimed exposure to Agent Orange would receive $180 million from the chemical companies. But those companies did not have to accept blame for any injuries that occurred as a result of Agent Orange. The U.S. government was not a party to the litigation.

"Thus resolution is a compassionate, expedient and productive means of meeting the needs of the people involved," said David Buzzelli, vice president of government and public affairs for Dow Chemical.

Veterans at first were ecstatic.

"This is a defeat for the chemical companies. We brought them down to their knees and we got an open admission of guilt," said Rod Rinker of Atlanta, one of the veterans who claimed Agent Orange exposure.

Not so, said the chemical companies.

"When you look at the overwhelming scientific evidence, Agent Orange is not a reasonable or likely cause of the ill health effects experienced by the veterans," said R.W. Charlton, another Dow spokesman.

Despite the release earlier of the results of the Operation Ranch Hand study, 1984 seemed to be a year in which the Vietnam veteran's complaints about Agent Orange and the health problems it caused were being taken seriously. The federal court decision boosted the morale of the Agent Orange claimants. Then Congress chimed in.

In late 1984, Congress passed Public Law 98-542, designed to provide compensation for soft tissue sarcoma and required the VA to establish standards for general Agent Orange and atomic radiation compensation.

It seemed as if the veterans were winning. But every time a veteran went to the VA seeking compensation for Agent Orange related problems, he was turned away.

"Since 1984, Public Law 98-542 has been virtually ignored," said South Dakota Sen. Tom Daschle. "In spite of the intent of Congress, in spite of the efforts of everyone involved in the writing of that law, in spite of our promises to veterans at that time that at long last, after all these years, they would be given the benefit of the doubt, not one veteran in this country has been compensated for any disease other than chloracne."

Agent Orange sufferers tried on several occasions to sue the government for its role in use of the herbicide, but their suits were routinely dismissed because of what has come to be known as the Feres Doctrine. In 1950, the Supreme Court ruled in a case involving the death of a military man that the government is not responsible for deaths, injuries or other losses related to military service.

Meanwhile, the reality of the settlement reached in the lawsuit with the seven chemical companies began to settle in. The lawyers involved wanted $40 million off the top for their fees. They had decided in a secret agreement prior to the May 1984 settlement that they would receive a 300 percent return on any investment in time and effort they had made. Many veterans charged that this secret fee agreement by the plaintiff's management committee precluded any incentive for the committee to represent the veterans in the suit. Judge Weinstein decided to give the lawyers $9.2 million.

It became readily apparent that $180 million just wasn't enough to take care of the Agent Orange claimants and their families, which had reached more than 200,000 by then. A master plan to divide the settlement noted that the settlement "is simply not large enough." The plan suggested taking $130 million for a settlement to provide cash payments to eligible veterans or the families of deceased members. Maximum cash payments of $12,800 to the most qualified claimants, or about 17,000 veterans and their survivors, was suggested. The master plan also suggested using $52 million to fund a "class assistance foundation" earmarked for benefit programs.

## TEST RESULTS CONTINUE TO BE MIXED

Results of Agent Orange tests continued to be mixed. The results varied greatly, depending on who was doing the testing.

In December, 1985, the Air Force released the third of its Operation Ranch Hand studies. It confirmed the other two: that there was no evidence that Agent Orange had any adverse affects on those who handled it during the war.

"At this time, there is no evidence of increased mortality as a result of herbicide exposure among individuals who performed the Ranch Hand spray operation in Southeast Asia," the Air Force concluded.

But in April, 1986, the CDC released a report that showed that the residents of a mobile home park near St. Louis were suffering from liver and immune system damage as a result of their exposure to dioxin laced chemicals.

According to the study, the 154 residents of Quail Run Mobile Home Park in Gray Summit, Missouri, near Times Beach southwest of St. Louis, showed depressed liver function and deficiencies in their immune systems. The dirt roads in the mobile home park had been sprayed in 1971 with dioxin laced oil to keep down the dust.

While the CDC seemed concerned about Missouri residents exposed to dioxin laced chemicals, it did not demonstrate the same concern for Vietnam veterans exposed to dioxin contaminated herbicides. In fact, information began to surface in 1986 that the CDC not only was dragging its feet on Agent Orange studies, it was deliberately ignoring information to which it had access in order to come up with results that would be favorable to the government.

In the summer of 1986, the House Veterans Affairs Subcommittee on Hospitals and Health Care held hearings to assess the progress of the CDC study of Agent Orange, mandated seven years earlier. Testimony from witnesses from the Office of Technology Assessment (OTA) shocked and angered members of the committee, according to Sen. Tom Daschle.

"OTA reported that the Centers for Disease Control had changed the protocol for the study without authorization," said Daschle. "OTA also reported at that particular hearing that petty arguments at CDC were interfering with the study's progress and that progress had virtually come to a standstill."

After seven years of study, the CDC had made no progress on one of the most important and highly publicized issues of the war in Vietnam.

In charge of the CDC study was Dr. Vernon Houk, director of the agency's Center for Environmental Health and Injury Control. The White House's Agent Orange Working Group was supposed to supervise the CDC study while the Pentagon's Environmental Support Group was charged with providing the CDC with records of Agent Orange spraying and troop deployment.

Houk's CDC team complained throughout the study that those records were too spotty to make a scientific study of the effects of Agent Orange on soldiers.

Not so, said the Pentagon. Richard Christian, head of the Pentagon's Environmental Support Group, testified before Congress in mid 1986 that the records of troop movements and spraying were more than adequate for a scientific study.

Christian's testimony was bolstered by two other sources. Retired Army Maj. Gen. John Murray had been asked by Defense Secretary Casper Weinberger in early 1986 to undertake a study to determine if Pentagon records were adequate for purposes of the study. After four months, Murray also determined that the records for a comprehensive study of Agent Orange were more than adequate.

In addition, the Institute of Medicine, an arm of the National Academy of Sciences, had used outside consultants to study reports of troop deployment and Agent Orange spraying to determine if they were sufficient for CDC purposes. Its conclusion: the Pentagon had the necessary records. The Institute of Medicine also was highly critical of the CDC research methods, charging that it excluded from its study the veterans most likely to have been exposed to Agent Orange.

## WHITE HOUSE COVER-UP

Despite information from three sources that there were adequate records available for a comprehen sive CDC study on Agent Orange, the White House and CDC sought to cover it up.

First, the Institute of Medicine's study was never turned over to the White House. Then, Murray decided that as a non-scientist, he was in no position to challenge the objections of CDC's Houk and deferred to his judgement on the matter of records. Then, according to Daschle, the Pentagon came down hard on Christian for criticizing the CDC.

"DOD officials altered his follow-up testimony before it was sent to the Hill, deleting his information challenging CDC's claims," said Daschle.

By mid 1986, the White House had set the wheels in motion to cancel the CDC's Agent Orange study.

There were other indications that the Reagan administration had no real interest in studies of Agent Orange or dioxin. In late 1986, the House Energy and Commerce Committee learned that the White House's Office of Management and Budget (OMB) was trying to stop all dioxin research, claiming that enough research had been done.

Despite efforts to shut down research and cover up results of studies not favorable to the government or chemical companies, evidence continued to flow in showing a definite statistical link between cancers and exposure to Agent Orange and dioxin:

- A 1986 study by the National Cancer Institute of Kansas revealed that farmers exposed to 2,4-D, an ingredient of Agent Orange, had six times more non-Hodgkin's lymphomas than farmers not exposed.

- A VA study released in 1987 showed that Marines who served in areas of Vietnam that had been heavily sprayed with Agent Orange had a 110 percent higher rate of non-Hodgkin's lymphomas. The study also showed these Marines had a 58 percent higher rate of lung cancers.

- A 1987 study in the state of Washington showed veterans who had been exposed to Agent Orange had significant increases in soft tissue sarcomas and non-Hodgkin's lymphomas.

- A 1987 VA study showed veterans who were most likely exposed to Agent Orange had eight times more soft tissue sarcoma than other veterans.

Meanwhile, the CDC had been taking blood samples of 646 Vietnam veterans, selected on the basis of probable exposure to Agent Orange, to test the level of dioxin in their blood. Other scientists were highly critical of this method of testing, but the CDC moved on.

Then, in September 1987, the CDC exonerated Agent Orange, claiming once again there were not sufficient records available to make the necessary tests.

"We cannot find a sufficiently large number of people who have been exposed to do a scientificaily valid study of exposure to Agent Orange," said Houk.

"We looked at three different kinds of exposure: short-term, long-term and exposure from being in an area of Vietnam where the herbicide was used. In none of these groups was there any difference in the level of Agent Orange in the blood."

Houk recommended that the Agent Orange study be canceled. The White House agreed, and shortly after that the CDC's $43 million Agent Orange study came to an end with a not guilty verdict for Agent Orange.

STUDY CALLED A FRAUD

But again, there was more information available that was never presented. The Institute of Medicine in the weeks before the CDC released its results of blood tests wrote a stinging rebuke of the CDC's tests methods. It said that none of the CDC's conclusions was supported by scientific data. The CDC refused to turn this report over to the White House.

"Either it was a politically rigged operation or it was a monumentally bungled operation," said Rep. Ted Weiss (D-NY), chairman of the Government Operations Human Resources and Intergovernmental Relations Subcommittee.

Other information began turning up that there were concerted efforts by various agencies of the government to conceal records and information about the effects of Agent Orange.

Daschle learned that there were major discrepancies between a January 1984 draft of the Air Force's Operation Ranch Hand study and the February 1984 report. According to Daschle, the draft showed there were twice as many birth defects among the children of Ranch Hand participants. "The draft also reported that the Ranch Handers were less well than the controls by a ratio of 5 to 1," said Daschle.

But these results were deleted from the final Ranch Hand report, which said there had been no adverse effects from exposure to Agent Orange.

"The Air Force deleted these findings from the final report at the suggestion of a Ranch Hand Advisory Committee set up by the White House Agent Orange Working Group," said Daschle.

Air Force scientists involved in the study said they were pressured by non-scientists within the Air Force and the White House to change the results and delete critical information for the final report. Daschle says he has even obtained two versions of the minutes of the meeting in which that pressure was applied. One confirms what the scientists told him. Another set deletes that information.

"What happened there was a fraud perpetrated by people whose names we still do not know," said Daschle.

Part of the fraud appears to have been perpetrated by the Monsanto Corp., which produces a number of chemicals containing dioxin. Monsanto knowingly rigged test results of employees who had been exposed to dioxin to make the effects of it appear far less than it actually was, according to a February 23, 1990 Environmental Protection Agency memorandum.

The memorandum was written by Dr. Cate Jenkins, a chemist in the Waste Characterization Branch, Characterization and Assessment Division of the EPA to Dr. Raymond C. Loehr, chairman of EPA's Science Advisory Board Executive Committee.

Jenkins writes that a key epidemiological study leading to the conclusion that there was no definitive data on human health effects of dioxins was based on examination of medical records of Monsanto employees from a 1949 explosion. That study "found no statistically significant excess cancer deaths," according to Jenkins.

"This study by Monsanto apparently has now been shown to be a fraud," Jenkins wrote.

"This study on behalf of Monsanto is described, where it is alleged that the record demonstrated a deliberate course of conduct by Monsanto through `altered' research to prove to the world that the only health consequences of dioxins was the relatively harmless, reversible condition of chloracne."

Since this study was altered, Jenkins surmises, "It could be that other studies on exposed populations are similarly flawed and subject to fraud." The study in question was done of employees at a Nitro, West Virginia Monsanto plant following an explosion in 1949 in which a number of them were exposed to dioxins. The study, performed by two Monsanto employees, concluded that the death rate of exposed workers was the same as the death rate of unexposed workers.

However, later investigation revealed that the authors of the study omitted five deaths from the exposed group and took four workers who had been exposed and put them in the unexposed group. This decreased the death rate in the exposed group and increased the death rate in the unexposed group. The exposed group actually had 18 cancer deaths as a result of the exposure, not the nine deaths reported in the study. And there were a total of 28 cancers in the exposed group,

compared to only two cancers in the unexposed group.

This type fraud appears to have been perpetrated regularly in connection with Agent Orange research, yet Congress continues to rely on this flawed research when it considers legislation that would benefit the victims of Agent Orange and the other rainbow herbicides.

## MONTGOMERY HOLDS UP AGENT ORANGE LEGISLATION

Efforts to get comprehensive Agent Orange legislation through Congress to right the wrongs of the cover-ups have been unsuccessful largely through the efforts of one man: Rep. Sonny Montgomery of Mississippi, chairman of the House Veterans Affairs Committee, who claimed to be the friend and champion of veterans in Congress - in fact had virtually single-handedly bottled up Agent Orange legislation.

The CDC, meanwhile, continues to perpetrate the scientifically flawed myth that Agent Orange and dioxin posed no health threats to Vietnam veterans.

In a study released March 29, 1990, the CDC admitted that Vietnam veterans face a higher risk of non-Hodgkin's lymphoma, but denied that it was a result of exposure to Agent Orange. It said the studies showed that Vietnam veterans do not have higher rats of soft tissue sarcomas, Hodgkin's disease, nasal cancer, nasopharyngeal cancer and liver cancer.

## BIZARRE FINDING

One of the more bizarre aspects of this report from the CDC was the claim that those veterans who suffered most from non-Hodgkin's lymphoma had served on Navy ships off the coast of Vietnam. It said that those who had served in III Corps, which had some of the heaviest Agent Orange spraying of the war, seemed to be at lower risk.

"There is no risk in this study associated with (dioxin) exposure," said Dr. Daniel Hoffman of the CDC. Veterans groups were appalled by the findings.

"The conclusion seems to fly in the face of other scientific studies, which indicates there is a connection between Agent Orange and cancer, birth defects and other disorders. It makes it sound like Agent Orange is like orange juice, healthy for you instead of harmful," said John Hanson, a spokesman for the American Legion.

## HOUSE COMMITTEE SAYS STUDY FLAWED

The House Committee in its August 1990 report also found that the 1987 Agent Orange study canceled by CDC was done so at the behest of the White House. Its report was a stinging rebuke to the White House and the CDC. The report offered these conclusions:

"A. The CDC Agent Orange exposure study should not have been canceled because it did not document that exposure of veterans to the herbicide could not be assessed, nor did CDC explore alternative methods of determining the exposure.

"B. The original protocol for the CDC Agent Orange study was changed to the point that it was unlikely for the heaviest exposed soldiers to be identified.

"C. The blood serum analysis, which was used as proof by CDC that an Agent Orange exposure study could not be conducted, was based on erroneous assumptions and a flawed analysis.

"D. The White House compromised the independence of the CDC and undermined the study by controlling crucial decisions and guiding the course of research at the same time it had secretly taken a legal position to resist demands to compensate victims of Agent Orange exposure and industrial accidents.

"E. The Federal Government has suppressed or minimized findings of ill health effects among Vietnam veterans that could be linked to Agent Orange exposure."

An indepth reading of the report reveals even more sordid details of how the CDC and the White House stacked the deck on Agent Orange.

According to the report, "The CDC study was changed from its original format so that it would have been unlikely for the soldiers who received the heaviest exposure to the herbicide to be identified. CDC accomplished this by unjustifiably discrediting the military records provided to it by the Department of Defense's Environmental Study

Group (ESG)."

POLITICS AND MONEY MORE IMPORTANT THAN HUMAN LIVES

The rebuke of the White House and its Agent Orange Working Group (AOWG) was even more revealing of the manner in which Agent Orange studies have been manipulated by political and economic concerns, not concerns about human lives.

"The original mandate to focus the White House panel on the effects of all herbicides was abruptly altered by the Reagan White House," according to the report. "By focusing the work of AOWG on Agent Orange only, the administration laid the groundwork for manipulating the study to the point of uselessness.

"A possible reason that the White House chose this path is revealed in confidential documents prepared by attorneys in OMB. The White House was deeply concerned that the Federal Government would be placed in the position of paying compensation to veterans suffering diseases related to Agent Orange and, moreover, feared that providing help to Vietnam veterans would set the precedent of having the U.S. compensate civilian victims of toxic contaminant exposure, too."

could this be an

SOME DEFY CDC STUDY

Despite the CDC's continuing recalcitrance on the issue of Agent Orange exposure, there have been other, more enlightened voices heard.

Secretary of Veterans Affairs Edward Derwinski is one of them. After hearing of the CDC's latest study, he ordered the VA to pay compensation to all veterans suffering from non-Hodgkin's lymphoma, a ruling which could mean as much as $23 million to the 1,600 non-Hodgkin's lymphoma sufferers or their widows and children.

Derwinski also decided not to challenge a California court's finding that the VA was applying too strict a standard to determine whether Agent Orange harmed Vietnam veterans. Derwinski ordered the VA to abide by legislation passed in 1984 to give veterans the benefit of the doubt on health claims.

"Overall, we're doing things a lot different here now," said Derwinski. "We're making decisions without sweeping things under the rug. We're not procrastinating. We're also shaking up a few people and sweeping away a few cobwebs."

Another of the more enlightened voices is that of retired Adm. Elmo Zumwalt Jr., who ordered certain areas of Vietnam to be sprayed with Agent Orange.

Zumwalt's son, Elmo Zumwalt III, served in the Navy in Vietnam and was exposed to the herbicide. Elmo Zumwalt III died in 1988 at the age of 42 from Hodgkin's diseases and lymphoma. Father and son believed that exposure to Agent Orange caused the cancers.

"I definitely believe my son would have had an additional 20 years of life had we not used it," said the elder Zumwalt.

Adm. Zumwalt has become a crusader on the issue of Agent Orange, charging that the government "intentionally manipulated or withheld compelling information on the adverse health effects" associated with exposure to Agent Orange.

"The flawed scientific studies and manipulated conclusions are not only unduly denying justice to Vietnam veterans suffering from exposure to Agent Orange," said Zumwalt, "they are now standing in the way of a full disclosure to the American people of the likely health effects of exposure to toxic dioxins."

SAY this

Daschle is another of the enlightened voices, calling not only for true, scientific studies of Agent Orange free from political interference, but investigations of the cover-ups by the White House and the CDC that enabled them to perpetrate the myth that Agent Orange is not harmful to human health.

"Can you blame veterans for wondering what is going on?" asked Daschle. "Can you blame their families who continue to watch all of this unfold, and not share their sense of frustration, their sense of indignation at the conflicting comments, the duplicity, the obfuscation that occurs time and time again when government officials at the highest level are being called upon to inform the public, but they cover up information instead?"

SAY this

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ASHLAND



December 9, 2010

STATE OF MISSISSIPPI
OFFICE OF POLLUTION CONTROL
P O BOX 2261
JACKSON, MS 39225

RE: Hercules Bond No. K08181688
Westchester Fire Insurance Company

To Whom It May Concern::

Enclosed please find a Continuation Certificate for Hercules Bond No. K08181688

If you have any questions, please call me at (859) 357-7415.

Very truly yours,

La-Ron Garr
Financial Service Assist.

Enclosure

# WESTCHESTER FIRE INSURANCE COMPANY

436 Walnut Street, WA10H, Philadelphia, PA 19106-3703

## CONTINUATION CERTIFICATE

The company indicated above, hereinafter called the "Company" as Surety on Bond number K08181688 in the sum of One Million Four Hundred Seventy Two Thousand and 00/100 ($ 1,472,000.00 ) on behalf of HERCULES INCORPORATED located at Hercules Plaza, 1313 North Market Street Wilmington, DE 19894, Principal, in favor of STATE OF MISSISSIPPI P.O. Box 20307 Jackson, MS 39289-1307 Obligee, hereby certifies that this bond is continued in full force and effect from 8/23/2010 to 8/23/2011, subject to all covenants and conditions of said bond.

This bond has been continued in force upon the express condition that the full extent of the Company's liability under said bond and all continuations thereof for any loss or series of losses occurring during the entire time the Company remains on said bond shall in no event exceed the sum of the bond.

In witness whereof the Company has caused this instrument to be duly signed, sealed and dated as of September 14, 2010.

**Westchester Fire Insurance Company Surety**

By: _____
Sandra M. Martinez Attorney-In-Fact

Please mail Inquiries to

ACE Surety Underwriting Services
436 Walnut Street, WA 10H
Philadelphia, PA 19106-3703
(800) 392-3770

# *Power of Attorney*

## WESTCHESTER FIRE INSURANCE COMPANY

**Know all men by these presents:** That **WESTCHESTER FIRE INSURANCE COMPANY,** a corporation of the State of New York, having its principal office in the City of Atlanta, Georgia pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and Vice Presidents of the Company in hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

FURTHER RESOLVED, that the Resolution of the Board of Directors of the Company adopted at the meeting held on November 8, 1999 relating to the authorization of certain persons to execute, for and on behalf of the Company, Written Commitments and appointments and delegations, in hereby rescinded.

Does hereby nominate, constitute and appoint Debra J Doyle, Diane M O'Leary, Douglas M Schmude, Jennifer L Jakaitis, Jessica B Yates, Judith A Lucky, Karen E Bogard, Karen L Daniel, Kimberly Bragg, Linda M Iser, Richard A Moore, Jr., Robert E Duncan, Sandra M Martinez, Sandra M Nowak, Susan A Welsh, William P Reidinger, all of the City of CHICAGO, Illinois, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Twenty Five million dollars & zero cents ($25,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office.

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said **WESTCHESTER FIRE INSURANCE COMPANY** this 22 day of September 2010.

**WESTCHESTER FIRE INSURANCE COMPANY**

Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF PHILADELPHIA ss.

On this 22 day of September, AD. 2010 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the **WESTCHESTER FIRE INSURANCE COMPANY** to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
SHARON M. DEAN, Notary Public
City of Philadelphia, Phila. County
My Commission Expires December 15, 2010

Sharon M. Dean, Notary Public

I, the undersigned Assistant Secretary of the **WESTCHESTER FIRE INSURANCE COMPANY,** do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 14th day of September 2010

William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER September 22, 2012

FORM NO. 88005

ACKNOWLEDGEMENT BY SURETY

STATE OF ILLINOIS
COUNTY OF COOK

On this 14th day of September, 2010, before me, Judi Lucky, a Notary Public, within and for said County and State, personally appeared Sandra M. Martinez to me personally known to be the Attorney-in-Fact of and for Westchester Fire Insurance Company and acknowledged that she executed the said instrument as the free act and deed of said Company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid County, the day and year in this certificate first above written.

Notary Public in the State of Illinois
County of Cook

OFFICIAL SEAL
JUDI LUCKY
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 10/07/2014

**Remedial Action Plan Bond**

COPY

BOND #K08181688

KNOW ALL MEN BY THESE PRESENTS: That Hercules Incorporated (hereinafter called the Principal), and Westchester Fire Insurance Company (hereinafter called the Surety), are held and firmly bound unto the State of Mississippi (hereinafter called the Obligee), in the full and just sum of One Million Four Hundred Seventy Two Thousand and 00/100 Dollars ($ *), the payment of which sum, well and truly to be made, the said Principal and Surety bind themselves, and each of their heirs, administrators, executors, and assigns, jointly and severally, firmly by these presents.

*** $1,472,000.00**

WHEREAS, the Principal has entered into a Corrective Action Plan Agreement with the Obligee at the Principal's site located at 617 West 7 Street, Hattiesburg, Mississippi. In such agreement, the Principal has agreed to undertake certain actions (hereinafter the "Corrective Action Plan Work").

WHEREAS, in accordance with Mississippi Commission on Environmental Quality Regulation HW-2, Subpart I, Chapter 2, Section 201 Part (H), the Obligee has agreed to accept this bond as financial assurance to guarantee performance of the Corrective Action Plan Work under the supervision of the Office of Pollution Control pursuant to the above referenced regulations governing brownfield voluntary cleanup and redevelopment in Mississippi (the "State").

NOW, THEREFORE, THE CONDITIONS OF THE SURETY'S OBLIGATION HEREUNDER IS SUCH, that if the Principal shall well and truly perform the Corrective Action Plan Work at the time and in the manner specified by the State during the term of this bond or, if upon failure to perform the Corrective Action Work and demand by the State the Principal shall

establish a remediation trust in amount of this bond or such lesser amount that the State shall require, then Surety shall have no obligation under this Bond, otherwise to remain in full force and effect. The Surety shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by the State that the Principal has failed to perform as guaranteed by this bond, the Surety shall place funds in the amount guaranteed for the facility into a standby trust fund as directed by the State.

PROVIDED, HOWEVER, That this bond is subject to the following conditions:

1. This bond shall be effective from **August 23rd**, 2008 to **August 23rd**, 2009. This is an annually renewable bond which shall automatically renew unless terminated in accordance with the provisions of this bond. The bond may be extended for additional terms at the option of the Surety, by continuation certificate executed by the Surety. Surety's liability under said bond shall not be cumulative and shall in no event exceed the penal amount as set forth in this bond. The Surety has no obligation to perform any remediation work and no responsibility involving any hazardous waste at the site. The Surety's obligation under this bond consists of the payment of sums found to be due the Obligee and no other obligation.

2. In the event of a default by the Principal in the performance of the contract during the term of this bond, the Surety shall be liable only for the loss to the Obligee due to actual costs of performance for the failure to perform that occurred during the effective period of the bond, up to the maximum penalty of this bond.

3. No claim, action, suit or proceeding, except as hereinafter set forth, shall be had or maintained against the Surety on this instrument unless same be brought

or instituted upon the Surety within one year from termination or expiration of the bond term.

4. Neither non-renewal by the surety, nor failure, nor inability of the Principal to file a replacement bond shall constitute loss to the Obligee recoverable under this bond.

5. No right of action shall accrue on this bond to or for the use of any person or corporation other than the Obligee named herein or the heirs, executors, administrator or successors of Obligee.

6. This bond may be canceled or modified by the Surety at any time by giving one hundred twenty (120) days written notice to the Obligee and Principal, in which event, the Surety's liability at the expiration of said one hundred twenty (120) days shall terminate or be modified as specified in the notice, except as to such liability of the Principal as may have accrued prior to the expiration of said one hundred twenty (120) days.

7. The Principal may or modify terminate this bond by sending written notice to the Surety; provided, however, that no such notice shall become effective until the Surety receives written authorization for termination of the bond by the State.

Signed and sealed this 24th day of July, 2008.

_____ (seal)
Westchester Fire Insurance Company (seal)
Wayne G. McVaugh, Attorney-In-Fact

Acknowledged and Accepted by the Obligee:
By: _____
Jerry B. Banks, Chief, OARD
Printed Name and Title
Date: 9/9/08

# *Power of Attorney*

165004

**WESTCHESTER FIRE INSURANCE COMPANY**

1263816

**Know all men by these presents:** That **WESTCHESTER FIRE INSURANCE COMPANY**, a corporation of the State of New York, having its principal office in the City of Atlanta, Georgia, pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business(each a "Written Commitment"):

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(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments

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FURTHER RESOLVED, that the Resolution of the Board of Directors of the Company adopted at the meeting held on November 8, 1999 relating to the authorization of certain persons to execute, for and on behalf of the Company, Written Commitments and appointments and delegations, is hereby rescinded.

Does hereby nominate, constitute and appoint DARELLA WHITE, MARY C. O'LEARY, MAUREEN MCNEILL, RICHARD A. JACOBUS, DOUGLAS R. WHEELER, SANDRA E. BRONSON, WAYNE G. MCVAUGH, ROSEMARIE CAPONI, DENNIS LAUSIER and ELIZABETH MARRERO all of the City of Philadelphia, Commonwealth of Pennsylvania, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Twenty Million Dollars ($20,000,000) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and ackowledged by the regularly elected officers of the Company at its principal office.

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the corporate seal of the said **WESTCHESTER FIRE INSURANCE COMPANY** this 13th day of June 2008.

**WESTCHESTER FIRE INSURANCE COMPANY**

Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF PHILADELPHIA ss.

On this 13th day of June, A.D. 2008, before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the **WESTCHESTER FIRE INSURANCE COMPANY** to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
KAREN E. BRANDT, Notary Public
City of Philadelphia, Phila. County
My Commission Expires September 26, 2010

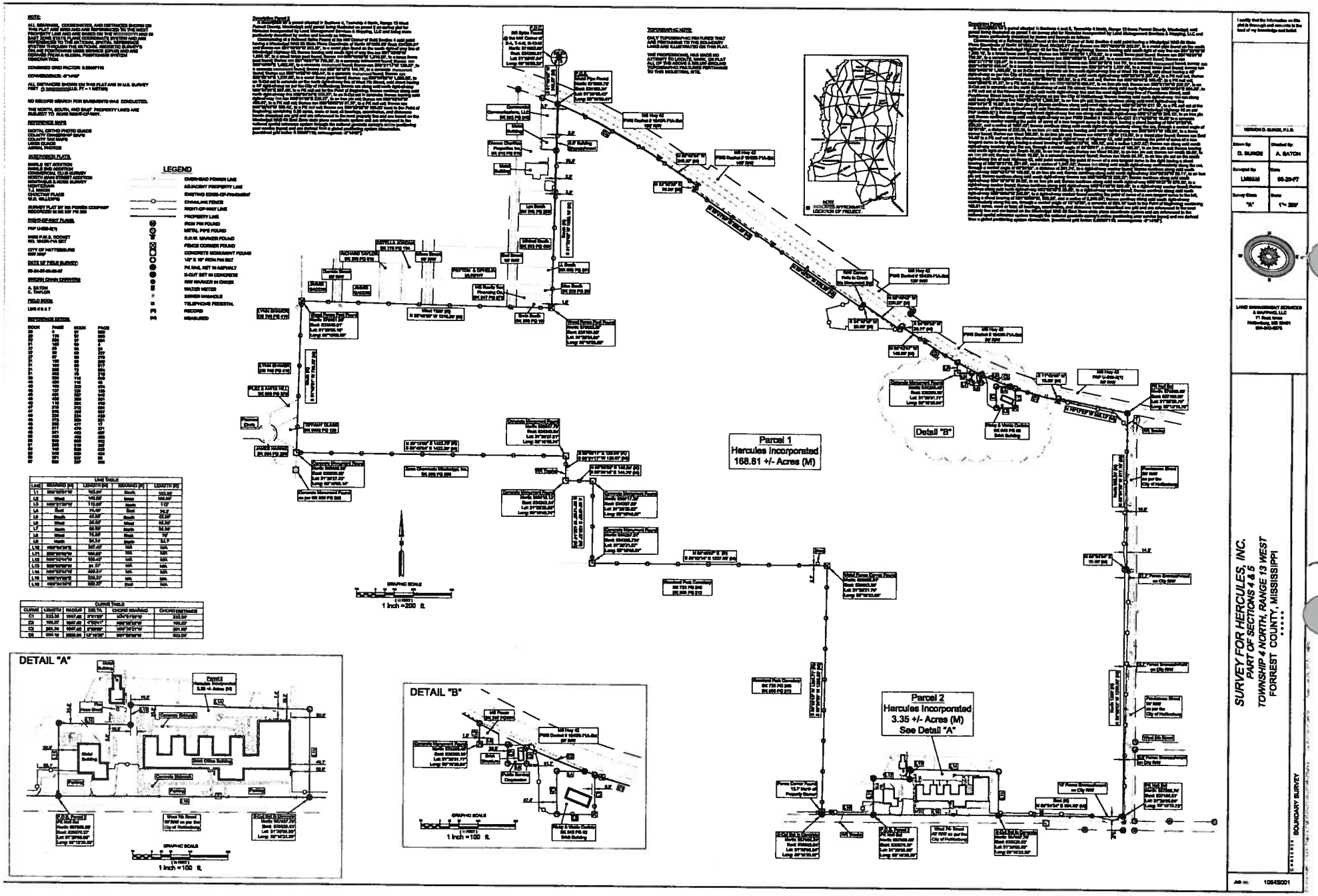
Notary Public

I, the undersigned Assistant Secretary of **WESTCHESTER FIRE INSURANCE COMPANY**, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 24th day of July 2008

William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER June 13, 2010.


LEGEND
OVERHEAD POWER LINE
ADJACENT PROPERTY LINE
EXISTING EDGE-OF-PAVEMENT
CHAIN-LINK FENCE
RIGHT-OF-WAY LINE
PROPERTY LINE
IRON PIN FOUND
METAL PIPE FOUND
R.O.W. MARKER FOUND
FENCE CORNER FOUND
CONCRETE MONUMENT FOUND
1/2" E. 18" IRON PIN SET
PK NAIL SET IN ASPHALT
X-CUT SET IN CONCRETE
RAY MARKER IN CREEK
WATER METER
SEWER MANHOLE
TELEPHONE PEDESTAL
RECORD
MEASURED
Parcel 1
Hercules Incorporated
168.81 +/- Acres (M)
Parcel 2
Hercules Incorporated
3.35 +/- Acres (M)
See Detail "A"
Detail "B"
DETAIL "A"
DETAIL "B"
GRAPHIC SCALE
1 Inch =200 ft.
1 Inch =100 ft.
SURVEY FOR HERCULES, INC.
PART OF SECTIONS 4 & 5
TOWNSHIP 4 NORTH, RANGE 13 WEST
FORREST COUNTY, MISSISSIPPI
BOUNDARY SURVEY
Job no. 10845001

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

To: WILLIAM MCKERCHER

| | |
|---|---|
| Sample ID: | AA46335 |
| Location Name: | HERCULES INCORPORATION |
| Location Description: | PROVIDENCE 001 |
| Location Code: | C0350022 |
| Other No.: | |
| Permit No.: | MSP091286 |
| Discharge No.: | MSP091286-001 |
| Master AI No.: | 2022 |
| Latitude: | |
| Longitude: | |

| | |
|---|---|
| Study: | GARD |
| County: | 035 FORREST |
| Basin: | |
| QA Type: | |
| Division Code: | 7700 |
| Requested By: | WILLIAM MCKERCHER |
| Date Collected: | 12/22/2010 |
| Time Collected: | 1342 |
| Sample Collector: | WMCKERCHER |
| Delivery Mode: | SV |
| Received at Lab by: | 3047 |
| Date Received at Lab: | 12/23/2010 |
| Time Received at Lab: | 0900 |

| ANALYTE | METHOD | RESULT | UNITS | MQL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | <MQL | ug/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | ug/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | ug/L | 25 | BBATES |
| Acetone | 8260 | 246* | ug/L | 25 | BBATES |
| Benzene | 8260 | 8.15 | ug/L | 5 | BBATES |
| Bromobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | 25.0 | ug/L | 5 | BBATES |
| Chlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Chloroform | 8260 | 19.4 | ug/L | 5 | BBATES |
| Chloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Ethylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | ug/L | 5 | BBATES |
| Isopropylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| m & p -Xylene | 8260 | <MQL | ug/L | 5 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | ug/L | 5 | BBATES |
| Methylene Chloride | 8260 | <MQL | ug/L | 5 | BBATES |
| Naphthalene | 8260 | <MQL | ug/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| o - Xylene | 8260 | <MQL | ug/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Styrene | 8260 | <MQL | ug/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| Toluene | 8260 | 5.10 | ug/L | 5 | BBATES |
| trans-1,2-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| -1,3-dichloropropene | 82 | <MQL | ug/L | 5 | BBATES |
| chloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| richlorofluoromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 115 | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 104 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 105 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 89 | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

| | | |
|---|---|---|
| ug/L: micrograms/Liter | <: less than | >: greater than |
| mg/L: milligrams/Liter | MCL: Maximum Contaminant Level | z: surrogate |
| mg/kg: milligrams/kilogram | MDL: Method Detection Limit | COC Date: Date Chain of Custody Signed |
| ug/g: micrograms/gram | LSPC: result less than lower specification | COC TIME: Time Chain of Custody |
| ppm: parts per million | USPC: result greater than upper specification | |
| ppb: parts per billion | TIE: Tentatively Identified or Estimated | |

**SAMPLE COMMENTS** WHERE TAKEN: PROVIDENCE STREET SEWER LINE

RESULTS FOR ACETONE CONSIDERED ESTIMATE. BB

Sample Validation Date 01/20/2011

Validated By

Date Report Printed 01/20/2011

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 12/23/10
Sample Point Identification PROVIDENCE 001
Requested By WILLIAM MCKERCHER Data To WILLIAM MCKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By W. MCKERCHER
Where Taken PROVIDENCE ST. SEWER LINE

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | WW | VOC-8260 | HCl | 12/22/10 | 1342 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By [signature] Date 12/23/10 Time 0900
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

L11225

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

To: WILLIAM MCKERCHER

| | |
|---|---|
| Sample ID: | AA46336 |
| Location Name: | HERCULES INCORPORATION |
| Location Description: | REDUS GENEVA 002 |
| Location Code: | C0350022 |
| Other No.: | |
| Permit No.: | MSP091286 |
| Discharge No.: | MSP091286-001 |
| Master AI No.: | 2022 |
| Latitude: | |
| Longitude: | |

| | |
|---|---|
| Study: | GARD |
| County: | 035 FORREST |
| Basin: | |
| QA Type: | |
| Division Code: | 7700 |
| Requested By: | WILLIAM MCKERCHER |
| Date Collected: | 12/22/2010 |
| Time Collected: | 1428 |
| Sample Collector: | WMCKERCHER |
| Delivery Mode: | SV |
| Received at Lab by: | 3047 |
| Date Received at Lab: | 12/23/2010 |
| Time Received at Lab: | 0900 |

| ANALYTE | METHOD | RESULT | UNITS | MQL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | <MQL | ug/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | ug/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | ug/L | 25 | BBATES |
| Acetone | 8260 | <MQL | ug/L | 25 | BBATES |
| Benzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | 2.32 | ug/L | 5 | BBATES |
| Chlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Chloroform | 8260 | 5.18 | ug/L | 5 | BBATES |
| Chloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Ethylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | ug/L | 5 | BBATES |
| Isopropylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| m & p -Xylene | 8260 | <MQL | ug/L | 5 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | ug/L | 5 | BBATES |
| Methylene Chloride | 8260 | <MQL | ug/L | 5 | BBATES |
| Naphthalene | 8260 | <MQL | ug/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| o - Xylene | 8260 | <MQL | ug/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Styrene | 8260 | <MQL | ug/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| Toluene | 8260 | <MQL | ug/L | 5 | BBATES |
| trans-1,2-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| trans-1,3-dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 95 | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 96 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 90 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 43* | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

| | | |
|---|---|---|
| ug/L: micrograms/Liter | <: less than | >: greater than |
| mg/L: milligrams/Liter | MCL: Maximum Contaminant Level | z: surrogate |
| mg/kg: milligrams/kilogram | MDL: Method Detection Limit | COC Date: Date Chain of Custody Signed |
| ug/g: micrograms/gram | LSPC: result less than lower specification | COC TIME: Time Chain of Custody |
| ppm: parts per million | USPC: result greater than upper specification | |
| ppb: parts per billion | TIE: Tentatively Identified or Estimated | |

**SAMPLE COMMENTS** WHERE TAKEN: INTERSECTION OF REDUS AND GENEVA STREET

TOLUENE D-8 SURROGATE IS LOW. BB

Sample Validation Date 01/20/2011

Validated By

Date Report Printed 01/20/2011

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 12/23/10
Sample Point Identification REDUS GENEVA 002
Requested By WILLIAM MCKERCHER Data To WILLIAM MCKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By W. MCKERCHER
Where Taken INTERSECTION OF REDUS & GENEVA ST

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | WW | VOC-[redacted] 8260 | HCL | 12/22/10 | 1428 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By Amy Bauer Date 12/23/10 Time 0900
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

46336

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

| | | | |
|---|---|---|---|
| To: WILLIAM MCKERCHER | | Study: | GARD |
| | | County: | 035 FORREST |
| | | Basin: | |
| Sample ID: | AA46337 | QA Type: | |
| Location Name: | HERCULES INCORPORATION | Division Code: | 7700 |
| Location Description: | EIGHT ATLANTA 003 | Requested By: | WILLIAM MCKERCHER |
| | | Date Collected: | 12/22/2010 |
| Location Code: | C0350022 | Time Collected: | 1554 |
| Other No.: | | Sample Collector: | WMCKERCHER |
| Permit No.: | MSP091286 | Delivery Mode: | SV |
| Discharge No.: | MSP091286-001 | Received at Lab by: | 3047 |
| Master AI No.: | 2022 | Date Received at Lab: | 12/23/2010 |
| Latitude: | | Time Received at Lab: | 0900 |
| Longitude: | | | |

| ANALYTE | METHOD | RESULT | UNITS | MQL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | 5.96 | ug/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | 1.71 trace | ug/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | <MQL | ug/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | ug/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | ug/L | 25 | BBATES |
| Acetone | 8260 | 106 | ug/L | 25 | BBATES |
| Benzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | <MQL | ug/L | 5 | BBATES |
| Chlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Chloroform | 8260 | 3.98 trace | ug/L | 5 | BBATES |
| Chloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Ethylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | ug/L | 5 | BBATES |
| Isopropylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| m & p -Xylene | 8260 | 3.29 trace | ug/L | 5 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | ug/L | 5 | BBATES |
| Methylene Chloride | 8260 | <MQL | ug/L | 5 | BBATES |
| Naphthalene | 8260 | <MQL | ug/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| o - Xylene | 8260 | 1.15 trace | ug/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Styrene | 8260 | <MQL | ug/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| Toluene | 8260 | 1.87 trace | ug/L | 5 | BBATES |
| trans-1,2-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| trans-1,3-dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 90 | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 92 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 83 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 43* | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

| | | |
|---|---|---|
| ug/L: micrograms/Liter | <: less than | >: greater than |
| mg/L: milligrams/Liter | MCL: Maximum Contaminant Level | z: surrogate |
| mg/kg: milligrams/kilogram | MDL: Method Detection Limit | COC Date: Date Chain of Custody Signed |
| ug/g: micrograms/gram | LSPC: result less than lower specification | COC TIME: Time Chain of Custody |
| ppm: parts per million | USPC: result greater than upper specification | |
| ppb: parts per billion | TIE: Tentatively Identified or Estimated | |

**SAMPLE COMMENTS** WHERE TAKEN:

TOLUENE -D8 SURROGATE IS LOW. BB

Sample Validation Date 01/20/2011

Validated By

Date Report Printed 01/20/2011

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 12/23/10
Sample Point Identification 8TH ATLANTA 003
Requested By WILLIAM MCKERCHER Data To WILLIAM MCKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By W. MCKERCHER
Where Taken INTERSECTION OF 8TH ST. & ATLANTA ST

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | WN | VOC-8260 | HCl | 12/22/10 | 1554 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )
V. LABORATORY: Received By [signature] Date 12/23/10 Time 0900
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

46337

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

To: WILLIAM MCKERCHER

| | |
|---|---|
| Sample ID: | AA46338 |
| Location Name: | HERCULES INCORPORATION |
| Location Description: | CURRIE CUT THROUGH 004 |
| Location Code: | C0350022 |
| Other No.: | |
| Permit No.: | MSP091286 |
| Discharge No.: | MSP091286-001 |
| Master AI No.: | 2022 |
| Latitude: | |
| Longitude: | |

| | |
|---|---|
| Study: | GARD |
| County: | 035 FORREST |
| Basin: | |
| QA Type: | |
| Division Code: | 7700 |
| Requested By: | WILLIAM MCKERCHER |
| Date Collected: | 12/22/2010 |
| Time Collected: | 1645 |
| Sample Collector: | WMCKERCHER |
| Delivery Mode: | SV |
| Received at Lab by: | 3047 |
| Date Received at Lab: | 12/23/2010 |
| Time Received at Lab: | 0900 |

| ANALYTE | METHOD | RESULT | UNITS | MQL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | 4.43 trace | ug/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | 1.24 trace | ug/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | ug/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | <MQL | ug/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | ug/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | <MQL | ug/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | ug/L | 25 | BBATES |
| Acetone | 8260 | 76.4 | ug/L | 25 | BBATES |
| Benzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | ug/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | <MQL | ug/L | 5 | BBATES |
| Chlorobenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Chloroform | 8260 | 6.03 | ug/L | 5 | BBATES |
| Chloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Ethylbenzene | 8260 | 1.03 trace | ug/L | 5 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | ug/L | 5 | BBATES |
| Isopropylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| m & p -Xylene | 8260 | 3.73 trace | ug/L | 5 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | ug/L | 5 | BBATES |
| Methylene Chloride | 8260 | <MQL | ug/L | 5 | BBATES |
| Naphthalene | 8260 | <MQL | ug/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| o - Xylene | 8260 | 1.36 trace | ug/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Styrene | 8260 | <MQL | ug/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | ug/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| Toluene | 8260 | 2.93 trace | ug/L | 5 | BBATES |
| trans-1,2-Dichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| trans-1,3-dichloropropene | 8260 | <MQL | ug/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | ug/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | ug/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | ug/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 106 | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 104 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 104 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 100 | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

ug/L: micrograms/Liter
mg/L: milligrams/Liter
mg/kg: milligrams/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion

<: less than
MCL: Maximum Contaminant Level
MDL: Method Detection Limit
LSPC: result less than lower specification
USPC: result greater than upper specification
TIE: Tentatively Identified or Estimated

>: greater than
z: surrogate
COC Date: Date Chain of Custody Signed
COC TIME: Time Chain of Custody

**SAMPLE COMMENTS** WHERE TAKEN:

Sample Validation Date 01/20/2011

Validated By

Date Report Printed 01/20/2011

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 12/23/10
Sample Point Identification CURRIE CUT-THROUGH 004
Requested By WILLIAM MCKERCHER Data To WILLIAM MCKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By W. MCKERCHER
Where Taken RAILLINE CUT-THROUGH NEAR CURRIE ST

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | WW | VOC-8260 | HCL | 12/22/10 | 1645 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) PO Vehicle ( ) Other ( )
V. LABORATORY: Received By Jamy Davis Date 12/23/10 Time 0900
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

41,338

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

# Chain of Custody Record

OFFICE OF POLLUTION
CONTROL LABORATORY
1542 OLD WHITFIELD ROAD
PEARL, MS 39208-9186

PROJECT NAME: HERCULES

PROJECT LOCATION: HATTIESBURG - FORREST CO.

REMARKS:

DATA TO:

ESD SAMPE TYPES
1. SURFACEWAER
2. GROUNDWATER
3. POTABLE WATER
4. WASTEWATER
5. LEACHATE
6. SOIL/SEDMENT
7. SLUDGE
8. WASTE
9. AIR
10. FISH
11. OTHER

Sampler
A. William McKercher
B.
C.

| SAMPLE ID | Sample Type | 20_10 Date | Time | Comp | Grab | DESCRIPTION | TOTAL CONTAINERS | ANALYSIS (Circle/Add parameter desired. List no. of containers submitted.) VOA | Semivolatiles | Pest/PCB's | Metals | PAH | DRO | GRO | BTEX/MTBE | TAG NO./REMARKS: | Custody Seals Intact at Lab | Seals Not Intact upon Receipt by Lab | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4 | 12/22 | 1342 | | ✓ | PROVIDENCE 001 | 3 | 3 | | | | | | | | | | | 46335 |
| | 4 | 12/22 | 1428 | | ✓ | REDUS GENEVA 002 | 3 | 3 | | | | | | | | | | | 46336 |
| | 4 | 12/22 | 1554 | | ✓ | 8TH ATLANTA 003 | 3 | 3 | | | | | | | | | | | 46337 |
| | 4 | 12/22 | 1645 | | ✓ | CURRIE CUT-THROUGH 004 | 3 | 3 | | | | | | | | | | | 46338 |

Temp, 3.0°C KS

| RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) | DATE/TIME | RELINQUISHED BY: (PRINT) | RECEIVED BY: (PRINT) |
|---|---|---|---|---|---|
| William McKercher | 12/23/10 0900 | Tommy Sawyer | | | |
| (SIGN) William McKercher | | (SIGN) Tommy Sawyer | | (SIGN) | (SIGN) |
| RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) | DATE/TIME | RELINQUISHED BY: (PRINT) | RECEIVED BY: (PRINT) |
| (SIGN) | | (SIGN) | | (SIGN) | (SIGN) |

DISTRIBUTIONS: White and Yellow copies accompany sample shipment to laboratory; Yellow copy retained by laboratory
White copy is returned to samplers; Pink copy retained by samplers.

BUREAU OF POLLUTION CONTROL

SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name _____

County Code _____ NPDES Permit No. _____

Discharge No. _____ Date Requested _____

Sample Point Identification _____

Requested By _____ Data To _____

Type of Sample: Grab ( ) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:

Environment Condition _____ Collected By _____

Where Taken _____

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date _____ Time _____

Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL

SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name _____

County Code _____ NPDES Permit No. _____

Discharge No. _____ Date Requested _____

Sample Point Identification _____

Requested By _____ Data To _____

Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:

Environment Condition _____ Collected By _____

Where Taken _____

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date _____ Time _____

Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |

Remarks _____

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL

SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name _____

County Code _____ NPDES Permit No. _____

Discharge No. _____ Date Requested _____

Sample Point Identification _____

Requested By _____ Data To _____

Type of Sample: Grab ( ) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:

Environment Condition _____ Collected By _____

Where Taken _____

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date 12/13/13 Time _____

Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

41.33 K

BUREAU OF POLLUTION CONTROL

SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name _____

County Code _____ NPDES Permit No. _____

Discharge No. _____ Date Requested _____

Sample Point Identification _____

Requested By _____ Data To _____

Type of Sample: Grab ( ) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:

Environment Condition _____ Collected By _____

Where Taken _____

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | _____ | _____ | _____ | _____ | _____ |
| 2. | _____ | _____ | _____ | _____ | _____ |
| 3. | _____ | _____ | _____ | _____ | _____ |
| 4. | _____ | _____ | _____ | _____ | _____ |
| 5. | _____ | _____ | _____ | _____ | _____ |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | _____ | _____ | _____ |
| D.O. | (000300) | ( ) | _____ | _____ | _____ |
| Temperature | (000010) | ( ) | _____ | _____ | _____ |
| Residual Chlorine | (050060) | ( ) | _____ | _____ | _____ |
| Flow | (074060) | ( ) | _____ | _____ | _____ |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date _____ Time _____

Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | _____ mg/l | _____ | * _____ |
| COD | (000340) | ( ) | _____ mg/l | _____ | _____ |
| TOC | (000680) | ( ) | _____ mg/l | _____ | _____ |
| Suspended Solids | (099000) | ( ) | _____ mg/l | _____ | _____ |
| TKN | (000625) | ( ) | _____ mg/l | _____ | _____ |
| Ammonia-N | (000610) | ( ) | _____ mg/l | _____ | _____ |
| Fecal Coliform(1) | (074055) | ( ) | _____ colonies/100 ml | _____ | * _____ |
| Fecal Coliform(2) | (074055) | ( ) | _____ colonies/100 ml | _____ | * _____ |
| Total Phosphorus | (000665) | ( ) | _____ mg/l | _____ | _____ |
| Oil and Grease(1) | (000550) | ( ) | _____ mg/l | _____ | _____ |
| Oil and Grease(2) | (000550) | ( ) | _____ mg/l | _____ | _____ |
| Chlorides | (099016) | ( ) | _____ mg/l | _____ | _____ |
| Phenol | (032730) | ( ) | _____ mg/l | _____ | _____ |
| Total Chromium | (001034) | ( ) | _____ mg/l | _____ | _____ |
| Hex. Chromium | (001032) | ( ) | _____ mg/l | _____ | _____ |
| Zinc | (001092) | ( ) | _____ mg/l | _____ | _____ |
| Copper | (001042) | ( ) | _____ mg/l | _____ | _____ |
| Lead | (017501) | ( ) | _____ mg/l | _____ | _____ |
| Cyanide | (000722) | ( ) | _____ mg/l | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |

Remarks _____

*Date of Test Initiation

# Sample Receipt

Mississippi DEQ/OPC Laboratory

**Sample I.D. AA46335**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **WMCKERCHER**
Collection date: **12/22/2010**
Lab submittal date: **12/23/2010**
Due date: **06/20/2011**
PONUMB: _____

Login record file: **101223001**

Collection time: **13:42**
Lab submittal time: **09:04**

Division Code: **7700**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO _____
SAMPLE_LOCATION **PROVIDENCE 001**
REQUESTED_BY **WILLIAM MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE _____

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 01/05/2011 |
| VOLATILE ORGANICS SURROGATES | 8260 | 01/05/2011 |

**Sample I.D. AA46336**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **WMCKERCHER**
Collection date: **12/22/2010**
Lab submittal date: **12/23/2010**
Due date: **06/20/2011**
PONUMB: _____

Login record file: **101223001**

Collection time: **14:28**
Lab submittal time: **09:04**

Division Code: **7700**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO _____
SAMPLE_LOCATION **REDUS GENEVA 002**
REQUESTED_BY **WILLIAM MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE _____

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 01/05/2011 |
| VOLATILE ORGANICS SURROGATES | 8260 | 01/05/2011 |

**Sample I.D. AA46337**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **WMCKERCHER**
Collection date: **12/22/2010**
Lab submittal date: **12/23/2010**
Due date: **06/20/2011**
PONUMB: _____

Login record file: **101223001**

Collection time: **15:54**
Lab submittal time: **09:04**

Division Code: **7700**

**Sample I.D. AA46337 (continued):**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO _____
SAMPLE_LOCATION **EIGHT ATLANTA 003**
REQUESTED_BY **WILLIAM MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE _____

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 01/05/2011 |
| VOLATILE ORGANICS SURROGATES | 8260 | 01/05/2011 |

**Sample I.D. AA46338**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **WMCKERCHER**
Collection date: **12/22/2010**
Lab submittal date: **12/23/2010**
Due date: **06/20/2011**
PONUMB: _____

Login record file: **101223001**

Collection time: **16:45**
Lab submittal time: **09:05**

Division Code: **7700**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO _____
SAMPLE_LOCATION **CURRIE CUT THROUGH 004**
REQUESTED_BY **WILLIAM MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE _____

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 01/05/2011 |
| VOLATILE ORGANICS SURROGATES | 8260 | 01/05/2011 |

Please refer to the indicated sample I.D. numbers whan making inquiries.

Received by: _____

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

| | | | |
|---|---|---|---|
| To: WILLIE MCKERCHER | | Study: | GARD |
| | | County: | 035 FORREST |
| | | Basin: | |
| Sample ID: | AA45674 | QA Type: | |
| Location Name: | HERCULES INCORPORATION | Division Code: | 3047 |
| Location Description: | PROVIDENCE STREET A 370 | Requested By: | WILLIE MCKERCHER |
| | | Date Collected: | 10/01/2010 |
| Location Code: | C0350022 | Time Collected: | 1145 |
| Other No.: | | Sample Collector: | WMCKERCHER |
| Permit No.: | MSP091286 | Delivery Mode: | SV |
| Discharge No.: | MSP091286-001 | Received at Lab by: | TAMMY SAWYER |
| Master AI No.: | 2022 | Date Received at Lab: | 10/01/2010 |
| Latitude: | | Time Received at Lab: | 1430 |
| Longitude: | | | |

| ANALYTE | METHOD | RESULT | UNITS | MQL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | <MQL | µg/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | µg/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | µg/L | 25 | BBATES |
| Acetone | 8260 | 137 | µg/L | 25 | BBATES |
| Benzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | <MQL | µg/L | 5 | BBATES |
| Chlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloroform | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Ethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | µg/L | 5 | BBATES |
| Isopropylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| m & p -Xylene | 8260 | <MQL | µg/L | 5 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | µg/L | 5 | BBATES |
| Methylene Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| Naphthalene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| o - Xylene | 8260 | <MQL | µg/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Styrene | 8260 | <MQL | µg/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Toluene | 8260 | <MQL | µg/L | 5 | BBATES |
| trans-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| trans-1,3-dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 110 | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 246* | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 104 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 114 | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

ug/L: micrograms/Liter
mg/L: milligrams/Liter
mg/kg: milligrams/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion

<: less than
MCL: Maximum Contaminant Level
MDL: Method Detection Limit
LSPC: result less than lower specification
USPC: result greater than upper specification
TIE: Tentatively Identified or Estimated

>: greater than
z: surrogate
COC Date: Date Chain of Custody Signed
COC TIME: Time Chain of Custody

**SAMPLE COMMENTS** DIBROMOFLUOROMETHANE SURROGATE IS HIGH DUE TO SAMPLE INTERFERENCE. BB

Sample Validation Date 10/08/2010

Validated By

Date Report Printed 10/08/2010

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 10/1/2010
Sample Point Identification PROVIDENCE ST A370
Requested By WILLIE MCKERCHER Data To WILLIE MCKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By WILLIE MCKERCHE
Where Taken MANHOLE A370

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | WASTEWATER | VOC - 8260 | HCl | 10-1-2010 | 1145 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By Tommy Dwyer Date 10-1-10 Time 1430
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
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| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

45674

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

| | | | |
|---|---|---|---|
| To: WILLIE MCKERCHER | | Study: | GARD |
| | | County: | 035 FORREST |
| | | Basin: | |
| Sample ID: | AA45675 | QA Type: | |
| Location Name: | HERCULES INCORPORATION | Division Code: | 3047 |
| Location Description: | PROVIDENCE STREET A 372 | Requested By: | WILLIE MCKERCHER |
| | | Date Collected: | 10/01/2010 |
| Location Code: | C0350022 | Time Collected: | 1155 |
| Other No.: | | Sample Collector: | WMCKERCHER |
| Permit No.: | MSP091286 | Delivery Mode: | SV |
| Discharge No.: | MSP091286-001 | Received at Lab by: | TAMMY SAWYER |
| Master AI No.: | 2022 | Date Received at Lab: | 10/01/2010 |
| Latitude: | | Time Received at Lab: | 1430 |
| Longitude: | | | |

| ANALYTE | METHOD | RESULT | UNITS | MQL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | <MQL | µg/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | µg/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | µg/L | 25 | BBATES |
| Acetone | 8260 | 45.2 | µg/L | 25 | BBATES |
| Benzene | 8260 | 19.4 | µg/L | 5 | BBATES |
| Bromobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | 45.8 | µg/L | 5 | BBATES |
| Chlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloroform | 8260 | 32.4 | µg/L | 5 | BBATES |
| Chloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Ethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | µg/L | 5 | BBATES |
| Isopropylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| m & p -Xylene | 8260 | <MQL | µg/L | 5 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | µg/L | 5 | BBATES |
| Methylene Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| Naphthalene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| o - Xylene | 8260 | <MQL | µg/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Styrene | 8260 | <MQL | µg/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Toluene | 8260 | 13.9 | µg/L | 5 | BBATES |
| trans-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| trans-1,3-dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 122* | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 105 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 100 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 117 | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

ug/L: micrograms/Liter
mg/L: milligrams/Liter
mg/kg: milligrams/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion

<: less than
MCL: Maximum Contaminant Level
MDL: Method Detection Limit
LSPC: result less than lower specification
USPC: result greater than upper specification
TIE: Tentatively Identified or Estimated

>: greater than
z: surrogate
COC Date: Date Chain of Custody Signed
COC TIME: Time Chain of Custody

**SAMPLE COMMENTS** 1,2-DICHLOROETHANE SURROGATE IS HIGH. BB

Sample Validation Date 10/08/2010

Validated By

Date Report Printed 10/08/2010

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 10/1/2010
Sample Point Identification PROVIDENCE STREET A372
Requested By WILLIE MCKERCHER Data To WILLIE MCKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By WILLIE MCKERCHER
Where Taken MANHOLE A372

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | WASTEWATER | VOC- 8260 | HCl | 10-1-2010 | 1155 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )
V. LABORATORY: Received By Tommy Dawyer Date 10-1-10 Time 1430
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

45675

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

# Chain of Custody Record

OFFICE OF POLLUTION
CONTROL LABORATORY
1542 OLD WHITFIELD ROAD
PEARL, MS 39208-9186

PROJECT NAME: HERCULES

PROJECT LOCATION: HATTIESBURG - FORREST CO

REMARKS:

DATA TO:

**ESD SAMPE TYPES**
1. SURFACEWAER
2. GROUNDWATER
3. POTABLE WATER
4. WASTEWATER
5. LEACHATE
6. SOIL/SEDMENT
7. SLUDGE
8. WASTE
9. AIR
10. FISH
11. OTHER

Sampler
A. Willie McKeehan
B.
C.

**ANALYSIS** (Circle/Add parameter desired. List no. of containers submitted.)

| SAMPLE ID | Sample Type | 20_10 Date | Time | Comp | Grab | DESCRIPTION | TOTAL CONTAINERS | VOA | Semivolatiles | Pest/PCB's | Metals | PAH | DRO | GRO | BTEX/MTBE | | | | | TAG NO./REMARKS: | Custody Seals Intact at Lab | Seals Not Intact upon Receipt by Lab | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4 | 10/1 | 1145 | | ✓ | PROVIDENCE ST A370 | 3 | 3 | | | | | | | | | | | | RUSH | | | 45674 |
| | 4 | 10/1 | 1155 | | ✓ | PROVIDENCE ST A372 | 3 | 3 | | | | | | | | | | | | | | | 45675 |
| | | | | | | Temp. 3.0c KF | | | | | | | | | | | | | | | | | |

| RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) | DATE/TIME | RELINQUISHED BY: (PRINT) | RECEIVED BY (PRINT) |
|---|---|---|---|---|---|
| (SIGN) Willie McKeehan | 10/1/2010-2:30 PM | (SIGN) Sammy Sawyer | | (SIGN) | (SIGN) |
| RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) | DATE/TIME | RELINQUISHED BY: (PRINT) | RECEIVED BY (PRINT) |
| (SIGN) | | (SIGN) | | (SIGN) | (SIGN) |

DISTRIBUTIONS: White and Yellow copies accompany sample shipment to laboratory; Yellow copy retained by laboratory
White copy is returned to samplers; Pink copy retained by samplers.

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORSYTH NPDES Permit No. _____
Discharge No. _____ Date Requested 10/1/2010
Sample Point Identification PROVIDENCE STREET A372
Requested By D. WILLIE McKENDRICK Data To D. WILLIE McKENDRICK
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By D. WILLIE McKENDRICK
Where Taken MANHOLE A372

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | WASTEWATER | VOC- 8260 | HCl | 10/1/2010 | 1155 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____
V. LABORATORY: Received By _____ Date 10-1-10 Time 1430
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |
| _____ | _____ | ( ) | | | |

Remarks _____

*Date of Test Initiation

4 of 76

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 10/1/2010
Sample Point Identification PROVIDENCE ST A370
Requested By DILLIE MCKERCHER Data To DILLIE MCKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By DILLIE MCKERCHER
Where Taken MANHOLE A370

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | WASTEWATER | VOC 8260 | HCl | 10-1-2010 | 1145 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date 10-1-10 Time 1430
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

45174

# Sample Receipt

Mississippi DEQ/OPC Laboratory

**Sample I.D. AA45674**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **WMCKERCHER**
Collection date: **10/01/2010**
Lab submittal date: **10/01/2010**
Due date: **03/30/2011**
PONUMB: _____

Login record file: **101001003**

Collection time: **11:45**
Lab submittal time: **14:25**

Division Code: **3047**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO _____
SAMPLE_LOCATION **PROVIDENCE STREET A 370**
REQUESTED_BY **WILLIE MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE **SV**

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 10/15/2010 |
| VOLATILE ORGANICS SURROGATES | 8260 | 10/15/2010 |

**Sample I.D. AA45675**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **WMCKERCHER**
Collection date: **10/01/2010**
Lab submittal date: **10/01/2010**
Due date: **03/30/2011**
PONUMB: _____

Login record file: **101001003**

Collection time: **11:55**
Lab submittal time: **14:25**

Division Code: **3047**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO _____
SAMPLE_LOCATION **PROVIDENCE STREET A 372**
REQUESTED_BY **WILLIE MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE **SV**

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 10/15/2010 |
| VOLATILE ORGANICS SURROGATES | 8260 | 10/15/2010 |

Please refer to the indicated sample I.D. numbers whan making inquiries.

Received by: _____

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

| | | | |
|---|---|---|---|
| To: WILLIE MCKERCHER | | Study: | GARD |
| | | County: | 035 FORREST |
| | | Basin: | |
| Sample ID: | AA44332 | QA Type: | |
| Location Name: | HERCULES INCORPORATION | Division Code: | 3047 |
| Location Description: | MW-35 | Requested By: | WILLIE MCKERCHER |
| | | Date Collected: | 05/12/2010 |
| Location Code: | C0350022 | Time Collected: | 1202 |
| Other No.: | MW-23 | Sample Collector: | BEANES |
| Permit No.: | MSP091286 | Delivery Mode: | SV |
| Discharge No.: | MSP091286-001 | Received at Lab by: | TAMMY SAWYER |
| Master AI No.: | 2022 | Date Received at Lab: | 05/13/2010 |
| Latitude: | | Time Received at Lab: | 0956 |
| Longitude: | | | |

| ANALYTE | METHOD | RESULT | UNITS | MQL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | 1.12 trace | µg/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | 9.89 | µg/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | 14.2 | µg/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | 2.83 trace | µg/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | 2.44 trace | µg/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | 3.34 trace | µg/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | 13.8 | µg/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | 3.75 trace | µg/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | 157 | µg/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | 1.28 trace | µg/L | 5 | BBATES |
| 2-Hexanone | 8260 | 23.6 trace | µg/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | 403 trace | µg/L | 500 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | µg/L | 25 | BBATES |
| Acetone | 8260 | 1210 trace | µg/L | 2500 | BBATES |
| Benzene | 8260 | 8770 | µg/L | 500 | BBATES |
| Bromobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | <MQL | µg/L | 5 | BBATES |
| Chlorobenzene | 8260 | 194 | µg/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloroform | 8260 | 1730 | µg/L | 500 | BBATES |
| Chloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Ethylbenzene | 8260 | 5.77 | µg/L | 5 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | µg/L | 5 | BBATES |
| Isopropylbenzene | 8260 | 57.9 | µg/L | 5 | BBATES |
| m & p -Xylene | 8260 | 8.83 | µg/L | 5 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | µg/L | 5 | BBATES |
| Methylene Chloride | 8260 | 268 trace | µg/L | 500 | BBATES |
| Naphthalene | 8260 | 500* | µg/L | 500 | BBATES |
| n-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| o - Xylene | 8260 | 3.25 trace | µg/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Styrene | 8260 | <MQL | µg/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Tetrachloroethene | 8260 | 6.28 | µg/L | 5 | BBATES |
| Toluene | 8260 | 3150 | µg/L | 500 | BBATES |
| trans-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| trans-1,3-dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 91 | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 88 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 90 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 104 | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

| | | |
|---|---|---|
| ug/L: micrograms/Liter | <: less than | >: greater than |
| mg/L: milligrams/Liter | MCL: Maximum Contaminant Level | z: surrogate |
| mg/kg: milligrams/kilogram | MDL: Method Detection Limit | COC Date: Date Chain of Custody Signed |
| ug/g: micrograms/gram | LSPC: result less than lower specification | COC TIME: Time Chain of Custody |
| ppm: parts per million | USPC: result greater than upper specification | |
| ppb: parts per billion | TIE: Tentatively Identified or Estimated | |

**SAMPLE COMMENTS**

COLLECTOR: BRENT EANES- FIELD CONSULTANT

RESULTS FOR NAPTHALENE CONSIDERED ESTIMATE. BB

Sample Validation Date 05/28/2010

Validated By

Date Report Printed 05/28/2010

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 5/13/2010
Sample Point Identification MW-23
Requested By WILLIE MCKERCHER Data To WILLIE MCKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By BRENT EANES
Where Taken MW-23

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | GW | VOC-8260 | NONE | 5/12/2010 | 1202 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By Tammy Sawyer Date 5-13-10 Time 0956
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

3047

44332

MISSISSIPPI DEPARTMENT
OF ENVIRONMENTAL QUALITY

# CHAIN OF CUSTODY RECORD

POLLUTION CONTROL
LABORATORY
121 Fairmont Plaza
Pearl, Mississippi 39208

PROJECT NAME: HERCULES

LOCATION: HATTIESBURG - FORREST Co.

SHIPPED TO:

DATA TO:

SAMPLE TYPES
1. SURFACE WATER
2. GROUND WATER
3. POTABLE WATER
4. WASTEWATER
5. LEACHATE
6. SOIL/SEDIMENT
7. SLUDGE
8. WASTE
9. AIR
10. FISH
11. OTHER

SAMPLERS (SIGN)
A. BRENT EANES WM
B.
C.
D.

| SITE NO. | SAMPLE TYPE | DATE (2010 ~~19~~ ___) | TIME | COMP | GRAB | STATION LOCATION/DESCRIPTION | TOTAL CONTAINERS | CIRCLE/ADD parameter desired. List no. of containers submitted. | GOD. TOC. NUTRIENTS | BOD. SOLIDS | METALS (Total) (TCLP) | EXT. ORG/PEST/PCBs (TCLP) | PURG. AROMATICS/ HALOCARBONS | CYANIDE | FECAL COLIFORM | Oil & Grease/TPH | Phenolics | VOC | REMARKS | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 5/12 | 1202 | | ✓ | MW-23 | 3 | | | | | | | | | | | 3 | | 44332 |

Temp. 20°C

| RELINQUISHED BY: (PRINT) / (SIGN) | DATE/TIME | RECEIVED BY: (PRINT) / (SIGN) | RELINQUISHED BY: (PRINT) / (SIGN) | DATE/TIME | RECEIVED BY: (PRINT) / (SIGN) |
|---|---|---|---|---|---|
| WILLIE McKERCHER / Willie McKercher | 5-13-10 0956 | Tammy Sawyer / Tammy Sawyer | | | |
| | DATE/TIME | RECEIVED BY: | RELINQUISHED BY: | DATE/TIME | RECEIVED BY: |
| | | | | | |

DISTRIBUTION: White and Yellow copies accompany sample shipment to lab; Yellow copy retained by lab; White copy is returned to samplers; Pink copy retained by samplers.

PAGE _____ OF _____

3/91

NOTICE: Must use a separate form for each ice chest.

3047

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Hercules

County Code _____ NPDES Permit No. _____

Discharge No. _____ Date Requested _____

Sample Point Identification _____

Requested By _____ Data To _____

Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:

Environment Condition _____ Collected By _____

Where Taken _____

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date _____ Time _____

Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

44232

# Sample Receipt

Mississippi DEQ/OPC Laboratory

**Sample I.D. AA44332**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **BEANES**
Collection date: **05/12/2010**
Lab submittal date: **05/13/2010**
Due date: **11/08/2010**
PONUMB: _____

Login record file: **100513004**

Collection time: **12:02**
Lab submittal time: **09:57**

Division Code: **3047**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO **MW-23**
SAMPLE_LOCATION **MW-35**
REQUESTED_BY **WILLIE MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE **SV**

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 05/26/2010 |
| VOLATILE ORGANICS SURROGATES | 8260 | 05/26/2010 |

Please refer to the indicated sample I.D. number whan making inquiries.

Received by: _____

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

To: WILLIAM MCKERCHER

| | |
|---|---|
| Sample ID: | AA42001 |
| Location Name: | HERCULES INCORPORATION |
| Location Description: | MW-21 |
| Location Code: | C0350022 |
| Other No.: | MW-21 |
| Permit No.: | MSP091286 |
| Discharge No.: | MSP091286-001 |
| Master AI No.: | 2022 |
| Latitude: | |
| Longitude: | |

| | |
|---|---|
| Study: | GARD |
| County: | 035 FORREST |
| Basin: | |
| QA Type: | |
| Division Code: | 3047 |
| Requested By: | WILLIAM MCKERCHER |
| Date Collected: | 09/29/2009 |
| Time Collected: | 1142 |
| Sample Collector: | BEANES |
| Delivery Mode: | SV |
| Received at Lab by: | TAMMY SAWYER |
| Date Received at Lab: | 09/29/2009 |
| Time Received at Lab: | 1510 |

| ANALYTE | METHOD | RESULT | UNITS | MQL | ANALYST |
|---|---|---|---|---|---|
| Silver, Total | 200.7 | <MQL | ug/L | 20.0 | MPYLES |
| Arsenic, Total | 200.7 | <MQL | ug/L | 50.0 | MPYLES |
| Barium, Total | 200.7 | 68.6 | ug/L | 10.0 | MPYLES |
| Cadmium, Total | 200.7 | 11.1 | ug/L | 10.0 | MPYLES |
| Chromium, Total | 200.7 | 23.7 | ug/L | 10.0 | MPYLES |
| Mercury, Total | 245.1 | <MQL | ug/L | 0.5 | MPYLES |
| Lead, Total | 200.7 | 11.6 | ug/L | 10.0 | MPYLES |
| Selenium, Total Method | 200.8 | 2.93 | ug/L | 0.5 | LCOBB |
| 4,4'-DDD | 608 | <MQL | µg/L | 0.5 | ESCARBROUGH |
| 4,4'-DDE | 608 | <MQL | µg/L | 0.5 | ESCARBROUGH |
| 4,4'-DDT | 608 | <MQL | µg/L | 0.5 | ESCARBROUGH |
| Aldrin | 608 | <MQL | µg/L | 0.34 | ESCARBROUGH |
| alpha-BHC | 608 | <MQL | µg/L | 0.35 | ESCARBROUGH |
| Alpha-Chlordane | 608 | <MQL | µg/L | 0.08 | ESCARBROUGH |
| beta-BHC | 608 | <MQL | µg/L | 0.23 | ESCARBROUGH |
| Chlordane Tech | 608 | <MQL | µg/L | 25 | ESCARBROUGH |
| delta-BHC | 608 | <MQL | µg/L | 0.24 | ESCARBROUGH |
| Dieldrin | 608 | <MQL | µg/L | 0.44 | ESCARBROUGH |

| | | | | | |
|---|---|---|---|---|---|
| Endosulfan I | 60 | <MQL | µg/ | 0.37 | ESCARBROUGH |
| Endosulfan II | 608 | <MQL | µg/L | 0.4 | ESCARBROUGH |
| Endosulfan sulfate | 608 | <MQL | µg/L | 0.35 | ESCARBROUGH |
| Endrin | 608 | <MQL | µg/L | 0.39 | ESCARBROUGH |
| Endrin aldehyde | 608 | <MQL | µg/L | 0.5 | ESCARBROUGH |
| Endrine Ketone | 608 | <MQL | µg/L | 0.6 | ESCARBROUGH |
| Gama-Chlordane | 608 | <MQL | µg/L | 0.3 | ESCARBROUGH |
| gamma-BHC (Lindane) | 608 | <MQL | µg/L | 0.25 | ESCARBROUGH |
| Heptachlor | 608 | <MQL | µg/L | 0.32 | ESCARBROUGH |
| Heptachlor epoxide | 608 | <MQL | µg/L | 0.32 | ESCARBROUGH |
| Methoxychlor | 608 | <MQL | µg/L | 0.86 | ESCARBROUGH |
| Toxaphene | 608 | <MQL | µg/L | 0.86 | ESCARBROUGH |
| DCB | 608 | 134* | % | 20-127 | ESCARBROUGH |
| TCMX | 608 | 337* | % | 56-125 | ESCARBROUGH |
| 1,2,4-Trichlorobenzene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 1,2-Dichlorobenzene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 1,3-Dichlorobenzene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 1,4-Dichlorobenzene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2,4,5-Trichlorophenol | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2,4,6-Trichlorophenol | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2,4-Dichlorophenol | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2,4-Dimethylphenol | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2,4-Dinitrophenol | 8270 | <MQL | µg/L | 100.0 | JSHELL |
| 2,4-Dinitrotoluene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2,6-Dinitrotoluene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2-Chloronaphthalene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2-Chlorophenol | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2-Methylnaphthalene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2-Methylphenol | 8270 | Trace 16.6 | µg/L | 20.00 | JSHELL |
| 2-Nitroaniline | 8270 | <MQL | µg/L | 100.0 | JSHELL |
| 2-Nitrophenol | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| 3,3'-Dichlorobenzidine | 8270 | <MQL | µg/L | 100.0 | JSHELL |
| 3-Nitroaniline | 8270 | <MQL | µg/L | 100.0 | JSHELL |
| 4,6-Dinitro-2-methylphenol | 8270 | <MQL | µg/L | 100.0 | JSHELL |
| 4-Bromophenyl-phenylether | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 4-Chloro-3-methylphenol | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| 4-Chloroaniline | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| 4-Chlorophenyl-phenylether | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 4-Methylphenol | 8270 | 106 | µg/L | 20.00 | JSHELL |
| 4-Nitroaniline | 8270 | <MQL | µg/L | 100.0 | JSHELL |
| 4-Nitrophenol | 8270 | <MQL | µg/L | 100.0 | JSHELL |
| Acenaphthene | 8270 | <MQL | µg/L | 20.00 | JSHELL |

| | | | | | |
|---|---|---|---|---|---|
| Acenaphthylene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Anthracene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Benzo[a]anthracene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Benzo[a]pyrene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Benzo[b]fluoranthene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Benzo[g,h,i]perylene | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| Benzo[k]fluoranthene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Benzoic Acid | 8270 | *726 | µg/L | 100.0 | JSHELL |
| Benzyl alcohol | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| bis(2-Chloroethoxy)methane | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| bis(2-Chloroethyl)ether | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| bis(2-chloroisopropyl)ether | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| bis(2-Ethylhexyl)phthalate | 8270 | Trace 10.7 | µg/L | 20.00 | JSHELL |
| Butylbenzylphthalate | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Carbazole | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Chrysene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Dibenz[a,h]anthracene | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| Dibenzofuran | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Diethylphthalate | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Dimethylphthalate | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Di-n-butylphthalate | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Di-n-octylphthalate | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Fluoranthene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Fluorene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Hexachlorobenzene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Hexachlorobutadiene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Hexachlorocyclopentadiene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Hexachloroethane | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| Indeno[1,2,3-cd]pyrene | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| Isophorone | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Naphthalene | 8270 | Trace 17.9 | µg/L | 20.00 | JSHELL |
| Nitrobenzene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| N-Nitroso-di-n-propylamine | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| n-Nitrosodiphenylamine | 8270 | <MQL | µg/L | 40.00 | JSHELL |
| Pentachlorophenol | 8270 | <MQL | µg/L | 100.0 | JSHELL |
| Phenanthrene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Phenol | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| Pyrene | 8270 | <MQL | µg/L | 20.00 | JSHELL |
| 2,4,6-Tribromophenol | 8270 | 74 | % | 10-123 | JSHELL |
| 2-Fluorobiphenyl | 8270 | 72 | % | 43-116 | JSHELL |
| 2-Fluorophenol | 8270 | 46 | % | 21-100 | JSHELL |
| Nitrobenzene-d5 | 8270 | 45 | % | 35-114 | JSHELL |

| | | | | | |
|---|---|---|---|---|---|
| Phenol-d5 | 827 | 60 | % | 10-194 | JSHELL |
| Terphenyl-d14 | 8270 | 51 | % | 33-141 | JSHELL |
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | 26.4 | µg/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | 107 | µg/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | µg/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | 126 | µg/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | 860 | µg/L | 25 | BBATES |
| Acetone | 8260 | 1130 | µg/L | 25 | BBATES |
| Benzene | 8260 | 3980 | µg/L | 250 | BBATES |
| Bromobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | <MQL | µg/L | 5 | BBATES |
| Chlorobenzene | 8260 | 210 | µg/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloroform | 8260 | 5550 | µg/L | 250 | BBATES |
| Chloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Ethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | µg/L | 5 | BBATES |
| Isopropylbenzene | 8260 | 21.0 | µg/L | 5 | BBATES |
| m & p -Xylene | 8260 | <MQL | µg/L | 5 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | µg/L | 5 | BBATES |
| Methylene Chloride | 8260 | 199 | µg/L | 5 | BBATES |
| Naphthalene | 8260 | 27.9 | µg/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| o - Xylene | 8260 | <MQL | µg/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Styrene | 8260 | <MQL | µg/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Toluene | 8260 | 4850 | µg/L | 250 | BBATES |
| trans-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| trans-1,3-dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 99 | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 96 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 94 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 104 | % | 80-118 | BBATES |

## ABBREVIATIONS / DEFINITIONS

ug/L: micrograms/Liter
mg/L: milligrams/Liter
mg/kg: milligrams/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion

<: less than
MCL: Maximum Contaminant Level
MDL: Method Detection Limit
LSPC: result less than lower specification
USPC: result greater than upper specification
TIE: Tentatively Identified or Estimated

>: greater than
z: surrogate
COC Date: Date Chain of Custody Signed
COC TIME: Time Chain of Custody

**SAMPLE COMMENTS**

COLLECTOR: BRENT EANES - FIELD CONSULTANT
Semi-Vol:
1) TIC: 4-hydroxy, alpha, alpha-4-Trimethyl cyclohexanemethanol
Est. Conc. = 1400 ug/L
2) TIC: Diphenyl Ether --- Est. Conc. = 1300 ug/L
3) * The instrumental value of Benzoic Acid exceeded the highest point on the calibration curve and the reported results should be considered an "estimated concentration".
JES

Pesticides: Sample interference caused surrogate recovery to be extremely high. ES

Sample Validation Date 03/12/2010

Validated By

Date Report Printed 03/12/2010

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code FORREST NPDES Permit No. _____
Discharge No. _____ Date Requested 9/29/09
Sample Point Identification MW-21
Requested By WILLIAM McKERCHER Data To WILLIAM McKERCHER
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By BRENT EANES
Where Taken MW-21

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | GW | VOC-8260 | HCL | 9/29/09 | 11:42 |
| 2. | GW | SVOC-8270 | NONE | 9/29/09 | 11:42 |
| 3. | GW | PESTICIDES-8081A | NONE | 9/29/09 | 11:42 |
| 4. | GW | METALS | NITRIC ACID | 9/29/09 | 11:42 |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )
V. LABORATORY: Received By Tammy Davis Date 9.29.09 Time 1510
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

42001

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

# Chain of Custody Record

OFFICE OF POLLUTION CONTROL LABORATORY
1542 OLD WHITFIELD ROAD
PEARL, MS 39208-9186

PROJECT NAME: HERCULES

PROJECT LOCATION: HATTIESBURG - FORREST CO.

ESD SAMPE TYPES
1. SURFACEWAER 6. SOIL/SEDMENT
2. GROUNDWATER 7. SLUDGE
3. POTABLE WATER 8. WASTE
4. WASTEWATER 9. AIR
5. LEACHATE 10. FISH
11. OTHER

Sampler
A.
B.
C.

REMARKS:

DATA TO:

| SAMPLE ID | Sample Type | 2009 Date | Time | Comp | Grab | DESCRIPTION | TOTAL CONTAINERS | VOA | Semivolatiles | Pest/PCB's | Metals | PAH | DRO | GRO | BTEX/MTBE | TAG NO./REMARKS | Custody Seals Intact at Lab | Seals Not Intact upon Receipt by Lab | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 9/29 | | | ✓ | MW-21 | 8 | 3 | 2 | 2 | 1 | | | | | | | | 42001 |

ANALYSIS
(Circle/Add parameter desired. List no. of containers submitted.)

Temp. 2.0 H

| RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) | DATE/TIME | RELINQUISHED BY: (PRINT) | RECEIVED BY: (PRINT) |
|---|---|---|---|---|---|
| William McKercher | 9.29.09 1510 | Tammy Sawyer | | | |
| (SIGN) William McKercher | | (SIGN) Tammy Sawyer | | (SIGN) | (SIGN) |
| RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) | DATE/TIME | RELINQUISHED BY: (PRINT) | RECEIVED BY: (PRINT) |
| (SIGN) | | (SIGN) | | (SIGN) | (SIGN) |

DISTRIBUTIONS: White and Yellow copies accompany sample shipment to laboratory; Yellow copy retained by laboratory
White copy is returned to samplers; Pink copy retained by samplers.

PAGE_____OF_____

09/07

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES

County Code _____ NPDES Permit No. _____

Discharge No. _____ Date Requested _____

Sample Point Identification MW-21

Requested By _____ Data To _____

Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

I. SAMPLE IDENTIFICATION:

Environment Condition _____ Collected By _____

Where Taken MW-21

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | GW | VOC 8260 | HCl | | |
| 2. | GW | TVOC-8270 | | | |
| 3. | GW | TOTAL-601A | | | |
| 4. | GW | METALS | HNO3 | | |
| 5. | | | | | |

I. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

V. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By _____ Date _____ Time _____

Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

# Sample Receipt

ssippi DEQ/OPC Laboratory

Login record file: **090929004**

**ple I.D. AA42001**
tion code **C0350022**
ition Description **HERCULES INCORPORATION**
ple collector **BEANES**
ection date: **09/29/2009**
submittal date: **09/29/2009**
date: **03/28/2010**
NUMB: _____

Collection time: **11:42**
Lab submittal time: **15:13**

Division Code: **3047**

RMIT_NO **MSP091286**
CHARGE_NO **MSP091286-001**
HER_NO **MW-21**
MPLE_LOCATION **MW-21**
QUESTED_BY **WILLIAM MCKERCHER**
TITUDE _____
NGITUDE _____
LIVERY_MODE _____

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 10/13/2009 |
| VOLATILE ORGANICS SURROGATES | 8260 | 10/13/2009 |
| SEMIVOL ORG COMPOUNDS | 8270 | 11/15/2009 |
| SEMIVOL ORG COMPOUNDS SURROGATES | 8270 | 11/15/2009 |
| Extract For Semi-Volatile Analysis | 3520 | 10/06/2009 |
| PESTICIDES COMPLIANCE | 608 | 11/15/2009 |
| PESTICIDES COMPLIANCE SURROGATES | 608 | 11/15/2009 |
| Extract For Pesticides Compliance | 608 | 10/06/2009 |
| Arsenic, Total | 200.7 | 10/27/2009 |
| Barium, Total | 200.7 | 10/27/2009 |
| Cadmium, Total | 200.7 | 10/27/2009 |
| Chromium, Total | 200.7 | 10/27/2009 |
| Lead, Total | 200.7 | 10/27/2009 |
| Mercury, Total | 245.1 | 10/27/2009 |
| Selenium, Total | 200.7 | 10/27/2009 |
| Silver, Total | 200.7 | 10/27/2009 |

lease refer to the indicated sample I.D. number whan making inquiries.

Received by: _____

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

To: WILLIAM MCKERCHER

| | |
|---|---|
| Sample ID: | AA36164 |
| Location Name: | HERCULES INCORPORATION |
| Location Description: | HER MW 19 051408 |
| Location Code: | C0350022 |
| Other No.: | HER-MW-19-05140 |
| Permit No.: | MSP091286 |
| Discharge No.: | MSP091286-001 |
| Master AI No.: | 2022 |
| Latitude: | |
| Longitude: | |

| | |
|---|---|
| Study: | GARD |
| County: | 035 FORREST |
| Basin: | |
| QA Type: | |
| Division Code: | 3047 |
| Requested By: | WILLIAM MCKERCHER |
| Date Collected: | 05/14/2008 |
| Time Collected: | 15:00 |
| Sample Collector: | CTERRELL |
| Delivery Mode: | SV |
| Received at Lab by: | DEBORAH TURNAGE |
| Date Received at Lab: | 05/15/2008 |
| Time Received at Lab: | 1215 |

| ANALYTE | METHOD | RESULT | UNITS | MDL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | 1.60 trace | µg/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | 1.16 trace | µg/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | <MQL | µg/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | µg/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | µg/L | 25 | BBATES |
| Acetone | 8260 | <MQL | µg/L | 25 | BBATES |
| Benzene | 8260 | 64.1 | µg/L | 1 | BBATES |
| Bromobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | 5.99 | µg/L | 5 | BBATES |
| Chlorobenzene | 8260 | 12.05 | µg/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloroform | 8260 | 4.24 trace | µg/L | 5 | BBATES |
| Chloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Ethylbenzene | 8260 | 2.28 | µg/L | 1 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | µg/L | 5 | BBATES |
| Isopropylbenzene | 8260 | 2.65 trace | µg/L | 5 | BBATES |
| m & p -Xylene | 8260 | 1.11 trace | µg/L | 2.0 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | µg/L | 5 | BBATES |
| Methylene Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| Naphthalene | 8260 | 9.21 | µg/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Propylbenzene | 8260 | 1.82 trace | µg/L | 5 | BBATES |
| o - Xylene | 8260 | <MQL | µg/L | 5 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Styrene | 8260 | <MQL | µg/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Toluene | 8260 | 2.31 | µg/L | 1 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| trans-1,2-Dichloroethene | [redacted] | <MQL | µ[redacted] | 5 | BBATES |
| trans-1,3-dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 120 | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 114 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 105 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 94 | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

ug/L: micrograms/Liter
mg/L: milligrams/Liter
mg/kg: milligrams/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion

<: less than
MCL: Maximum Contaminant Level
MDL: Method Detection Limit
LSPC: result less than lower specification
USPC: result greater than upper specification
TIE: Tentatively Identified or Estimated

>: greater than
z: surrogate
COC Date: Date Chain of Custody Signed
COC TIME: Time Chain of Custody

**SAMPLE COMMENTS** COLLECTOR: CHRIS TERRELL - FIELD CONSULTANT

Sample Validation Date 06/30/2008

Validated By

Date Report Printed 06/30/2008

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code Forrest NPDES Permit No. _____
Discharge No. _____ Date Requested 5/15/08
Sample Point Identification HER-MW-19-051408
Requested By Willie McKercher Data To Willie McKercher
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By ~~Willie McKercher~~ Chris Terrell
Where Taken MW-19

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | GW | VOC-8260 | HCl | 5/14/08 | 1500 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )
V. LABORATORY: Received By Deborah Jennings Date 5-15-08 Time 1215
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |

Remarks _____

*Date of Test Initiation

36164

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Pollution Control Laboratory
1542 Old Whitfield Road
Pearl MS 39208
601-961-5701

## Sample Results

| | | | |
|---|---|---|---|
| To: WILLIAM MCKERCHER | | Study: | GARD |
| | | County: | 035 FORREST |
| | | Basin: | |
| Sample ID: | AA36165 | QA Type: | |
| Location Name: | HERCULES INCORPORATION | Division Code: | 3047 |
| Location Description: | HER MW 18 051408 | Requested By: | WILLIAM MCKERCHER |
| | | Date Collected: | 05/14/2008 |
| Location Code: | C0350022 | Time Collected: | 14:30 |
| Other No.: | | Sample Collector: | CTERRELL |
| Permit No.: | MSP091286 | Delivery Mode: | SV |
| Discharge No.: | MSP091286-001 | Received at Lab by: | DEBORAH TURNAGE |
| Master AI No.: | 2022 | Date Received at Lab: | 05/15/2008 |
| Latitude: | | Time Received at Lab: | 1215 |
| Longitude: | | | |

| ANALYTE | METHOD | RESULT | UNITS | MDL | ANALYST |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,1-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2,2-Tetrachloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1,2-Trichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,1-Dichloroethene | 8260 | 2.34 trace | µg/L | 5 | BBATES |
| 1,1-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,3-Trichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2,4-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromo-3-chloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dibromoethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3,5-Trimethylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,3-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,4-Dichlorobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2,2-Dichloropropane | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Butanone (MEK) | 8260 | <MQL | µg/L | 25 | BBATES |
| 2-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 2-Hexanone | 8260 | <MQL | µg/L | 25 | BBATES |
| 4-Chlorotoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Isopropyltoluene | 8260 | <MQL | µg/L | 5 | BBATES |
| 4-Methyl-2-pentanone (MIBK) | 8260 | <MQL | µg/L | 25 | BBATES |
| Acetone | 8260 | <MQL | µg/L | 25 | BBATES |
| Benzene | 8260 | 1.66 | µg/L | 1 | BBATES |
| Bromobenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromodichloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromoform | 8260 | <MQL | µg/L | 5 | BBATES |
| Bromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Carbon Tetrachloride | 8260 | <MQL | µg/L | 5 | BBATES |
| Chlorobenzene | 8260 | 29.7 | µg/L | 5 | BBATES |
| Chloroethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloroform | 8260 | <MQL | µg/L | 5 | BBATES |
| Chloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| cis-1,3-Dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromochloromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dibromomethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Dichlorodifluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Ethylbenzene | 8260 | <MQL | µg/L | 1 | BBATES |
| Hexachlorobutadiene | 8260 | <MQL | µg/L | 5 | BBATES |
| Isopropylbenzene | 8260 | 1.78 trace | µg/L | 5 | BBATES |
| m & p -Xylene | 8260 | <MQL | µg/L | 2 | BBATES |
| Methyl tertiary butyl ether | 8260 | <MQL | µg/L | 5 | BBATES |
| Methylene Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| Naphthalene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| n-Propylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| o - Xylene | 8260 | <MQL | µg/L | 1 | BBATES |
| sec-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Styrene | 8260 | <MQL | µg/L | 5 | BBATES |
| tert-Butylbenzene | 8260 | <MQL | µg/L | 5 | BBATES |
| Tetrachloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Toluene | 8260 | <MQL | µg/L | 1 | BBATES |

| | | | | | |
|---|---|---|---|---|---|
| trans-1,2-Dichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| trans-1,3-dichloropropene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichloroethene | 8260 | <MQL | µg/L | 5 | BBATES |
| Trichlorofluoromethane | 8260 | <MQL | µg/L | 5 | BBATES |
| Vinyl Chloride | 8260 | <MQL | µg/L | 5 | BBATES |
| 1,2-Dichloroethane-d4 | 8260 | 123* | % | 80-120 | BBATES |
| Dibromofluromethane | 8260 | 117 | % | 80-118 | BBATES |
| p-Bromoflurobenzene | 8260 | 101 | % | 80-115 | BBATES |
| Toluene-d8 | 8260 | 98 | % | 80-118 | BBATES |

**ABBREVIATIONS / DEFINITIONS**

ug/L: micrograms/Liter
mg/L: milligrams/Liter
mg/kg: milligrams/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion

<: less than
MCL: Maximum Contaminant Level
MDL: Method Detection Limit
LSPC: result less than lower specification
USPC: result greater than upper specification
TIE: Tentatively Identified or Estimated

>: greater than
z: surrogate
COC Date: Date Chain of Custody Signed
COC TIME: Time Chain of Custody

**SAMPLE COMMENTS** COLLECTOR: CHRIS TERRELL - FIELD CONSULTANT

Volatiles:

1,2-Dichloroethane-D4 outside method limits. BB

Sample Validation Date 06/30/2008

Validated By

Date Report Printed 06/30/2008

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code Forrest Co. NPDES Permit No. _____
Discharge No. _____ Date Requested 5/15/08
Sample Point Identification HER-MW-18-051408
Requested By Willie McKercher Data To Willie McKercher
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( ) _____

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By Chris Terrell
Where Taken MW-18

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | GW | VOC-8260 | HCl | 5/14/08 | 1430 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

II. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )
V. LABORATORY: Received By Deborah Durrage Date 5-15-08 Time 1215
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

36165

# Sample Receipt

Mississippi DEQ/OPC Laboratory

**Sample I.D. AA36164**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **CTERRELL**
Collection date: **05/14/2008**
Lab submittal date: **05/15/2008**
Due date: **05/15/2008**
Matrix: **GROUNDWATER**

Login record file: **080515122302**

Collection time: **15:00**
Lab submittal time: **12:16**

Division Code: **3047**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO _____
SAMPLE_LOCATION **HER MW 19 051408**
REQUESTED_BY **WILLIAM MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE **SV**

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 05/28/2008 |

**Sample I.D. AA36165**
Location code **C0350022**
Location Description **HERCULES INCORPORATION**
Sample collector **CTERRELL**
Collection date: **05/14/2008**
Lab submittal date: **05/15/2008**
Due date: **05/15/2008**
Matrix: **GROUNDWATER**

Login record file: **080515122302**

Collection time: **14:30**
Lab submittal time: **12:17**

Division Code: **3047**

PERMIT_NO **MSP091286**
DISCHARGE_NO **MSP091286-001**
OTHER_NO _____
SAMPLE_LOCATION **HER MW 18 051408**
REQUESTED_BY **WILLIAM MCKERCHER**
LATITUDE _____
LONGITUDE _____
DELIVERY_MODE **SV**

| Analyses ordered | Method | Due Date |
|---|---|---|
| VOLATILE ORGANICS IN WATER | 8260 | 05/28/2008 |

Please refer to the indicated sample I.D. numbers whan making inquiries.

Received by: _____

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code Escambia — NPDES Permit No. _____
Discharge No. _____ — Date Requested 5/15/08
Sample Point Identification HER-MW-11-050408
Requested By Willie McKeever — Data To Willie McKeever
Type of Sample: Grab ( ) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ — Collected By Chris Terrell
Where Taken MW-11

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | GW | VOC-8260 | HCl | 5/14/08 | 1500 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

II. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )
V. LABORATORY: Received By Victoria Zuniga — Date 5-15-08 — Time 1215
Recorded By _____ — Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |
| _____ | _____ | ( ) | _____ | _____ | _____ |

Remarks _____

*Date of Test Initiation

36164

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name HERCULES
County Code Escambia Co. NPDES Permit No. _____
Discharge No. _____ Date Requested 5/15/02
Sample Point Identification HER-MW-18-051402
Requested By Willie McKeithen Data To Willie McKeithen
Type of Sample: Grab (✓) Composite (Flow ) (Time ) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By Chris Tunnell
Where Taken MW-18

| | Type | Parameters | Preservative | Date | Time |
|---|---|---|---|---|---|
| 1. | GW | VOC 8260 | HCl | 5/14/02 | 1430 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

III. FIELD:

| Analysis | Computer Code | Request | Results | Analyst | Date |
|---|---|---|---|---|---|
| pH | (000400) | ( ) | | | |
| D.O. | (000300) | ( ) | | | |
| Temperature | (000010) | ( ) | | | |
| Residual Chlorine | (050060) | ( ) | | | |
| Flow | (074060) | ( ) | | | |

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____
V. LABORATORY: Received By Rebecca Luzzaro Date 5-15-02 Time 1215
Recorded By _____ Date Sent to State Office _____

| Analysis | Computer Code | Request | Result | Analyst | Date Measured |
|---|---|---|---|---|---|
| $BOD_5$ | (000310) | ( ) | mg/l | | * |
| COD | (000340) | ( ) | mg/l | | |
| TOC | (000680) | ( ) | mg/l | | |
| Suspended Solids | (099000) | ( ) | mg/l | | |
| TKN | (000625) | ( ) | mg/l | | |
| Ammonia-N | (000610) | ( ) | mg/l | | |
| Fecal Coliform(1) | (074055) | ( ) | colonies/100 ml | | * |
| Fecal Coliform(2) | (074055) | ( ) | colonies/100 ml | | * |
| Total Phosphorus | (000665) | ( ) | mg/l | | |
| Oil and Grease(1) | (000550) | ( ) | mg/l | | |
| Oil and Grease(2) | (000550) | ( ) | mg/l | | |
| Chlorides | (099016) | ( ) | mg/l | | |
| Phenol | (032730) | ( ) | mg/l | | |
| Total Chromium | (001034) | ( ) | mg/l | | |
| Hex. Chromium | (001032) | ( ) | mg/l | | |
| Zinc | (001092) | ( ) | mg/l | | |
| Copper | (001042) | ( ) | mg/l | | |
| Lead | (017501) | ( ) | mg/l | | |
| Cyanide | (000722) | ( ) | mg/l | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |
| | | ( ) | | | |

Remarks _____

*Date of Test Initiation

3 of 65

Cooler Temp. 5.0 C R/

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

# CHAIN OF CUSTODY RECORD

POLLUTION CONTROL LABORATORY
121 Fairmont Plaza
Pearl, Mississippi 39208

PROJECT NAME: HERCULES

LOCATION: Hattiesburg - Forrest Co.

SHIPPED TO:

DATA TO:

SAMPLE TYPES
1. SURFACE WATER 2. GROUND WATER 3. POTABLE WATER 4. WASTEWATER 5. LEACHATE 6. SOIL/SEDIMENT 7. SLUDGE 8. WASTE 9. AIR 10. FISH 11. OTHER

SAMPLERS (SIGN)
A. Chris Tunell WM
B.
C.
D.

| SITE NO. | SAMPLE TYPE | DATE (2008 19 ___) | TIME | COMP | GRAB | STATION LOCATION/DESCRIPTION | TOTAL CONTAINERS | COD, TOC, NUTRIENTS | BOD, SOLIDS | METALS (Total) (TCLP) | EXT. ORG/PEST/PCBs (TCLP) | PURG. AROMATICS/ HALOCARBONS | CYANIDE | FECAL COLIFORM | Oil & Grease/TPH | Phenolics | VOC-8260 | REMARKS | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 5/14 | 1500 | | ✓ | HER-MW-19-051408 | 3 | | | | | | | | | | 3 | | 36164 |
| | 2 | 5/14 | 1430 | | ✓ | HER-MW-18-051408 | 3 | | | | | | | | | | 3 | | 36165 |

CIRCLE/ADD parameter desired. List no. of containers submitted.

ANALYSIS

| RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) | RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) |
|---|---|---|---|---|---|
| Willie McKercher | 05/15/08 | DEBORAH TURNAGE | | | |
| (SIGN) Willie McKercher | 1215 | (SIGN) Deborah Turnage | (SIGN) | | (SIGN) |
| RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) | RELINQUISHED BY: (PRINT) | DATE/TIME | RECEIVED BY: (PRINT) |
| (SIGN) | | (SIGN) | (SIGN) | | (SIGN) |

**NOTICE: Must use a separate form for each ice chest.**

DISTRIBUTION: White and Yellow copies accompany sample shipment to lab; Yellow copy retained by lab; White copy is returned to samplers; Pink copy retained by samplers.

PAGE _____ OF _____

3/91