U.S. Department of Justice

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90-7-1-41

Washington, D.C. 20530

February 19, 1982

Honorable John T. Curtin
Chief Judge
United States District Court for
the Western District of New York
Court and Franklin Streets
Buffalo, New York 14202

Re: United States v. Hooker Chemical & Plastics Corp., et al. (Hyde Park)

Dear Judge Curtin:

In a letter dated January 18, 1982, the government advised the Court that the results of EPA sampling at the Niagara River Gorge face and a report by Mr. Richard Johnston of the United States Geological Survey (USGS) regarding groundwater conditions at the Hyde Park Landfill site were nearly finalized and would be forwarded to the Court and the parties when they were received by government counsel. These reports have now been finalized and are enclosed.

Mr. Johnston's report, entitled "Simulation of Groundwater Flow in the Vicinity of Hyde Park Landfill, Niagara Falls, New York," presents the results of a computer simulation of groundwater flow along a line which extends from the PASNY power conduits to the Niagara Gorge and runs through the Hyde Park Landfill (see Figure 1 of the Report). A brief summary and explantion of the computer simulation was prepared by Mr. Johnston and is attached to the report. The information utilized in this modeling effort was obtained from the 1964 report by Mr. Johnston, entitled, "Groundwater in the Niagara Falls Area, New York," and from site specific data regarding the Hyde Park Landfill obtained by Hooker's consultants during 1979-1981. All of this data has been made available to the public.

Based on this existing data, the elevation of the water table and the vertical gradient of hydraulic head in the glacial till, the upper Lockport Dolomite, the lower Lockport Dolomite, and the Rochester Shale were simulated on a computer. The computer model was then used to calculate groundwater velocity in each geologic formation and to determine more precisely the location of the groundwater divide. The computer simulation (see Figure 5) indicates that groundwater flow in the upper Lockport Dolomite is nearly horizontal with little vertical movement from the groundwater divide east of the Hyde Park Landfill to within 400 feet of the Niagara Gorge, where increased horizontal and vertical fracturing allows groundwater to move downward into lower geologic formations. Figure 6 shows the relative velocities plotted to scale in the geologic formations. Applying the appropriate mathmatical equation to these velocities indicates that approximately 80 percent of the seepage along the gorge face is from the Lockport Dolomite.

In addition, the report estimates that groundwater moving from the Hyde Park Landfill would reach the Niagara Gorge in approximately 490 years moving in the overburden, 5.8 years moving in the upper Lockport Dolomite, and 7 years moving in the lower Lockport Dolomite. Hydraulic conductivity in the Rochester Shale was estimated to be 2 to 3 orders of magnitude less than that of the Lockport Dolomite; this estimate is based upon the fact that wells drilled into this formation were unable to produce significant water yields. It is important to note that the report indicates that these transport times refer to groundwater and that generally chemicals can be expected to move at slower rates.

In accordance with the representation made at the October 16, 1981 hearing, EPA collected groundwater and sediment samples from four locations at the Niagara Gorge face. These locations are approximately the same as those sampled by the Amici in September, 1981. Attachment A hereto is a photograph and chart which indicate the sampling points. EPA also took samples at a location 7000 ft. downstream of the point where Bloody Run enters the Niagara River to obtain an indication of the background or ambient levels of chemical concentration generally found in the Niagara Falls region.

EPA's chemical analyses of samples of groundwater seepages on the Niagara River Gorge face and soil collected at the seepage points show low parts per trillion concentrations of trichlorophenol, chlorinated benzenes and polychlorinated biphenyls (PCBs). These concentrations were not significantly different from the concentrations detected in the downstream or ambient samples. The EPA sampling results have been summarized in a table (see Attachment B) which also includes, for comparison purposes, the levels reported by Mr. Grant Anderson as well as other ambient concentrations of the same chemicals detected in samples collected at Niagara-on-the-Lake and analyzed by the Canadian Ministry of the Environment.

It is important to note however, that the variability of quality control procedures and protocols utilized by laboratories for sampling and analysis necessitates careful and cautious comparisons between different sets of data. Complications due to contamination from other sources and differences in climatic conditions at the time of sampling also make comparisons of data sets difficult.

With regard to the results of EPA's analyses, a few specific points should be noted. First, the groundwater and soil samples were analyzed for the presence of dioxin utilizing equipment sensitive to levels at the low part per trillion range and dioxin was not detected in these samples.

Second, BHCs (the gamma-BHC isomer is also referred to as Lindane) were not detected in groundwater or soil samples. However, due to false positive signals produced by interfering substances and picked up by the detection instrument, BHCs were initially indicated to be present in some of the soil samples. However, subsequent analysis demonstrated the absence of BHCs.

Third, the isomer of PCB detected in the EPA sediment samples (PCB 1260) is not the same isomer of PCB that has been detected in samples collected at the Hyde Park Landfill. It is therefore likely that the PCBs detected at the Niagara Gorge face are originating from another source and not from the landfill.

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LM

The enclosed reports are respectfully submitted in furtherance of our obligation to inform the Court of matters relevant to the Court's continuing jurisdiction over these matters.

Sincerely yours,

Assistant Attorney General
Land and Natural Resources Division

By: Michael Elder

Michael Elder, Attorney
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Attachments

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Attachment A

Approximate Locations of
Sampling Points

North

Location G is approximately
7000 feet downstream of
Bloody Run

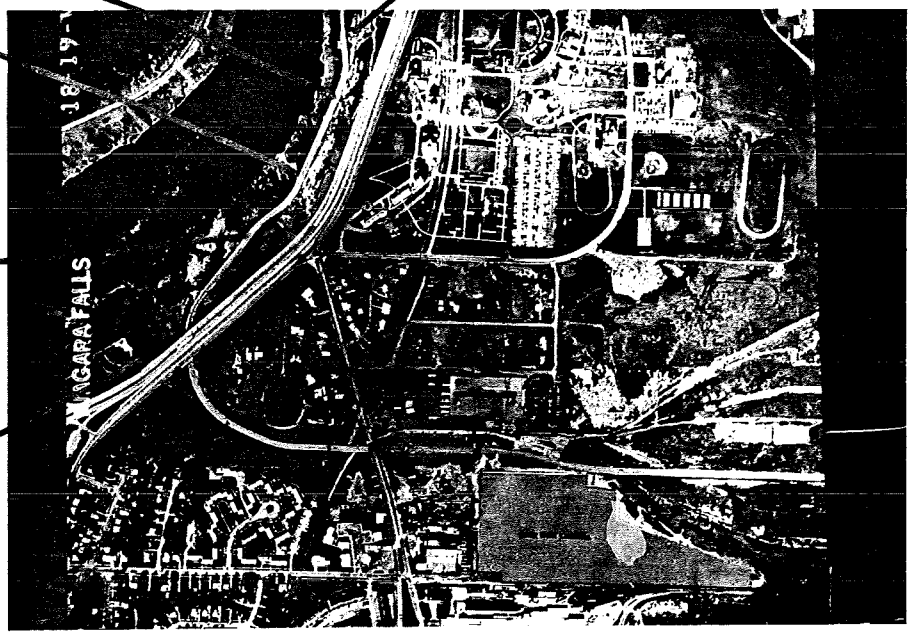
Location D

Location F(Location C is downstream)

Location
E

Location
B

Location
A



Description of Sampling Locations

Location on Photograph	Description	EPA Sample Number	Anderson Site #
A	Devils Hole, near base of stairs	B0779(sediment)	1
B	Gorge seep, approximately 400 feet south of Bloody Run	B0776(sediment) B0780(water)	2
C	Gorge seep at drainage level close to Hydro-Power drain system (downstream of Location F)	-	3
D	Gorge seep, approximately 400 feet north of Bloody Run on east side of road	B0749(sediment) B0677(water)	4
E	At culvert drain to the Niagara River	-	5
F	Approximately 185 feet south of PASNY guard house in east ditch at the culvert(upstream of Location C)	B0750(sediment)	-
G	Approximately 7000 feet downstream of Bloody Run-background sample	B0777(water) B0778(sediment)	-

Attachment B

NIAGARA GORGE
WATER SAMPLES
(Parts per Trillion = Nanograms/Liter)
ND = Not Detected

Sample Location Indicated on photo	A		B	C	D	G	Samples collected at Niagara-on-the-Lake */
Sampler	Anderson		EPA	Anderson	EPA	EPA	
Sample Number	#1		BO780	#3	BO677	BO777	
Date of Sample	9/19/81		10/22/81	9/19/81	10/22/81	10/22/81	1/8/80-9/9/80
α - BHC	2.3		ND(<1)	0	ND(<1)	ND(<1)	11
B - BHC			ND(<1)		ND(<1)	ND(<1)	
γ - BHC (Lindane)	0.4		ND(<1)	0	ND(<1)	ND(<1)	4
Δ - BHC			ND(<1)		ND(<1)	ND(<1)	
PCBs (total)	0		ND(<50)	0	ND(<50)	ND(<50)	10
PCB 1260			ND(<50)		ND(<50)	ND(<50)	
Dichlorobenzene	<20		ND(<30)	<20	ND(<30)	ND(<30)	
Trichlorobenzene	<5		ND(<10)	<5	ND(<10)	ND(<10)	
Tetrachlorobenzene	<5		ND(<5)	<5	ND(<5)	ND(<5)	
Pentachlorobenzene	<5		ND(<5)	<5	ND(<5)	ND(<5)	
Hexachlorobenzene	<5		ND(<1)	<5	ND(<1)	ND(<1)	1
Mirex	0		ND(<5)	0	ND(<1)	ND(<1)	<1
2, 4, 6-Trichlorophenol			ND(<1.5)		20	ND(<1.5)	
2, 3, 7, 8-Dioxin			ND(<1)		ND(<1)	ND(<1)	
γ - Chlordane	0.1			0			<1
α - Chlordane	0.3			0			<1
Endrin	1.6			2.9			<1

*/ Canadian Ministry of the Environment, Environmental Baseline Report - Update, Table 4 - Water Samples - Mean Concentration at Niagara-on-the-Lake, November, 1981.

NIAGARA GORGE
SOIL SAMPLES
(Parts per Trillion = Nanograms/Kilograms
ND = Not Detected

Sample Location Indicated on photo	A			B			C	D		E	F	G	Samples Collected at Niagara on the Lake */
Sampler	Anderson	Anderson	EPA	Anderson	Anderson	EPA	Anderson	Anderson	EPA	Anderson	EPA	EPA	
Sample Number	#1	#1	BO779	#2	#2	BO776	#3	#4	BO749	#5	BO750	BO778	
Date of Sample	9/19/81	9/30/81	10/22/81	9/19/81	9/30/81	10/22/81	9/30/81	9/30/81	10/22/81	9/30/81	10/22/81	10/22/81	1/5/80-8/19/80
γ - BHC	0		ND(<50)	0		ND(<50)			ND(<50)		ND(<50)	ND(<50)	11,000
B - BHC			ND(<50)			ND(<50)			ND(<50)		ND(<50)	ND(<50)	
γ - BHC (Lindane)	0	75/100	ND(<50)	0	109/250	ND(<50)			ND(<50)	ND(<200)	ND(<50)	ND(<50)	2,000
Δ - BHC			ND(<50)			ND(<50)			ND(<50)		ND(<50)	ND(<50)	
PCBs (total)	1,000	10,000	278,000	7,000	ND(<2000)	132,000	ND(<2000)	6,000	178,000	ND(<2000)	123,000		642,000
PCB - 1260			278,000			132,000			178,000		123,000	ND(<2500)	
Dichlorobenzenes	<5,000		46,400	<5,000		ND(<1500)			91,500		ND(<1500)	21,500	
Trichlorobenzenes	4,000		9,930	4,000		1,430			2,070		2,140	860	
Tetrachlorobenzenes	7,000		2,440	7,000		756			1,600		1,620	650	
Pentachlorobenzene	2,000		2,420	21,000		510			540		1,400	740	
Hexochlorobenzene	2,000	200	720	4,000	ND(<200)	ND(<50)			70	ND(<200)	2,680	120	83,000-160,000
Mirex	0	ND(<200)	ND(<250)	0	ND(<200)	ND(<250)	ND(<200)	ND(<200)	ND(<250)	ND(<200)	ND(<250)	ND(<250)	6,000
2, 4, 6 - Trichlorophenol			ND(<75)			ND(<75)			ND(<75)		ND(<75)	ND(<75)	
2, 3, 7, 8 - Dioxin			ND(<50)			ND(<50)			ND(<50)		ND(<50)	ND(<50)	

*/ Canadian Ministry of the Environment, Environmental Baseline Report - Update, Table 9 - Suspended Sediments - Mean Concentration at Niagara--on-the-Lake, November, 1981.