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BARBARA MORRISON  
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(716) 856-6300

15 October 1981

Hon. John Curtin  
United States District Court  
Western District of New York  
U.S. Courthouse  
Buffalo, New York

Dear Judge Curtin:

Re: U.S. v. Hooker et al, Civil No. 79-989  
(Hyde Park Landfill)

At the time the hearing ended on October 6, 1981, exhibit 102 which consisted of samples taken at the gorge face, still had one sample #3 which was not available. This sample is now available and amici feel that it is most important that it be presented to the Court and Parties due to its geological location, 150 feet below the Rochester Shale and the relatively high concentration of lindane it contained.

The enclosed affidavits of Dr. D. Hallett and Mr. E. Grant Anderson have been prepared to complete the table of Exhibit 102 for sample #3. Analysis of this sample was delayed because of the extraordinarily high sulfide mercaptan content which interfered with the detection of lindane residues. The same difficulty was experienced by Technical Services Limited who also analysed this sample. The sample was reanalysed in Dr. Hallett's research laboratory after a further routine cleanup step, when lab time permitted.

Portions of these samples are stored in Dr. Hallett's laboratory. Arrangements are currently being made by amici to complete analysis of these samples for TCDD. When results are available amici shall forward them forthwith to the Court and the Parties.

Sincerely,

*Toby Vigod*  
Toby Vigod  
Counsel

*Barbara Morrison*  
Barbara Morrison  
Counsel

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA  
THE STATE OF NEW YORK

Plaintiffs,

- vs -

Civil Action No. 79-989

HOOKEE CHEMICALS & PLASTICS CORP.;  
OXY CHEMICAL CORPORATION; HOOKEE  
CHEMICAL CORPORATION; OCCIDENTAL  
PETROLEUM INVESTMENT CO.; OCCIDENTAL  
PETROLEUM CORPORATION; THE TOWN OF  
LEWISTON; THE TOWN OF NIAGARA,  
(Hyde Park Landfill)

AFFIDAVIT OF  
DOUGLAS J. HALLETT

Defendants.

STATE OF NEW YORK )  
COUNTY OF ERIE ) ss.  
CITY OF BUFFALO )

Dr. Douglas J. Hallett, a resident of the Township of West Carleton,  
Province of Ontario, being duly sworn, hereby deposes and says:

1. On October 6, 1981, I gave testimony in the Hyde Park hearing with respect to chemical analyses results from water and sediment samples taken at 4 sites (see Exhibits 86,87 and 102) along the gorge face at specific locations which correspond to photographs taken by Grant Anderson. (see Exhibit 85, photograph 8(sample 1), photograph 9 (sample 2) and photograph 10 (sample 3)
2. The analytical testing of sample #3(which corresponds to Photograph 10 in Exhibit 85) was obtained 300 feet below the top of the gorge from the whirlpool sandstone formation. This was visually described in testimony by Mr. Anderson (Tr. Vol. VI p.1496).
3. Analysis of sample #3 had not been completed by my laboratory, the National Wildlife Research Center in Hull, Quebec, by October 6,1981, because the sample contained a high level of sulphur in the form of sulphides and mercaptans which interfered with the normal operation of the gas chromatographic instrument used to analyse these samples.
4. The high level of sulphur necessitated a further routine cleanup step to ensure proper analysis of the organochlorine contaminants in this sample.
5. Olfactory detection of mercaptans (also buried in substantial quantities in the Hyde park landfill- see Federal Complaint at p. 9 ) is considered

evidence of non-aqueous phase contamination. Four chemists in my laboratory, including myself, all of whom are experienced in rendering these determinations, identified the characteristic odours of these substances.

6. Sample #3 was analysed on Tuesday October 12, 1981 in my laboratory in Hull, Quebec by a chemist under my direct supervision.

7. Analysis of alpha, beta and gamma(lindane) isomers of BHC in sample #3 revealed concentrations of 185 ppt of gamma BHC (lindane). and 17 ppt beta BHC. Alpha BHC was not detected.

8. The high proportion of gamma BHC (lindane) relative to alpha or beta BHC is indicative of Hyde Park leachate. The proportions are similar to those found in the leachate analyses presented in the "Indicators" chart prepared by Dr. Mason and the Chemical Compilation by Arthur D. Little, Inc.

9. In my opinion, the high proportion of the unstable gamma isomer can only originate from a current primary industrial source ie. Hyde Park landfill.

10. Gamma BHC(lindane) degrades quickly in sunlight to the alpha isomer and is the least environmentally persistent of the three isomers mentioned. The alpha and beta isomers are found to predominate in environmental samples and are present in agricultural use of lindane as an insecticide.

11. Upon Information and belief, Hooker was the only producer of lindane in the Niagara Falls, New York area.

12. Widespread agricultural use of lindane has been severely restricted since 1972.

13. Large amounts of lindane are buried in the Hyde Park landfill, and leachate in the groundwater emanating from the landfill contains predominantly gamma BHC (lindane) relative to the other isomers.

14. Mr. Anderson testified that the bulk of this leachate moves vertically downward from the landfill into the groundwater moving into the Lockport Dolomite and Rochester Shale.

15. Because of the reasons listed in paragraphs 11-14 above, it is my opinion that the Hyde Park landfill is the source of gamma BHC (lindane) which is now oozing along with mercaptans through cracks in the Rochester shale into the Niagara Gorge and Niagara River.

Sworn to Before me  
on this 15th day of October, 1981

BARBARA MORRISON  
Notary Public, State of New York  
*Barbara Morrison*  
Qualified in Erie County  
My Commission Expires March 30, 1985. NOTARY

*Douglas J. Hallett*  
DOUGLAS J. HALLETT

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA  
THE STATE OF NEW YORK

Plaintiffs,

- vs -

Civil Action No. 79-989

HOOKE CHEMICALS & PLASTICS CORP.;  
OXY CHEMICAL CORPORATION; HOOKE  
CHEMICAL CORPORATION; OCCIDENTAL  
PETROLEUM INVESTMENT CO.; OCCIDENTAL  
PETROLEUM CORPORATION; THE TOWN OF  
LEWISTON; THE TOWN OF NIAGARA,  
(Hyde Park Landfill)

AFFIDAVIT OF E. GRANT  
ANDERSON

Defendants.

STATE OF NEW YORK )  
COUNTY OF ERIE ) ss.  
CITY OF BUFFALO )

E. Grant Anderson, a resident of the Town of Markham,  
Province of Ontario, duly sworn, hereby deposes and says:

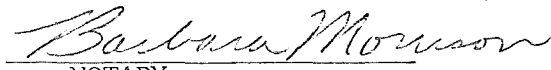
1. Sample #3 was taken on September 30, 1981 by Mr. P Madenovich, a chemist with Technical Service Laboratories in Mississauga, Ontario under my direct supervision.
2. The sample (#3) was split and sent to Dr. D.J. Hallett for quality assurance testing in his laboratory, the National Wildlife Research Centre in Hull, Quebec.
3. The sample (#3) was taken from a white chemical gook oozing out of a vertical joint in the Whirlpool Sandstone Formation.
4. The Whirlpool Sandstone Formation is the fractured bedrock layer situated on top of the Queenston Shale all of which is located about 150 feet below the Rochester Shale.
5. The presence of non-aqueous and aqueous phase chemicals present in and oozing from vertical fractures in the Whirlpool Sandstone Formation confirms my scientific and hydrogeological analysis of vertical flow of chemicals through all of the rock layers below the Lockport Dolomite.
6. Further, the gamma BHC (lindane) concentration of 185ppt measured in sample #3 (photo 10 Ex. 85) represents the highest concentration of lindane

determined by Dr. D. Hallett in all of the samples tested.

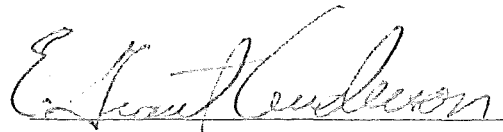
7. The fact that the highest concentration was determined in the sediment sample deepest below the top of the Gorge supports my scientific and hydrogeological analysis that chemicals are moving deep vertically through the Rochester Shale and the underlying rock layers.

8. In addition, the highest concentraion in the deepest sample further supports my analysis that dilution substantially reduces chemical concentrations in the Lockport Dolomite, in the infrequent and isolated areas where contaminants do reach the Gorge face on top of the Rochester Shale.

Sworn to before me  
on this 15th day of October, 1981

  
NOTARY

BARBARA MORRISON  
Notary Public, State of New York  
Qualified in Erie County  
My Commission Expires March 30, 1981

  
E. GRANT ANDERSON

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Dear Judge Curtin:

Re: U.S. v. Hooker et al. Civil No. 79-989  
(Hyde Park Landfill)

Pursuant to your request of October 6, 1981, Dr. Douglas Hallett has provided the following list of laboratories at which analysis of PCBs, mirex, chlorobenzenes, lindane and TCDD can be quickly and efficiently analysed by gas chromatography and by GC/MS (low resolution) screening for TCDD.

1. Environment Canada. Inland Waters Directorate, Burlington, Ontario, Canada.
2. Environment Canada. Canadian Wildlife Service, Hull, Quebec.
3. Environment Canada. Air Pollution Control Directorate, Ottawa, Ontario.
4. Ontario Ministry of Environment. Toronto, Ontario.
5. Environment Canada. National Water Research Centre Burlington, Ontario.
6. Environment Canada. Inland Waters Ontario Region, Burlington, Ontario.
7. Ontario Research Foundation. Mississauga, Ontario.  
- currently analysing all residues mentioned except TCDD, but have the equipment and expertise to analyze for TCDD.
8. New York State Department of Health. Albany, New York.
9. U.S. Fish and Wildlife Service (Dr. D. Stalling) St. Louis, Missouri.
10. Dow Chemical Co. Midland, Michigan.
11. US EPA a) Research Triangle Park North Carolina  
b) Chicago, Illinois

The final two laboratories have the equipment and technical expertise but must adopt state of the art methodologies that are published in the scientific literature

and accepted by the scientific community.

12. SCA New Youngstown New York (except TCDD currently, but have GC/MS capability and expertise.)

13. Likely Hooker Chemicals Co. from the data that I have reviewed.

The methodology uses standard gas chromatography using capillary columns and electron capture detectors or GC/MS equipped with capillary columns. Standard extraction and column chromatographic cleanup is adequate for this analysis and TCDD screening. If TCDD is suspected present then further confirmatory analysis can be sought on only those limited samples suspect.

Sincerely,

*Toby Vigod*  
Toby Vigod  
Counsel