

APPENDIX M

OEPA SOLID WASTE ANALYSIS



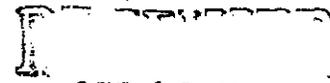
State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road
Bowling Green, Ohio 44087-1969
(330) 425-9171
FAX (330) 487-0769

George V. Voinovich
Governor

September 18, 1998



SEP 23 1998

AWK CONSULTING ENGINEERS

Mr. Nageotte, P.G.
ASK Consulting Engineers, Inc.
1611 Monroeville Avenue
Turtle Creek, PA 15145

Dear Mr. Nageotte:

This correspondence is in response to your letter to the Ohio Environmental Protection Agency (Ohio EPA) Division of Solid & Infectious Waste Management (DSIWM), dated September 2, 1998, concerning the Mahoning River Environmental Dredging project to be conducted by the U.S. Army Corps of Engineers.

A preliminary review of the sediments sampling data contained in the Reconnaissance Report was conducted by Ohio EPA's Division of Surface Water. Based upon the review of this limited data sediments from the Mahoning River may be suitable for disposal at a licensed and permitted municipal solid waste landfill in Ohio. Please be reminded this determination was based upon very limited data available to Ohio EPA and that the ultimate responsibility for characterization of these sediments rests with the generator of that material. Additional sampling, as outlined in the attached September 4, 1998 memorandum would therefore be required before a final determination can be made concerning the options available for disposal of this dredged material. In addition, any sediments to be disposed of at a solid waste facility would have to pass the U.S. EPA paint filter test (Method 9095 in SW-846: "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods"), and may not be Resource Conservation and Recovery Act (RCRA) or Toxic Substances Control Act (TSCA) regulated materials. It is recommended that you contact the disposal facility concerning waste characterization and materials data information prior to shipment of any sediments from the project site.

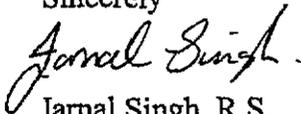
Please review the attached September 4, 1998 memorandum from John Estenik, Toxic Advisor/Division of Surface Water to Yeng Feng of the Ohio Department of Health regarding his review of the sampling data. Also, enclosed is an Ohio EPA Inter-Office Communication concerning a similar project that was undertaken at the Ashtabula River and, as you requested, a list of municipal solid waste landfills in Mahoning County.

APPENDIX M
PAGE 1 OF 9

Mr. Nageotte, P.G.
ASK Consulting Engineers, Inc.
September 18, 1998
Page 2

If you have any questions regarding this correspondence or the information enclosed, please do not hesitate to contact me at (330) 963-1276.

Sincerely



Jarnal Singh, R.S.
Division of Solid & Infectious
Waste Management

JS:cl

cc. Kurt Princic, DSIWM-NEDO
Pat Natalli, DHWM-NEDO
Yeng Feng, Ohio Department of Health
Robert Davic, DSW-NEDO
John Estenik, Toxic Advisor-DSW

[a:Mahoning\dregings.awk]

APPENDIX	<u> M </u>
PAGE	<u> 2 </u> OF <u> 9 </u>

DATE September 4, 1998
TO Yeng Feng, Ohio Department of Health
FROM John F. Estenik, Toxics Advisor/Division of Surface Water
RE Mahoning River Sediment and Bank Soil Dioxin Assessment

I have reviewed and evaluated some Mahoning River sediment and bank soil dioxin data as requested. I calculated toxicity equivalents (TEQs) using zero for non-detects (ND values = 0); I did not correct the sample concentration results based upon data qualifiers and did not use the second column conformation column concentration for 2,3,7,8-TCDF. All of the above would not significantly effect my TEQ calculation result.

Based upon very limited data, the Mahoning River sediment and bank soil could be removed and put into the BFI landfill. Preliminary dioxin data indicate that there are no problems with the landfill disposal of this material.

The three sediment TEQ concentrations are: N1-10-VU = 27.14 ppt TEQs; L0-3-VU = 35.72 ppt TEQs; and SW-3-VU = 93.94 ppt TEQs. The two bank soil TEQ concentrations are: 345SF = 7.37 ppt TEQs and 327SF = 95.2 ppt TEQs.

I consider the three sediment and two bank soil sample results to be "low" based upon the following information:

1. The background urban Columbus dioxin TEQs for uncontaminated soil range from 3 ppt to 30 ppt with a mean of 10 ppt TEQs (USEPA Columbus Municipal Incinerator data). Similar information for a Cuyahoga County site (considered urban background) ranged between 4 ppt to 36 ppt with a mean of 10.4 ppt TEQs (seven samples) [Bureau of Reclamation Resource Management data]. The highest Mahoning River bank soil sample (95.2 ppt TEQs) is three times the high end of the uncontaminated urban soil ranges, 30 ppt and 36 ppt.
2. Sediment dioxin concentrations range between 0.19 ppt to 39.2 ppt TEQs for Lake Erie proper, and between 1.0 ppt to 39.0 ppt TEQs for Lake Erie tributaries (Ohio EPA data). The Mahoning River sediment range is from 27.14 ppt to 93.94 ppt TEQs. Again, the highest Mahoning River sediment dioxin sample is approximately three times the high sediment dioxin values for Lake Erie and Lake Erie tributaries.

CONCERNS

- A. All samples should be core samples with subsamples taken and composited for dioxin analyses.

1. Additional samples have to be taken to get a better idea of the magnitude, extent and distribution of dioxin contamination of Mahoning River sediment, bank soil, flood plain soil and historical industrial site soil. At least one core sample should be collected behind each dam (ten samples). An additional six samples should be taken in assumed highly contaminated areas based upon the presence of historical PAH sample results. At least three to four samples should be taken in the Mahoning River upstream from the contaminated reach. Another three to four samples should be taken in the Pennsylvania portion of the Mahoning River. Finally, four Youngstown uncontaminated soil samples (background controls) should be analyzed. The total number of sediment/soil samples would be approximately 28 samples (excluding soil samples taken to evaluate historical industrial site locations).
 2. Additional samples should be taken at the river banks and on the flood plain. Sample locations should be selected based upon the presence of high levels of contamination.
 3. Soil samples should also be collected from the historical industrial areas outside the flood plain. Steel manufacturing, ash and combustion are sources of dioxin. Soil samples should be collected from both highly contaminated and lesser contaminated locations.
- B. The data had many qualifiers; however, the results were presented in a conservative way (e.g., estimated maximum possible concentrations were reported). Therefore, the high number of qualifiers per sample should not preclude using these data.
- C. Bank soil samples analyzed dioxin concentrations in subsamples between foot 2 and foot 6. The first 2 feet of bank material were not included in the sample analysis. The core dioxin concentration is not known. The "surface" (1 to 2 feet) dioxin concentrations must be added to the concentrations analyzed between 2 to 6 feet to determine the core contaminant concentration.
- D. The historical industrial soil areas should be evaluated for dioxin contamination. Industrial areas can have higher than urban background dioxin soil concentrations. According to Ontario data (Brendon Birmingham 1990), Ontario industrial sites have 40.8 ± 33.1 ppt TEQs. I would expect possible historical industrial soil dioxin concentrations to range from 5,000 ppt to 10,000 ppt. Remediation of high dioxin concentrations, if they are found, could be hot spot removal or covering the hot spot with 1 to 2 feet of "clean" soil.

styeng,jfe

cc: Lee Nageotte, AWK Consulting Engineers, Inc.
Irina Scott, Ohio Department of Health
John Sadzewicz, Ohio EPA Acting Deputy Director, Water Programs
Vanessa Steigerwald, Ohio EPA Division of Emergency Response & Remediation
Bob Davic, Ohio EPA Northeast District Office
Dan Dudley, Ohio EPA Division of Surface Water
file

APPENDIX	M
PAGE	4 OF 9

Inter-Office Communication

To: Natalie Farber, DSW-CO

From: NEDO ARP Committee through Bob ^{BW} Wysenski, Assistant Chief-NEDO

Subject: Addendum to "NEDO Proposal for Disposal of Non-TSCA Sediments Generated from the Ashtabula River" dated July 31, 1997

Date: September 23, 1997

This IOC serves as an addendum to the IOC dated July 31, 1997, "NEDO Proposal for Disposal of Non-TSCA Sediments Generated from the Ashtabula River". The purpose of this IOC is to specify what will be necessary to address the conclusions of the July 31, 1997 IOC outlined below.

The July 31, 1997 IOC concluded that:

At this time NEDO does not feel it is appropriate for the non-TSCA sediments to be disposed of at a class III residual waste facility. There is not enough sampling data (TCLP data) to determine that the non-TSCA material meets the criteria for disposal at a class III residual waste facility (less than thirty times drinking water standards). NEDO however, does recommend that this alternative be included in the draft Comprehensive Management Plan\Environmental Impact Statement (CMP\EIS) document, as NEDO is willing to revisit this issue should sampling data become available which shows the sediment concentrations meet the criteria for disposal at a class III residual waste facility.

The July 31, 1997 document further concluded:

NEDO feels that at this point, due to the uncertainty in the non-TSCA material that an FML should be included in the design of this facility. The possibility does exist that an FML may not be necessary if sampling data performed under the TCLP criteria (USEPA Method 1311), shows that the non-TSCA material falls within the guidelines established by DSW Policy 0400.028 and OAC 3745-30-03.

NEDO feels that in order to address the conclusions outlined above, additional sampling will be necessary. The purpose of this sampling will be to demonstrate that the non-TSCA material meets the criteria outlined in DSW Draft Policy 0400.028 and criteria for disposal at a class III residual waste facility contained in OAC 3745-30-04. Should additional sampling prove the non-TSCA material meets this criteria, NEDO does not feel it will be necessary to incorporate an FML in the design of the upland non-TSCA disposal facility, nor will NEDO have any objection to the non-TSCA material being disposed of at a class III residual waste facility. NEDO has determined that the sampling protocol outlined in OAC 3745-30-03 and -04 is appropriate for purposes of this demonstration.

OAC 3745-30-03(E) requires that:

All samples of a residual waste shall be composite samples of that residual waste as described in section 9.1.1.4.1. of SW-846, and the sampler shall employ all reasonable measures, such as sampling different sources of the residual waste at different times, or conducting random sampling of a representative pile of the residual waste generated from different sources at different times, to ensure that representative composite samples are obtained.

The appropriate number of samples shall be determined in accordance with the statistical procedures specified in SW-846, with the following limitations:

(1) For the initial waste characterization performed in accordance with paragraphs (A) to (C) of this rule or any waste characterization performed in accordance with paragraph (F)(2) of this rule, the number of samples may be limited to seven at the discretion of the sampler, applicant, or permittee, unless the director determines, based on a high degree of variability in the concentration of a parameter at or near the maximum allowable concentration for a particular landfill class, that more samples are required.

NEDO, therefore, expects the samples to be composite samples taken at random locations in the river where the non-TSCA sediments are located. All samples should be tested for TCLP concentrations in terms of mg/l, for parameters 1 through 42 of Appendix I of OAC 3745-30-04.(attached) In addition, all samples should be tested for PCB's in accordance with Test Method 1311\8082, as prescribed by SW-846, latest edition. NEDO suggests that a total of ten (10) samples be collected and analyzed rather than the minimum seven (7) samples specified in OAC 3745-30-03(E). NEDO feels the three (3) additional samples will provide some assurance if the sampling results show the material has concentrations near the regulatory threshold or shows the material is more variable than expected, therefore requiring a larger sample pool as specified by SW-846, Section 9.1.1.4.1.

In addition, NEDO recommends that concurrent to performing the 10 TCLP samples, that samples also be taken and tested for total concentration in terms of mg/kg. These samples should be taken from the same location as the TCLP samples. The purpose for these extra "total" samples is to determine whether or not a correlation can be drawn between the TCLP data (mg/l) and the total data (mg/kg). This information may also be useful should anomalies show up in the TCLP data. For the purposes of the total concentrations (mg/kg), NEDO feels it will only be necessary to test the samples for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and PCB's.

Page 3

Natalie Farber, DSW, CO-IOC

September 23, 1997

If you have any questions regarding this IOC please feel free to contact Kurt Princic at (216) 963-1204.

KP:cl

cc: Bill Skowronski, Chief, NEDO
Erm Gomes, DSW, NEDO
Regan Williams, DERR, NEDO
Kurt Princic, DSIWM, NEDO
[County\ARP\Cor\04]

Dennis Lee, DSW, NEDO
John Schmidt, DSIWM, NEDO
Paul Anderson, DSW-NEDO
Barb Brdicka, DSIWM-CO

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APPENDIX I

RESIDUAL WASTE CHARACTERIZATION AND RESIDUAL WASTE LANDFILL
CLASSIFICATION

NUMBER	PARAMETER	MAXIMUM ALLOWABLE CONCENTRATION (PPM OR MG/L)		
		RESIDUAL WASTE LANDFILL		
		CLASS IV	CLASS III	CLASS II
1	ARSENIC	0.25	1.5	3.0
2	BARIUM	5.0	30.0	60.0
3	CADMIUM	0.05	0.3	0.6
4	CHROMIUM	0.25	1.5	3.0
5	FLUORIDE	20.0	120.0	240.0
6	LEAD	0.25	1.5	3.0
7	MERCURY	0.01	0.06	0.12
8	SELENIUM	0.05	0.3	0.6
9	SILVER	0.25	1.5	3.0
10	CHLORIDE	*	7500	**
11	IRON	*	9.0	**
12	MANGANESE	*	9.0	**
13	SODIUM	*	7500	**
14	SULFATE	*	7500	**
15	TOTAL DISSOLVED SOLIDS	*	10,000	**
16	PHENOL	17.5	105.0	**
17	CYANIDE	1.0	6.0	12.0
18	BENZENE	0.025	0.15	0.3
19	CARBON TETRACHLORIDE	0.025	0.15	0.3
20	CHLOROBENZENE	5.0	30.0	60.0
21	CHLOROFORM	0.3	1.8	3.6
22	M-CRESOL	10.0	60.0	120.0
23	O-CRESOL	10.0	60.0	120.0
24	P-CRESOL	10.0	60.0	120.0
25	1,4 DICHLOROBENZENE	0.38	2.25	4.50
26	1,2 DICHLOROETHANE	0.025	0.15	0.3
27	1,1 DICHLOROETHYLENE	0.035	0.21	0.42
28	2,4 DINITROTOLUENE	0.0065	0.039	0.078
29	HEPTACHLOR	0.0004	0.0024	0.0048
30	HEXACHLORO-1,3 BUTADIENE	0.025	0.15	0.3
31	HEXACHLOROBENZENE	0.0065	0.039	0.078
32	HEXACHLOROETHANE	0.15	0.9	1.80
33	METHYLETHYLKETONE	10.0	60.0	120.0
34	NITROBENZENE	0.1	0.6	1.2
35	PENTACHLOROPHENOL	5.0	30.0	60.0

APPENDIX I (CONT.)

NUMBER	PARAMETER	MAXIMUM ALLOWABLE CONCENTRATION (PPM OR MG/L)		
		RESIDUAL WASTE LANDFILL CLASS IV	CLASS III	CLASS II
36	PYRIDINE	0.25	1.5	3.0
37	TETRACHLOROETHYLENE	0.035	0.21	0.42
38	TRICHLOROETHYLENE	0.025	0.15	0.3
39	2,4,5 TRICHLOROPHENOL	20.0	120.0	240.0
40	2,4,6 TRICHLOROPHENOL	0.1	0.6	1.2
41	VINYL CHLORIDE	0.01	0.06	0.12
42	PH	***	***	***

* NO MAXIMUM ALLOWABLE CONCENTRATION IS DELINEATED FOR A CLASS IV LANDFILL. THE CHEMICAL ANALYSIS OF GROUND WATER IN THE FIRST SATURATED ZONE BENEATH THE LANDFILL OR PROPOSED LANDFILL REQUIRED BY PARAGRAPH (C) OF THIS RULE WILL BE UTILIZED TO ESTABLISH THE MAXIMUM ALLOWABLE CONCENTRATION.

** NO MAXIMUM ALLOWABLE CONCENTRATION IS DELINEATED FOR A CLASS II LANDFILL. THEREFORE, THE REGULATORY CRITERIA FOR A CLASS II LANDFILL ARE THE MOST STRINGENT CRITERIA APPLICABLE TO A RESIDUAL WASTE LANDFILL WHICH DISPOSES OF A RESIDUAL WASTE WITH CONCENTRATIONS OF THESE PARAMETERS WHICH EXCEED THE MAXIMUM ALLOWABLE CONCENTRATION FOR A CLASS III LANDFILL. THE CONCENTRATION OF THESE PARAMETERS NEED NOT BE DETERMINED IF IT WILL NOT AFFECT THE RESIDUAL WASTE LANDFILL CLASSIFICATION PROCESS.

*** THE PH VALUE MUST BE DETERMINED AND REPORTED FOR INFORMATIONAL PURPOSES; HOWEVER, THE RESIDUAL WASTE LANDFILL CLASSIFICATION IS NOT DEPENDENT ON THE PH VALUE.

EFFECTIVE: JAN 13 1992

CERTIFICATION:

Donald R. Schreyer

DEC 23 1991

(Date)

PROMULGATED UNDER: R.C. Chapter 119
 RULE AMPLIFIES: ORC Section 3734.02
 EFFECTIVE DATE:

Page 3

Natalie Farber, DSW, CO-IOC

September 23, 1997

If you have any questions regarding this IOC please feel free to contact Kurt Princic at (216) 963-1204.

KP:cl

cc: Bill Skowronski, Chief, NEDO
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Regan Williams, DERR, NEDO
Kurt Princic, DSIWM, NEDO
[County\ARP\Cor\04]

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APPENDIX	M
PAGE	8 OF 9

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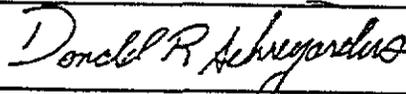
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EFFECTIVE:

JAN 13 1992

CERTIFICATION:



DEC 23 1991

(Date)

PROMULGATED UNDER: R.C. Chapter 119
 RULE AMPLIFIES: ORC Section 3734.02
 EFFECTIVE DATE:

APPENDIX	<u>M</u>
PAGE	<u>9</u> OF <u>9</u>