Facility name: Milwaukee Moss-American Site

Location: 8716 Granville Road, Milwaukee County, Wisconsin

EPA Region: V

Person(s) in charge of the facility:

Name of Reviewer: J. H. Stallings
J. C. Stauter

Date: November 3, 1983

General description of the facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

The ~50 acre site at intersection of Granville Road and Brown Deer Road in northern Milwaukee County, Wisconsin until 1976 was the location of a wood pressure treating facility owned by Kerr-McGee Oil Company and Moss-American (succeeded by Kerr-McGee Corporation). All equipment and buildings have been removed from site; contaminated residue removed; area backfilled with clean dirt; graded and either paved or allowed to revegetate.

Scores: $S_M = 6.43$ ($S_{gw} = 8.54$ $S_{sw} = 7.13$ $S_a = 0$)

$S_{FE} = 0$

$S_{DC} = 0$

FIGURE 1
HRS COVER SHEET

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If observed release is given a score of 45, proceed to line [4]. If observed release is given a score of 0, proceed to line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	0 (1) 2 3	2	2	6	
Net Precipitation	0 (1) 2 3	1	1	3	
Permeability of the Unsaturated Zone	0 1 (2) 3	1	2	3	
Physical State	0 1 2 (3)	1	3	3	
Total Route Characteristics Score			8	15	
[3] Containment	0 1 (2) 3	1	2	3	3.3
[4] Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 (15) 18	1	15	18	
Hazardous Waste Quantity	0 1 (2) 3 4 5 6 7 8	1	2	8	
Total Waste Characteristics Score			17	26	
[5] Targets					3.5
Ground Water Use	0 1 (2) 3	3	6	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 (12) 16 18 20 24 30 32 35 40	1	12	40	
Total Targets Score			18	49	
[6] If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]			4896	57,330	
[7] Divide line [6] by 57,330 and multiply by 100			S_{gw} = 8.54		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	0	(45)	1	45	45	4.1
If observed release is given a value of 45, proceed to line [4]. If observed release is given a value of 0, proceed to line [2].						
[2] Route Characteristics						4.2
Facility Slope and Intervening Terrain	0 1 2 3		1		3	
1-yr. 24-hr. Rainfall	0 1 2 3		1		3	
Distance to Nearest Surface Water	0 1 2 3		2		6	
Physical State	0 1 2 3		1		3	
Total Route Characteristics Score					15	
[3] Containment	0 1 2 3		1		3	4.3
[4] Waste Characteristics						4.4
Toxicity/Persistence	0 3 6 9 12 (15) 18		1	15	18	
Hazardous Waste Quantity	0 1 (2) 3 4 5 6 7 8		1	2	8	
Total Waste Characteristics Score				17	26	
[5] Targets						4.5
Surface Water Use	0 1 (2) 3		3	6	9	
Distance to a Sensitive Environment	(0) 1 2 3		2	0	6	
Population Served/Distance to Water Intake Downstream	(0) 4 6 8 10 12 16 18 20 24 30 32 35 40		1	0	40	
Total Targets Score				6	55	
[6] If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]				4590	64,350	
[7] Divide line [6] by 64,350 and multiply by 100			S_{SW} = 7.13			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	5.1
Date and Location:					
Sampling Protocol:					
If line [1] is 0, the S_a = 0. Enter on line [5]. If line [1] is 45, then proceed to line [2].					
[2] Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
[3] Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score			39	
[4] Multiply [1] x [2] x [3]				35,100	
[5] Divide line [4] by 35,100 and multiply by 100		S_a = 0			

FIGURE 9
AIR ROUTE WORK SHEET

	s	s^2
Groundwater Route Score (S_{gw})	8.54	72.9316
Surface Water Route Score (S_{sw})	7.13	50.8369
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		123.7685
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		11.125
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		6.43

FIGURE 10
WORKSHEET FOR COMPUTING S_M

N/A

NO DOCUMENTED THREAT

Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Containment	1 3	1		3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Total Targets Score				24	
4 Multiply 1 x 2 x 3				1,440	
5 Divide line 4 by 1,440 and multiply by 100		S_{FE} =			

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

N/A

DIRECT CONTACT INCIDENT REFERED TO IN WDNR EVALUATION OCCURRED PRIOR TO CLEAN UP ACTIVITIES ON SITE AND IN LITTLE MENOMONEE RIVER, AND SHOULD NOT BE USED TO SCORE PRESENT SITE.

Direct Contact Work Sheet

	Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1	Observed Incident	(0) 45	1	0	45	8.1
	If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2	Accessibility	0 1 2 (3)	1	3	3	8.2
3	Containment	(0) 15	1	0	15	8.3
4	Waste Characteristics Toxicity	0 1 (2) 3	5	10	15	8.4
5	Targets					8.5
	Population Within a 1-Mile Radius	(0) 1 2 3 4 5	4	0	20	
	Distance to a Critical Habitat	(0) 1 2 3	4	0	12	
	Total Targets Score			0	32	
6	If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			0	21,600	
7	Divide line 6 by 21,600 and multiply by 100	S_{DC} =		0		

FIGURE 12
DIRECT CONTACT WORK SHEET

June 28, 1982

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: MILWAUKEE SITE - FORMER MOSS-AMERICAN COMPANY FACILITY

LOCATION: 8716 N. Granville Road, Milwaukee County, Wisconsin

At intersection of Granville Road, N. 107th Street and Brown Deer Road; Section 7 & 8 T1N, R21E.

The ~50 acre site in northern Milwaukke County was location of wood pressure treating facility until 1976. After closing, all buildings and equipment were removed from site; contaminated residue removed; then backfilled with clean dirt, graded and finally paved or allowed to revegetate.

The Little Menomonee River passes through the northeast corner of property; 1/4 mile of river downstream from plant was dredged in 1972 to remove creosote sediments.

GROUND WATER ROUTE

1 OBSERVED RELEASE - No

Contaminants detected (5 maximum):

No groundwater contamination observed except in invalid NEIC report.

Ref. 3, page 17

Rationale for attributing the contaminants to the facility:

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern - Rating Value - 1

Name/description of aquifers(s) of concern:

Niagra Dolomite (Silurian Age)

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

Niagra Dolomite ~100 feet (aquifer of concern)

Ref. 1, pp. 16, 16, 25; Pef. 2

Depth from the ground surface to the lowest point of waste disposal/ storage:

15 feet - Worst case - Assumes contaminated soil remains in impoundment after clean-up. Distance between aquifer and waste disposal = 85 feet.

Net Precipitation - Assigned Value - 1

Mean annual or seasonal precipitation (list months for seasonal):

32 inches/year

Ref. (5), Plate 2

Mean annual lake or seasonal evaporation (list months for seasonal):

30 inches/year

Ref. (4), page 13, Fig. 4

Net precipitation (subtract the above figures):

2 inches/year

Permeability of Unsaturated Zone - Assigned Value - 2

Soil type in unsaturated zone:

Glacial Till

Ref. 1, pg. 25

Permeability associated with soil type:

Relatively impermeable in northern Milwaukee area
Assume $< 10^{-3} \geq 10^{-5}$ cm/sec

Ref. 1, pg. 25

Physical State - Assigned Value - 3

Physical state of substances at time of disposal (or at present time for generated gases):

Liquid

* * *

3 CONTAINMENT

Containment - Assigned Value - 2

Method(s) of waste or leachate containment evaluated:

Clay curtain wall between area of possible contamination and Little Menomonee River. No collection of liquids, stopped by wall.

Ref. 7

Method with highest score:

4 WASTE CHARACTERISTICS

Toxicity and Persistence - Combined Matrix Value - 15

Compound(s) evaluated:

Creosote: MOD toxic, Ref. (6), p. 520 for "creosote, coal tar"
Sax Level = 2

Compound with highest score:

Toxicity Value = 2
Persistence = Unknown
Assume Highest Value = 3

Hazardous Waste Quantity - Assigned Value = 2

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

3000 Cubic Feet = 111 cubic yards

Basis of estimating and/or computing waste quantity:

From 4/8/81 CERCLA Notification

* * *

5 TARGETS

Ground Water Use - Assigned Value - 2

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Niagra Dolomite used as water supply for private wells and small subdivision. Municipal supplies from other sources are available.

Distance to Nearest Well - Assigned Value - 2

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

Not known

Distance to above well or building:

Assumed to be within 1 mile

Population Served by Ground Water Wells Within a 3-Mile Radius - Assigned Value = 2

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

From WDNR Work Sheet

~150 homes/private well
~1 well/25 homes
~1 in Niagra Dolomite serving 9000 people in Menomonee Falls*

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

N/A

Total population served by ground water within a 3-mile radius:

(150 homes)(3.8 people/home)	=	570
(25 homes)(3.8 people/home)	=	95
		665

Combined Matrix Value - 12

*Well in Menomonee Falls is hydrologically upgradient from site and should not be included in those with a potential to be affected. Ref. (2)

SURFACE WATER ROUTE

1 OBSERVED RELEASE - Assigned Value - 45

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

Assume worst case.

Rationale for attributing the contaminants to the facility:

Worst case estimate.

* * *

2 ROUTE CHARACTERISTICS N/A

Facility Slope and Intervening Terrain

Average slope of facility in percent:

Name/description of nearest downslope surface water:

Average slope of terrain between facility and above-cited surface water body in percent:

Is the facility located either totally or partially in surface water?

Is the facility completely surrounded by areas of higher elevation?

1-Year 24-Hour Rainfall in Inches

Distance to Nearest Downslope Surface Water

Physical State of Waste

* * *

3 CONTAINMENT N/A

Containment

Method(s) of waste or leachate containment evaluated:

Method with highest score:

4 WASTE CHARACTERISTICS

Toxicity and Persistence Combined Matrix Value - 15

Compound(s) evaluated

SEE "Ground Water Route" Section

Compound with highest score:

SEE "Ground Water Route" Section

Hazardous Waste Quantity - Assigned Value - 2

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

SEE "Ground Water Route" Section

Basis of estimating and/or computing waste quantity:

SEE "Ground Water Route" Section

* * *

5 TARGETS

Surface Water Use Assigned Value - 2

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Recreational use only, not for drinking water.

Is there tidal influence?

N/A

Distance to a Sensitive Environment — Assigned Value - 0

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

N/A

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

None reported in area.

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

None reported in area.

Population Served by Surface Water — Assigned Value - 0

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

None

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

N/A

Total population served:

N/A

Name/description of nearest of above water bodies:

N/A

Distance to above-cited intakes, measured in stream miles.

N/A

AIR ROUTE

1 OBSERVED RELEASE Assigned Value - 0

Contaminants detected:

None observed.

Date and location of detection of contaminants

Methods used to detect the contaminants:

Rationale for attributing the contaminants to the site:

* * *

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Most incompatible pair of compounds:

Toxicity

Most toxic compound:

Hazardous Waste Quantity

Total quantity of hazardous waste:

Basis of estimating and/or computing waste quantity:

* * *

3 TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi 0 to 1 mi 0 to 1/2 mi 0 to 1/4 mi

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Distance to critical habitat of an endangered species, if 1 mile or less:

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

Distance to residential area, if 2 miles or less:

Distance to agricultural land in production within past 5 years, if 1 mile or less:

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

REFERENCES

1) Groundwater Conditions in the Milwaukee--Waukesha Area, Wisconsin, by Foley, F.C., Walton, W.C. and Drescher, W. J., Department of the Interior, Geological Survey, Water Supply Paper 1229.

2) Internal letter, B. J. Smith to J. C. Stauter, 10/11/83, Geohydrological Summary of Milwaukee Site.

3) The Potential for Pollution of the Little Menomonee River. From: The Kerr-McGee/Moss-American Plant Site, Milwaukee, Wisconsin (September-October, 1977), NEIC & Region V EPA, November, 1977. EPA No. 330/2-77-022, Office of Enforcement.

4) "Ranking System for Hazardous Substance Releases", EPA, 6/10/82.

5) Water Atlas of the United States, by Geraghty, J. J., Miller, D.W., Van der Leeden, F., Troise, F.L., Water Information Center, Port Washington, N.Y., 1973.

6) Dangerous Properties of Industrial Materials, by Sax, N.I., 5th edition, Van Nostrand Reinhold Company, N.Y., 1979.

7) Internal letter from Ann Brown to Barbara Hoffman, dated 7/25/83.

MOSS-AMERICAN CO., INC. (KERR-MCGEE OIL CO.)
Milwaukee, Wisconsin

From 1946 until 1976, Moss-American Co., Inc., a division of Kerr-McGee Oil Co., treated railroad ties, telephone poles, and building materials with preservatives such as creosote on a 90-acre site in Milwaukee, Wisconsin. Creosote-soaked logs were stored and coated at several areas in the plant. As a result, creosote and other coal tar distillates contaminated the site. The old factory buildings were demolished in 1978, and creosote sludge and the most contaminated soils were excavated and sent to a disposal site in Illinois. Creosote-like compounds from past operations, however, continue to contaminate surface soil, ground water, and river sediments near the site.

The site, a portion of which is owned by the Milwaukee County Parks Commission, is adjacent to the Little Menomonee River.

MOSS-AMERICAN COMPANY HRS 35.94

Moss-American Company, Inc. is an inactive wood-treating business at 8716 Granville Road, Milwaukee. From 1946 until 1976, the company treated wood with preservatives like Creosote to provide long-lasting wood products for railroad ties, telephone poles and building materials. Creosote-soaked logs were stored and coated at several areas in the plant. Subsequently, Creosote and other coal tar distillates stained the property soil and former factory site. The old factory buildings were demolished in 1978. This demolition included the removal of residual Creosote sludge and the most saturated soils. This cleanup resulted in 29 truck loads (450 cubic yards) of this waste being excavated and transported to Nuclear Engineering Inc., Landfill site in Sheffield, Illinois.

The 90-acre parcel of land, a portion of which is currently owned by the Milwaukee County Parks Commission, abuts the Little Menomonee River. In the past, Creosote-like compounds have contaminated soil near the surface, groundwater, and river sediments near the site.

2800P-6

Moss-American Company
Milwaukee, Wisconsin

Enforcement Summary and Chronology of Removal Actions

A. LOCAL ENFORCEMENT:

1954 - City of Milwaukee Health Department requested Moss Co. install a filtering system (straw bales) as base of settling lagoon. Moss complied.

August 1966 - Milwaukee Sewage Commission (MMSD) advised Moss-American that oil leaking from lagoons was not satisfactory and that lagoons should be dredged and lagoon walls rebuilt with uncontaminated clay. Moss-American complied.

1968(?) - City of Milwaukee ordered Moss-American to replace their existing treatment system. The company installed a series of coke filters to pretreat waste. In 1971 they hooked up to MMSD for final treatment.

1971 - Children cleaning up river are burned by sediments. Investigation by State and County resulted in Moss - American dredging the former 8 ponds and abandoning them by filling with uncontaminated soils. The company also dredged sediments from 1700 feet of Little Menomonee River adjacent to their property. A 12 foot deep clean clay curtain wall was constructed between old lagoons and river.

1974 - County filed suit against Kerr-McGee joining EPA action. Suit dropped in 1978 for settlement of undisclosed amount of cash and 50 acres of land deeded to County.

B. STATE ENFORCEMENT:

1977-1978 - Southeast District of DNR was involved with disposal of demolition waste from Kerr-McGee property. Resulted in 29 truck loads (450 yd^3) of saturated soils being removed to Nuclear Engineering Landfill in Sheffield, Illinois.

C. FEDERAL ENFORCEMENT:

1972 - EPA awarded two research contracts for the removal and treatment of Creosote contaminated river bottom sediments. Of the 2.5 miles of river intended to be cleaned up, only 4000 feet of river were partially cleaned up before the $320,000 grant was exhausted in November 1973.

1974 - EPA filed suit against Kerr-McGee Corp. seeking reimbursement of the demonstration grant monies, damages to the river, injunctive relief to force the company to cleanup the rest of the river, and civil penalties for discharge to river.

1976 - Kerr-McGee terminates activity plus files motion to dismiss. Motion denied.

1977 - National Enforcement Investigation Center of EPA conducts an on-site investigation. Study proves groundwater contamination and hints at long-term liability of Creosote transport via groundwater.

March, 1978 - Federal Judge dismissed suit due to federal investigator submitting falsified sample data.