

HRS Quickscore Notes—Black Leaf Chemical

HRS score sheets were prepared for two scenarios: Worst Case and Reasonable Expectation. The Worst Case Scenario assumes Level I contamination of targets in the Soil Exposure Pathway and potential contamination of targets in the Groundwater Migration Pathway. The Air Migration Pathway was not scored due to the fact that there are no active emissions at the site and the potential for migrations of dust particles is minimized by gravel and grass covering the lot. The Surface Water Pathway was not scored because the PPE is not within 2 miles of the site and there is not a perennial stream within 1 mile of the site. The site score for the Worst Case Scenario was 40.34

The Reasonable Expectation Scenario Contamination Scenario assumes that the residents within 200 feet of the site are subject to Level II contamination in the Soil Exposure Pathway. Groundwater targets are subject to potential contamination. The site score for this scenario was 7.17.

Source

Since EPA conducted SI sampling in October 2010, the site has known contamination above the Regional Screening Levels (RSLs) of pesticides, PAHs, and arsenic. The source was considered to be contaminated soil. The estimated size of the lot is 691,516.45 square feet, so that was used as the size of the source. This is not unreasonable as 27 of the 29 sample locations showed contamination above RSLs.

Hazardous Substances

Hazardous substances found at this site include several pesticides, PAHs and arsenic. For HRS purposes, Lindane was used for the Groundwater Migration Pathway. Dieldrin was used for the Soil Exposure Pathway because it was found on the Black Leaf property and within 200 feet of several residences.

Groundwater Migration Pathway

There are no municipal groundwater intakes within a 4-mile radius of the site. Only 4 domestic wells were identified within the TDL. The nearest well is over 3 miles from the site. Due to the distance of the wells from the site, targets were considered to be subject to potential contamination in both scenarios. Table 3-12 was used to determine the HRS value and the Karst figures were used.

KDWM has no analytical data for groundwater at the site.

Surface Water Pathway

The City of Louisville's municipal drinking water comes from the Ohio River, which is located over 4 miles to the northeast of the site. According to the HRS Rule, the Surface Water/Overland Flow Route Migration Pathway should not be considered if the PPE is not within 2 miles of the site. The PPE would be the discharge point at the Morris Forman Treatment Plant, which is greater than two (2) miles from the site. The Surface Water/Groundwater to Surface Water Migration Pathway should not be considered if a portion of the surface water is not within one (1) mile of one more sources at the site.



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The nearest perennial stream from the site is Beargrass Creek, however, this creek is not within a mile of the site.

This pathway was not scored.

Soil Exposure Pathway

The site does not have adequate access controls and it is located adjacent to a residential neighborhood with at least 1 known daycare. For this reason, it scores high in the Attractiveness/Accessibility area. There are 25 residences and 1 daycare within 200 feet of the site. There are 14,902 people living within 1 mile of the site.

Due to the fact that data collected by EPA in October 2010 shows the presence of pesticides, PAHs and arsenic above RSLs at the site, the Worst Case Scenario assumes Level I contamination of the 25 residences located within 200 feet of the site. The daycare is factored into the resident population score. Dieldrin was used as the contaminant because it was identified in sample SS-18, which is located on the northern edge of the site near the neighborhood. It is also located within 200 feet of the daycare, which legally can care for a maximum of 6 children. For the Reasonable Expectation Scenario, the 25 residences were considered subject to Level II contamination.

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******PRE-DECISIONAL DOCUMENT ******
****** SUMMARY SCORESHEET ******
****** FOR COMPUTING PROJECTED HRS SCORE ******

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Site Name: Black Leaf Chemical Region: Region 4
 Scenario Name: Black Leaf SI Reasonable
 Expectation Scenario
 City, County, State: Louisville/Jefferson, Evaluator: Cheryl Brown Harris
 Kentucky
 EPA ID#: KYD980559520 Date: 01/24/2011
 Lat/Long: 38:13:59,-85:46:57
 Congressional District:
 This Scoresheet is for: SI
 Scenario Name: Black Leaf SI Reasonable Expectation Scenario
 Description:

	S pathway	S ² pathway
Ground Water Migration Pathway Score (S _{gw})	1.01	1.02
Surface Water Migration Pathway Score (S _{sw})	0.0	0.0
Soil Exposure Pathway Score (S _s)	14.3	204.49
Air Migration Score (S _a)	0.0	0.0
$S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		205.51
$(S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2)/4$		51.38
$/(S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2)/4$		7.17

Pathways not assigned a score (explain):

Air Migration was not assigned a score due to the fact that there are no known active air emissions from the site.
 Surface Water Pathway was not assigned a score due to the fact that the PPE is not within 2 miles of the site and
 there is no perennial stream within 1 mile of the site.

TABLE 3-1 --GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Aquifer Evaluated: Groundwater--shallow aquifer		
Likelihood of Release to an Aquifer:		
1. Observed Release	550	550.0
2. Potential to Release:		
2a. Containment	10	0.0
2b. Net Precipitation	10	0.0
2c. Depth to Aquifer	5	1.0
2d. Travel Time	35	1.0
2e. Potential to Release [(lines 2a(2b + 2c + 2d)]	500	0.0
3. Likelihood of Release (higher of lines 1 and 2e)	550	550.0
Waste Characteristics:		
4. Toxicity/Mobility	(a)	10000.0
5. Hazardous Waste Quantity	(a)	10.0
6. Waste Characteristics	100	18.0
Targets:		
7. Nearest Well	(b)	3.0
8. Population:		
8a. Level I Concentrations	(b)	0.0
8b. Level II Concentrations	(b)	0.0
8c. Potential Contamination	(b)	0.4
8d. Population (lines 8a + 8b + 8c)	(b)	0.4
9. Resources	5	5.0
10. Wellhead Protection Area	20	0.0
11. Targets (lines 7 + 8d + 9 + 10)	(b)	8.4
Ground Water Migration Score for an Aquifer:		
12. Aquifer Score [(lines 3 x 6 x 11)/82,5000] ^c	100	1.01
Ground Water Migration Pathway Score:		
13. Pathway Score (S _{gw}), (highest value from line 12 for all aquifers evaluated) ^c	100	1.01

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c Do not round to nearest integer

TABLE 5-1 --SOIL EXPOSURE PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Likelihood of Exposure:		
1. Likelihood of Exposure	550	550.0
Waste Characteristics:		
2. Toxicity	(a)	10000.0
3. Hazardous Waste Quantity	(a)	10.0
4. Waste Characteristics	100	18.0
Targets:		
5. Resident Individual	50	45.0
6. Resident Population:		
6a. Level I Concentrations	(b)	0.0
6b. Level II Concentrations	(b)	61.0
6c. Population (lines 6a + 6b)	(b)	61.0
7. Workers	15	0.0
8. Resources	5	
9. Terrestrial Sensitive Environments	(c)	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)	106.0
Resident Population Threat Score		
11. Resident Population Threat Score (lines 1 x 4 x 10)	(b)	1049400.0
Nearby Population Threat		
Likelihood of Exposure:		
12. Attractiveness/Accessibility	100	75.0
13. Area of Contamination	100	100.0
14. Likelihood of Exposure	500	500.0
Waste Characteristics:		
15. Toxicity	(a)	10000.0
16. Hazardous Waste Quantity	(a)	10.0
17. Waste Characteristics	100	18.0
Targets:		
18. Nearby Individual	1	1.0
19. Population Within 1 Mile	(b)	13.5
20. Targets (lines 18 + 19)	(b)	14.5
Nearby Population Threat Score		
21. Nearby Population Threat (lines 14 x 17 x 20)	(b)	130500.0
Soil Exposure Pathway Score:		
22. Pathway Score ^d (S _s), [(lines (11+21)/82,500, subject to max of 100]	100	14.3

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60

^d Do not round to nearest integer

TABLE 6-1 --AIR MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Likelihood of Release:		
1. Observed Release	550	
2. Potential to Release:		
2a. Gas Potential to Release	500	
2b. Particulate Potential to Release	500	
2c. Potential to Release (higher of lines 2a and 2b)	500	
3. Likelihood of Release (higher of lines 1 and 2c)	550	
Waste Characteristics:		
4. Toxicity/Mobility	(a)	
5. Hazardous Waste Quantity	(a)	
6. Waste Characteristics	100	
Targets:		
7. Nearest Individual	50	
8. Population:		
8a. Level I Concentrations	(b)	
8b. Level II Concentrations	(b)	
8c. Potential Contamination	(c)	
8d. Population (lines 8a + 8b + 8c)	(b)	
9. Resources	5	
10. Sensitive Environments:		
10a. Actual Contamination	(c)	
10b. Potential Contamination	(c)	
10c. Sensitive Environments (lines 10a + 10b)	(c)	
11. Targets (lines 7 + 8d + 9 + 10c)	(b)	
Air Migration Pathway Score:		
12. Pathway Score (S _a) [(lines 3 x 6 x 11)/82,500] ^d	100	

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.

^d Do not round to nearest integer

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 Scenario Name: Black Leaf SI Worst Case
 City, County, State: Louisville/Jefferson, Evaluator: Cheryl Brown Harris
 Kentucky
 EPA ID#: KYD980559520 Date: 01/24/2011
 Lat/Long: 38:13:59,-85:46:57
 Congressional District:
 This Scoresheet is for: SI
 Scenario Name: Black Leaf SI Worst Case
 Description:

	S pathway	S ² pathway
Ground Water Migration Pathway Score (S _{gw})	1.01	1.02
Surface Water Migration Pathway Score (S _{sw})	0.0	0.0
Soil Exposure Pathway Score (S _s)	80.67	6507.65
Air Migration Score (S _a)	0.0	0.0
$S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		6508.67
$(S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2)/4$		1627.17
$/(S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2)/4$		40.34

Pathways not assigned a score (explain):

Air Migration was not assigned a score due to the fact that there are no known active air emissions from the site. Surface Water Pathway was not assigned a score due to the fact that the PPE is not within 2 miles of the site and there is no perennial stream within 1 mile of the site.

TABLE 3-1 --GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Aquifer Evaluated: Groundwater--shallow aquifer		
Likelihood of Release to an Aquifer:		
1. Observed Release	550	550.0
2. Potential to Release:		
2a. Containment	10	0.0
2b. Net Precipitation	10	0.0
2c. Depth to Aquifer	5	1.0
2d. Travel Time	35	1.0
2e. Potential to Release [(lines 2a(2b + 2c + 2d)]	500	0.0
3. Likelihood of Release (higher of lines 1 and 2e)	550	550.0
Waste Characteristics:		
4. Toxicity/Mobility	(a)	10000.0
5. Hazardous Waste Quantity	(a)	10.0
6. Waste Characteristics	100	18.0
Targets:		
7. Nearest Well	(b)	3.0
8. Population:		
8a. Level I Concentrations	(b)	0.0
8b. Level II Concentrations	(b)	0.0
8c. Potential Contamination	(b)	0.4
8d. Population (lines 8a + 8b + 8c)	(b)	0.4
9. Resources	5	5.0
10. Wellhead Protection Area	20	0.0
11. Targets (lines 7 + 8d + 9 + 10)	(b)	8.4
Ground Water Migration Score for an Aquifer:		
12. Aquifer Score [(lines 3 x 6 x 11)/82,5000] ^c	100	1.01
Ground Water Migration Pathway Score:		
13. Pathway Score (S _{gw}), (highest value from line 12 for all aquifers evaluated) ^c	100	0.0

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c Do not round to nearest integer

TABLE 5-1 --SOIL EXPOSURE PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Likelihood of Exposure:		
1. Likelihood of Exposure	550	550.0
Waste Characteristics:		
2. Toxicity	(a)	10000.0
3. Hazardous Waste Quantity	(a)	10.0
4. Waste Characteristics	100	18.0
Targets:		
5. Resident Individual	50	50.0
6. Resident Population:		
6a. Level I Concentrations	(b)	610.0
6b. Level II Concentrations	(b)	
6c. Population (lines 6a + 6b)	(b)	610.0
7. Workers	15	0.0
8. Resources	5	
9. Terrestrial Sensitive Environments	(c)	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)	660.0
Resident Population Threat Score		
11. Resident Population Threat Score (lines 1 x 4 x 10)	(b)	6534000.0
Nearby Population Threat		
Likelihood of Exposure:		
12. Attractiveness/Accessibility	100	75.0
13. Area of Contamination	100	100.0
14. Likelihood of Exposure	500	500.0
Waste Characteristics:		
15. Toxicity	(a)	10000.0
16. Hazardous Waste Quantity	(a)	10.0
17. Waste Characteristics	100	18.0
Targets:		
18. Nearby Individual	1	0.0
19. Population Within 1 Mile	(b)	13.5
20. Targets (lines 18 + 19)	(b)	13.5
Nearby Population Threat Score		
21. Nearby Population Threat (lines 14 x 17 x 20)	(b)	121500.0
Soil Exposure Pathway Score:		
22. Pathway Score ^d (S _s), [(11+21)/82,500, subject to max of 100]	100	80.67

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60

^d Do not round to nearest integer

TABLE 6-1 --AIR MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Likelihood of Release:		
1. Observed Release	550	
2. Potential to Release:		
2a. Gas Potential to Release	500	
2b. Particulate Potential to Release	500	
2c. Potential to Release (higher of lines 2a and 2b)	500	
3. Likelihood of Release (higher of lines 1 and 2c)	550	
Waste Characteristics:		
4. Toxicity/Mobility	(a)	
5. Hazardous Waste Quantity	(a)	
6. Waste Characteristics	100	
Targets:		
7. Nearest Individual	50	
8. Population:		
8a. Level I Concentrations	(b)	
8b. Level II Concentrations	(b)	
8c. Potential Contamination	(c)	
8d. Population (lines 8a + 8b + 8c)	(b)	
9. Resources	5	
10. Sensitive Environments:		
10a. Actual Contamination	(c)	
10b. Potential Contamination	(c)	
10c. Sensitive Environments (lines 10a + 10b)	(c)	
11. Targets (lines 7 + 8d + 9 + 10c)	(b)	
Air Migration Pathway Score:		
12. Pathway Score (S _a) [(lines 3 x 6 x 11)/82,500] ^d	100	

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.

^d Do not round to nearest integer