

CONTENTS file #2 of Supplemental data for Bowers RL & Smith JWN (2014)

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Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Gasoline / Petrol

Direct NAPL Intrusion to Enclosed Space			
Exposure Route:		Inhalation	
Source Medium:		NAPL	
Depth to Source (m):		0	
Note:		Saturated vapor, diluted in breathing space	
Rank	Constituent	Inhalation Risk	
		HQ _{max}	CR _{max}
1	<i>Benzene</i>	<i>1.3E+03</i>	<i>3.8E-02</i>
2	<i>Dibromoethane, 1,2- (EDB)</i>	<i>1.0E+01</i>	<i>2.4E-02</i>
3	<i>Dichloroethane, 1,2- (EDC)</i>	<i>1.6E+01</i>	<i>8.4E-03</i>
4	<i>Diisopropyl ether (DIPE)</i>	<i>6.6E+02</i>	-
5	<i>Ethyl tert-butyl ether (ETBE)</i>	<i>5.9E+02</i>	-
6	<i>Tert-amyl-methyl ether (TAME)</i>	<i>4.5E+02</i>	-
7	<i>Methyl tert-butyl ether (MTBE)</i>	<i>2.1E+02</i>	-
8	<i>Xylenes (mixed isomers)</i>	<i>1.3E+02</i>	-
9	<i>Hexane, n-</i>	<i>1.0E+02</i>	-
10	<i>TPH - Aliphatic > C05-C06</i>	<i>7.3E+01</i>	-
11	<i>TPH - Aliphatic >C06-C08</i>	<i>1.9E+01</i>	-
12	<i>Tert-butyl alcohol (TBA)</i>	<i>1.2E+01</i>	-
13	<i>Toluene</i>	<i>1.0E+01</i>	-
14	<i>TPH - Aliphatic >C08-C10</i>	<i>7.4E+00</i>	-
15	<i>Ethyl benzene</i>	<i>3.6E+00</i>	-
16	<i>Naphthalene</i>	<i>1.6E+00</i>	-
17	Heptane, n-	1.4E+00	-
18	TPH - Aromatic >C10-C12	1.4E+00	-
19	Methyl cyclohexane	1.3E+00	-
20	Cyclohexane	9.0E-01	-
21	Trimethylbenzene, 1,2,4-	3.6E-01	-
22	Cumene	3.4E-01	-
23	TPH - Aliphatic >C10-C12	3.2E-01	-
24	Trimethylbenzene, 1,3,5-	1.6E-01	-
25	TPH - Aliphatic >C12-C16	8.1E-03	-
26	TPH - Aromatic >C12-C16	4.2E-03	-

Outdoor Inhalation - Vapors and Particulates			
Exposure Route:		Inhalation	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Inhalation Risk	
		HQ _{max}	CR _{max}
1	<i>Dibromoethane, 1,2- (EDB)</i>	5.7E-03	<i>1.3E-05</i>
2	<i>Benzene</i>	2.1E-01	<i>6.1E-06</i>
3	Dichloroethane, 1,2- (EDC)	9.1E-03	<i>4.9E-06</i>
4	Ethyl tert-butyl ether (ETBE)	5.2E-01	-
5	Tert-amyl-methyl ether (TAME)	2.7E-01	-
6	Tert-butyl alcohol (TBA)	2.0E-01	-
7	Diisopropyl ether (DIPE)	1.1E-01	-
8	Methyl tert-butyl ether (MTBE)	1.1E-01	-
9	Xylenes (mixed isomers)	8.4E-02	-
10	Hexane, n-	7.3E-03	-
11	TPH - Aliphatic > C05-C06	4.5E-03	-
12	Naphthalene	4.0E-03	-
13	Toluene	2.5E-03	-
14	TPH - Aliphatic >C06-C08	1.8E-03	-
15	TPH - Aromatic >C10-C12	1.8E-03	-
16	TPH - Aliphatic >C08-C10	1.5E-03	-
17	Ethyl benzene	1.0E-03	-
18	Cumene	2.0E-04	-
19	Trimethylbenzene, 1,2,4-	2.0E-04	-
20	TPH - Aliphatic >C10-C12	1.5E-04	-
21	Methyl cyclohexane	1.3E-04	-
22	Heptane, n-	1.1E-04	-
23	Cyclohexane	8.8E-05	-
24	Trimethylbenzene, 1,3,5-	7.5E-05	-
25	TPH - Aromatic >C12-C16	1.3E-05	-
26	TPH - Aliphatic >C12-C16	7.9E-06	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQ_{max} > 1.0, or ii) CR_{max} > 1.0E-6.
- HQ_{max} = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CR_{max} = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.
Individual compounds for which HQ>1, but not listed in bold are included among the highlighted TPH fractions, which are more broadly indicated as COPCs instead of those individual compounds.

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Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Gasoline / Petrol

Outdoor Inhalation - Vapors			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Rank	Constituent	Inhalation Risk	
		HQ _{max}	CR _{max}
1	<i>Benzene</i>	1.0E-01	<i>3.0E-06</i>
2	<i>Dibromoethane, 1,2- (EDB)</i>	1.1E-03	<i>2.7E-06</i>
3	<i>Dichloroethane, 1,2- (EDC)</i>	2.8E-03	<i>1.5E-06</i>
4	Ethyl tert-butyl ether (ETBE)	1.2E-01	-
5	Tert-amyl-methyl ether (TAME)	6.0E-02	-
6	Methyl tert-butyl ether (MTBE)	4.6E-02	-
7	Diisopropyl ether (DIPE)	4.4E-02	-
8	Hexane, n-	1.1E-02	-
9	Xylenes (mixed isomers)	9.1E-03	-
10	Tert-butyl alcohol (TBA)	6.6E-03	-
11	TPH - Aliphatic > C05-C06	4.0E-03	-
12	TPH - Aliphatic >C06-C08	1.1E-03	-
13	Toluene	7.3E-04	-
14	TPH - Aliphatic >C08-C10	4.1E-04	-
15	Naphthalene	3.0E-04	-
16	Ethyl benzene	2.1E-04	-
17	TPH - Aromatic >C10-C12	1.4E-04	-
18	Methyl cyclohexane	5.2E-05	-
19	Heptane, n-	5.2E-05	-
20	Cyclohexane	4.0E-05	-
21	Trimethylbenzene, 1,2,4-	2.2E-05	-
22	TPH - Aliphatic >C10-C12	1.8E-05	-
23	Cumene	1.5E-05	-
24	Trimethylbenzene, 1,3,5-	8.3E-06	-
25	TPH - Aromatic >C12-C16	7.1E-07	-
26	TPH - Aliphatic >C12-C16	4.5E-07	-

Indoor Vapor Intrusion (Convection Driven)			
Exposure Route:		Inhalation	
Source Medium:		Subsurface Soil	
Depth to Source (m):		0.15	
Note:		Assumes no biodegradation	
Rank	Constituent	Inhalation Risk	
		HQ _{max}	CR _{max}
1	<i>Benzene</i>	<i>5.0E+01</i>	<i>1.4E-03</i>
2	<i>Dichloroethane, 1,2- (EDC)</i>	7.0E-01	<i>3.8E-04</i>
3	<i>Dibromoethane, 1,2- (EDB)</i>	1.3E-01	<i>3.0E-04</i>
4	<i>Diisopropyl ether (DIPE)</i>	<i>1.9E+01</i>	-
5	<i>Ethyl tert-butyl ether (ETBE)</i>	<i>1.8E+01</i>	-
6	<i>Tert-amyl-methyl ether (TAME)</i>	<i>1.4E+01</i>	-
7	<i>Hexane, n-</i>	<i>8.9E+00</i>	-
8	<i>Methyl tert-butyl ether (MTBE)</i>	<i>7.1E+00</i>	-
9	<i>Xylenes (mixed isomers)</i>	<i>4.0E+00</i>	-
10	<i>TPH - Aliphatic > C05-C06</i>	<i>3.1E+00</i>	-
11	<i>Tert-butyl alcohol (TBA)</i>	<i>3.1E+00</i>	-
12	TPH - Aliphatic >C06-C08	8.2E-01	-
13	Toluene	3.9E-01	-
14	TPH - Aliphatic >C08-C10	3.2E-01	-
15	Ethyl benzene	1.2E-01	-
16	TPH - Aromatic >C10-C12	5.9E-02	-
17	Naphthalene	4.1E-02	-
18	Heptane, n-	4.0E-02	-
19	Methyl cyclohexane	4.0E-02	-
20	Cyclohexane	3.0E-02	-
21	TPH - Aliphatic >C10-C12	1.4E-02	-
22	Trimethylbenzene, 1,2,4-	9.5E-03	-
23	Cumene	9.4E-03	-
24	Trimethylbenzene, 1,3,5-	4.2E-03	-
25	TPH - Aliphatic >C12-C16	3.5E-04	-
26	TPH - Aromatic >C12-C16	1.8E-04	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQ_{max} > 1.0, or ii) CR_{max} > 1.0E-6.
- HQ_{max} = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CR_{max} = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

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Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Gasoline / Petrol

Indoor Vapor Intrusion (Diffusion Driven)			
Exposure Route:		Inhalation	
Source Medium:		Subsurface Soil	
Depth to Source (m):		0.15	
Note:		Assumes no biodegradation	
Rank	Constituent	Inhalation Risk	
		HQ _{max}	CR _{max}
1	<i>Benzene</i>	<i>4.4E+02</i>	<i>1.2E-02</i>
2	<i>Dibromoethane, 1,2- (EDB)</i>	<i>2.0E+00</i>	<i>4.6E-03</i>
3	<i>Dichloroethane, 1,2- (EDC)</i>	<i>5.5E+00</i>	<i>2.9E-03</i>
4	<i>Diisopropyl ether (DIPE)</i>	<i>2.0E+02</i>	-
5	<i>Ethyl tert-butyl ether (ETBE)</i>	<i>1.8E+02</i>	-
6	<i>Tert-amyl-methyl ether (TAME)</i>	<i>1.4E+02</i>	-
7	<i>Xylenes (mixed isomers)</i>	<i>4.0E+01</i>	-
8	<i>Methyl tert-butyl ether (MTBE)</i>	<i>3.8E+01</i>	-
9	<i>Hexane, n-</i>	<i>3.7E+01</i>	-
10	<i>Tert-butyl alcohol (TBA)</i>	<i>2.6E+01</i>	-
11	<i>TPH - Aliphatic > C05-C06</i>	<i>1.3E+01</i>	-
12	<i>TPH - Aliphatic >C06-C08</i>	<i>6.6E+00</i>	-
13	<i>Toluene</i>	<i>3.4E+00</i>	-
14	<i>TPH - Aliphatic >C08-C10</i>	<i>2.5E+00</i>	-
15	<i>Ethyl benzene</i>	<i>1.1E+00</i>	-
16	TPH - Aromatic >C10-C12	4.7E-01	-
17	Naphthalene	4.6E-01	-
18	Heptane, n-	4.2E-01	-
19	Methyl cyclohexane	4.0E-01	-
20	Cyclohexane	2.8E-01	-
21	TPH - Aliphatic >C10-C12	1.1E-01	-
22	Trimethylbenzene, 1,2,4-	1.0E-01	-
23	Cumene	9.9E-02	-
24	Trimethylbenzene, 1,3,5-	4.5E-02	-
25	TPH - Aliphatic >C12-C16	2.8E-03	-
26	TPH - Aromatic >C12-C16	1.4E-03	-

Indoor Vapor Intrusion (Convection Driven)			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Note:		Assumes no biodegradation	
Rank	Constituent	Inhalation Risk	
		HQ _{max}	CR _{max}
1	<i>Benzene</i>	<i>2.2E+01</i>	<i>6.1E-04</i>
2	<i>Dibromoethane, 1,2- (EDB)</i>	9.9E-02	<i>2.3E-04</i>
3	<i>Dichloroethane, 1,2- (EDC)</i>	4.2E-01	<i>2.2E-04</i>
4	<i>Ethyl tert-butyl ether (ETBE)</i>	<i>1.3E+01</i>	-
5	<i>Diisopropyl ether (DIPE)</i>	<i>8.8E+00</i>	-
6	<i>Tert-amyl-methyl ether (TAME)</i>	<i>8.7E+00</i>	-
7	<i>Methyl tert-butyl ether (MTBE)</i>	<i>5.1E+00</i>	-
8	<i>Hexane, n-</i>	<i>2.8E+00</i>	-
9	<i>Xylenes (mixed isomers)</i>	<i>1.8E+00</i>	-
10	TPH - Aliphatic > C05-C06	9.9E-01	-
11	Tert-butyl alcohol (TBA)	4.0E-01	-
12	TPH - Aliphatic >C06-C08	2.6E-01	-
13	Toluene	1.6E-01	-
14	TPH - Aliphatic >C08-C10	1.0E-01	-
15	Ethyl benzene	4.6E-02	-
16	Naphthalene	3.1E-02	-
17	TPH - Aromatic >C10-C12	2.8E-02	-
18	Heptane, n-	1.3E-02	-
19	Methyl cyclohexane	1.3E-02	-
20	Cyclohexane	9.7E-03	-
21	TPH - Aliphatic >C10-C12	4.4E-03	-
22	Trimethylbenzene, 1,2,4-	4.4E-03	-
23	Cumene	3.4E-03	-
24	Trimethylbenzene, 1,3,5-	1.8E-03	-
25	TPH - Aliphatic >C12-C16	1.1E-04	-
26	TPH - Aromatic >C12-C16	1.1E-04	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQ_{max} > 1.0, or ii) CR_{max} > 1.0E-6.
- HQ_{max} = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CR_{max} = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.9 (page 4 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Gasoline / Petrol

Indoor Vapor Intrusion (Diffusion Driven)			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Note:		Assumes no biodegradation	
Rank	Constituent	Inhalation Risk	
		HQ _{max}	CR _{max}
1	<i>Benzene</i>	<i>1.8E+01</i>	<i>1.2E-03</i>
2	<i>Dibromoethane, 1,2- (EDB)</i>	<i>2.0E-01</i>	<i>1.1E-03</i>
3	<i>Dichloroethane, 1,2- (EDC)</i>	<i>4.8E-01</i>	<i>6.0E-04</i>
4	<i>Ethyl tert-butyl ether (ETBE)</i>	<i>2.0E+01</i>	-
5	<i>Tert-amyl-methyl ether (TAME)</i>	<i>1.0E+01</i>	-
6	<i>Diisopropyl ether (DIPE)</i>	<i>7.8E+00</i>	-
7	<i>Methyl tert-butyl ether (MTBE)</i>	<i>7.7E+00</i>	-
8	<i>Hexane, n-</i>	<i>2.0E+00</i>	-
9	<i>Xylenes (mixed isomers)</i>	<i>1.6E+00</i>	-
10	<i>Tert-butyl alcohol (TBA)</i>	<i>1.0E+00</i>	-
11	TPH - Aliphatic > C05-C06	7.1E-01	-
12	TPH - Aliphatic >C06-C08	1.9E-01	-
13	Toluene	1.3E-01	-
14	TPH - Aliphatic >C08-C10	7.2E-02	-
15	Naphthalene	5.1E-02	-
16	Ethyl benzene	3.7E-02	-
17	TPH - Aromatic >C10-C12	2.5E-02	-
18	Heptane, n-	9.2E-03	-
19	Methyl cyclohexane	9.2E-03	-
20	Cyclohexane	7.0E-03	-
21	Trimethylbenzene, 1,2,4-	3.9E-03	-
22	TPH - Aliphatic >C10-C12	3.2E-03	-
23	Cumene	2.6E-03	-
24	Trimethylbenzene, 1,3,5-	1.5E-03	-
25	TPH - Aromatic >C12-C16	1.2E-04	-
26	TPH - Aliphatic >C12-C16	7.9E-05	-

Surface Soil Ingestion			
Exposure Route:		Ingestion	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Ingestion Risk	
		HQ _{max}	CR _{max}
1	<i>Dibromoethane, 1,2- (EDB)</i>	<i>6.4E-02</i>	<i>5.3E-05</i>
2	<i>Benzene</i>	6.7E+00	<i>3.7E-05</i>
3	<i>Diisopropyl ether (DIPE)</i>	<i>4.2E+00</i>	-
4	<i>Dichloroethane, 1,2- (EDC)</i>	4.4E-02	<i>2.6E-06</i>
5	<i>Tert-amyl-methyl ether (TAME)</i>	<i>1.7E+00</i>	-
6	<i>Toluene</i>	<i>1.4E+00</i>	-
7	TPH - Aliphatic >C08-C10	9.6E-01	-
8	TPH - Aromatic >C10-C12	8.8E-01	-
9	Ethyl tert-butyl ether (ETBE)	8.4E-01	-
10	Xylenes (mixed isomers)	6.3E-01	-
11	Methyl naphthalene, 2-	6.3E-01	-
12	Hexane, n-	5.6E-01	-
13	Methyl tert-butyl ether (MTBE)	5.2E-01	-
14	TPH - Aliphatic >C10-C12	4.4E-01	-
15	Ethyl benzene	2.4E-01	-
16	Naphthalene	1.8E-01	-
17	TPH - Aliphatic >C12-C16	1.4E-01	-
18	Trimethylbenzene, 1,2,4-	1.1E-01	-
19	TPH - Aliphatic >C06-C08	8.8E-02	-
20	TPH - Aliphatic > C05-C06	6.2E-02	-
21	TPH - Aromatic >C16-C21	4.7E-02	-
22	TPH - Aromatic >C12-C16	3.5E-02	-
23	Trimethylbenzene, 1,3,5-	3.4E-02	-
24	Cumene	1.8E-02	-
25	Methyl naphthalene, 1-	1.4E-02	-
26	Tert-butyl alcohol (TBA)	1.4E-02	-
27	Heptane, n-	7.7E-03	-
28	TPH - Aliphatic >C16-C21	7.0E-03	-
29	TPH - Aromatic >C21-C35	4.7E-03	-
30	Methyl cyclohexane	1.6E-03	-
31	Cyclohexane	1.1E-03	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway. Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQ_{max} > 1.0, or ii) CR_{max} > 1.0E-6.
- HQ_{max} = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CR_{max} = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.9 (page 5 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Gasoline / Petrol

Surface Soil Dermal Contact			
Exposure Route:		Dermal Contact	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Dermal Contact Risk	
		HQ _{max}	CR _{max}
1	<i>Dibromoethane, 1,2- (EDB)</i>	1.2E-02	<i>5.4E-05</i>
2	<i>Dichloroethane, 1,2- (EDC)</i>	8.3E-03	<i>2.6E-06</i>
3	Diisopropyl ether (DIPE)	8.0E-01	-
4	Tert-amyl-methyl ether (TAME)	3.2E-01	-
5	Ethyl tert-butyl ether (ETBE)	2.7E-01	-
6	Methyl tert-butyl ether (MTBE)	1.6E-01	-
7	Naphthalene	1.4E-01	-
8	Xylenes (mixed isomers)	1.2E-01	-
9	TPH - Aliphatic >C12-C16	8.9E-02	-
10	TPH - Aromatic >C16-C21	3.0E-02	-
11	TPH - Aromatic >C12-C16	2.2E-02	-
12	TPH - Aliphatic >C16-C21	4.4E-03	-
13	TPH - Aromatic >C21-C35	3.0E-03	-

Combined Surface Soil Direct Contact			
Exposure Route:		Ingestion, Dermal Contact, Inhalation of Vapors and Particulates	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Combined Direct Contact Risk	
		HQ _{max}	CR _{max}
1	<i>Dibromoethane, 1,2- (EDB)</i>	8.2E-02	<i>1.2E-04</i>
2	<i>Benzene</i>	<i>6.9E+00</i>	<i>4.3E-05</i>
3	<i>Dichloroethane, 1,2- (EDC)</i>	6.1E-02	<i>1.0E-05</i>
4	<i>Diisopropyl ether (DIPE)</i>	<i>5.1E+00</i>	-
5	<i>Tert-amyl-methyl ether (TAME)</i>	<i>2.3E+00</i>	-
6	<i>Ethyl tert-butyl ether (ETBE)</i>	<i>1.6E+00</i>	-
7	<i>Toluene</i>	<i>1.4E+00</i>	-
8	TPH - Aliphatic >C08-C10	9.6E-01	-
9	TPH - Aromatic >C10-C12	8.8E-01	-
10	Xylenes (mixed isomers)	8.4E-01	-
11	Methyl tert-butyl ether (MTBE)	7.9E-01	-
12	Methyl naphthalene, 2-	6.3E-01	-
13	Hexane, n-	5.7E-01	-
14	TPH - Aliphatic >C10-C12	4.4E-01	-
15	Naphthalene	3.2E-01	-
16	Ethyl benzene	2.4E-01	-
17	TPH - Aliphatic >C12-C16	2.3E-01	-
18	Tert-butyl alcohol (TBA)	2.1E-01	-
19	Trimethylbenzene, 1,2,4-	1.1E-01	-
20	TPH - Aliphatic >C06-C08	9.0E-02	-
21	TPH - Aromatic >C16-C21	7.6E-02	-
22	TPH - Aliphatic >C05-C06	6.7E-02	-
23	TPH - Aromatic >C12-C16	5.7E-02	-
24	Trimethylbenzene, 1,3,5-	3.5E-02	-
25	Cumene	1.9E-02	-
26	Methyl naphthalene, 1-	1.4E-02	-
27	TPH - Aliphatic >C16-C21	1.1E-02	-
28	Heptane, n-	7.9E-03	-
29	TPH - Aromatic >C21-C35	7.6E-03	-
30	Methyl cyclohexane	1.8E-03	-
31	Cyclohexane	1.2E-03	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway. Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQ_{max} > 1.0, or ii) CR_{max} > 1.0E-6.
- HQ_{max} = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CR_{max} = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.9 (page 6 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Gasoline / Petrol

Groundwater Ingestion			
Exposure Route:		Ingestion	
Source Medium:		Groundwater	
Depth to Source (m):		NA	
Rank	Constituent	Ingestion Risk	
		HQ _{max}	CR _{max}
1	<i>Dibromoethane, 1,2- (EDB)</i>	<i>6.1E+00</i>	<i>2.0E-02</i>
2	<i>Benzene</i>	<i>6.8E+02</i>	<i>1.5E-02</i>
3	<i>Dichloroethane, 1,2- (EDC)</i>	<i>1.7E+01</i>	<i>4.1E-03</i>
4	<i>Methyl tert-butyl ether (MTBE)</i>	<i>1.4E+03</i>	-
5	<i>Diisopropyl ether (DIPE)</i>	<i>5.0E+02</i>	-
6	<i>Ethyl tert-butyl ether (ETBE)</i>	<i>4.5E+02</i>	-
7	<i>Tert-amyl-methyl ether (TAME)</i>	<i>2.0E+02</i>	-
8	<i>Tert-butyl alcohol (TBA)</i>	<i>1.5E+02</i>	-
9	<i>Toluene</i>	<i>3.7E+01</i>	-
10	<i>Xylenes (mixed isomers)</i>	<i>4.7E+00</i>	-
11	<i>Ethyl benzene</i>	<i>1.7E+00</i>	-
12	TPH - Aromatic >C10-C12	7.7E-01	-
13	Methyl naphthalene, 2-	5.1E-01	-
14	Hexane, n-	3.9E-01	-
15	Trimethylbenzene, 1,2,4-	2.3E-01	-
16	Naphthalene	1.9E-01	-
17	TPH - Aliphatic > C05-C06	1.3E-01	-
18	Trimethylbenzene, 1,3,5-	6.7E-02	-
19	Cumene	3.5E-02	-
20	TPH - Aliphatic >C06-C08	2.2E-02	-
21	TPH - Aliphatic >C08-C10	1.4E-02	-
22	Methyl naphthalene, 1-	1.3E-02	-
23	TPH - Aromatic >C12-C16	6.2E-03	-
24	Cyclohexane	2.5E-03	-
25	Heptane, n-	9.3E-04	-
26	Methyl cyclohexane	7.9E-04	-
27	TPH - Aromatic >C16-C21	7.3E-04	-
28	TPH - Aliphatic >C10-C12	4.2E-04	-
29	TPH - Aliphatic >C12-C16	2.4E-06	-
30	TPH - Aromatic >C21-C35	5.9E-07	-
31	TPH - Aliphatic >C16-C21	3.0E-10	-

Notes:

1. Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQ_{max} > 1.0, or ii) CR_{max} > 1.0E-6.
2. HQ_{max} = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
3. CR_{max} = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
4. Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.10 (page 1 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Diesel / Fuel Oil

Direct NAPL Intrusion to Enclosed Space			
Exposure Route:		Inhalation	
Source Medium:		NAPL	
Depth to Source (m):		0	
Note: Saturated vapor, diluted in breathing space			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	1.2E+02	3.3E-03
2	Xylenes (mixed isomers)	1.0E+01	-
3	TPH - Aromatic >C10-C12	5.9E+00	-
4	Naphthalene	3.9E+00	-
5	TPH - Aliphatic >C08-C10	2.9E+00	-
6	TPH - Aliphatic >C10-C12	1.1E+00	-
7	Toluene	7.1E-01	-
8	TPH - Aromatic >C12-C16	6.5E-01	-
9	Ethyl benzene	5.4E-01	-
10	TPH - Aliphatic >C12-C16	5.0E-01	-
11	Biphenyl, 1,1-	2.4E-01	-
12	TPH - Aliphatic >C06-C08	1.4E-01	-
13	Trimethylbenzene, 1,3,5-	9.9E-02	-
14	Cumene	2.4E-02	-
15	Benzo-a-pyrene	2.2E-06	2.1E-11
16	Benzo-b-fluoranthene	-	6.4E-13
17	Benzo-a-anthracene	-	2.5E-13
18	Chrysene	-	1.7E-14
19	Indeno-1,2,3-cd-pyrene	-	6.2E-17

Outdoor Inhalation - Vapors and Particulates			
Exposure Route:		Inhalation	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	1.9E-02	5.4E-07
2	Naphthalene	9.3E-03	-
3	TPH - Aromatic >C10-C12	7.8E-03	-
4	Xylenes (mixed isomers)	6.6E-03	-
5	TPH - Aromatic >C12-C16	2.0E-03	-
6	Biphenyl, 1,1-	1.2E-03	-
7	TPH - Aliphatic >C08-C10	5.8E-04	-
8	TPH - Aliphatic >C10-C12	5.1E-04	-
9	TPH - Aliphatic >C12-C16	4.8E-04	-
10	Toluene	1.7E-04	-
11	Ethyl benzene	1.6E-04	-
12	Benzo-a-pyrene	1.0E-05	9.4E-11
13	Trimethylbenzene, 1,3,5-	4.8E-05	-
14	Cumene	1.5E-05	-
15	TPH - Aliphatic >C06-C08	1.3E-05	-
16	Benzo-a-anthracene	-	1.4E-13
17	Benzo-b-fluoranthene	-	7.3E-14
18	Indeno-1,2,3-cd-pyrene	-	1.2E-14
19	Chrysene	-	1.5E-15

Notes:

1. Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
2. HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
3. CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
4. Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.10 (page 2 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Diesel / Fuel Oil

Outdoor Inhalation - Vapors			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	9.3E-03	2.6E-07
2	Xylenes (mixed isomers)	7.2E-04	-
3	Naphthalene	7.2E-04	-
4	TPH - Aromatic >C10-C12	6.1E-04	-
5	TPH - Aliphatic >C08-C10	1.6E-04	-
6	TPH - Aromatic >C12-C16	1.1E-04	-
7	TPH - Aliphatic >C10-C12	6.2E-05	-
8	Biphenyl, 1,1-	5.1E-05	-
9	Toluene	5.0E-05	-
10	Ethyl benzene	3.2E-05	-
11	TPH - Aliphatic >C12-C16	2.7E-05	-
12	TPH - Aliphatic >C06-C08	7.6E-06	-
13	Trimethylbenzene, 1,3,5-	5.3E-06	-
14	Cumene	1.1E-06	-
15	Benzo-a-pyrene	7.9E-10	7.3E-15
16	Benzo-a-anthracene	-	8.4E-17
17	Benzo-b-fluoranthene	-	7.9E-17
18	Chrysene	-	2.4E-18
19	Indeno-1,2,3-cd-pyrene	-	9.7E-21

Indoor Vapor Intrusion (Convection Driven)			
Exposure Route:		Inhalation	
Source Medium:		Subsurface Soil	
Depth to Source (m):		0.15	
Note: Assumes no biodegradation			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	4.4E+00	1.3E-04
2	Xylenes (mixed isomers)	3.2E-01	-
3	TPH - Aromatic >C10-C12	2.5E-01	-
4	TPH - Aliphatic >C08-C10	1.2E-01	-
5	Naphthalene	9.8E-02	-
6	TPH - Aliphatic >C10-C12	4.8E-02	-
7	TPH - Aromatic >C12-C16	2.8E-02	-
8	Toluene	2.7E-02	-
9	TPH - Aliphatic >C12-C16	2.1E-02	-
10	Ethyl benzene	1.7E-02	-
11	Biphenyl, 1,1-	5.9E-03	-
12	TPH - Aliphatic >C06-C08	5.9E-03	-
13	Trimethylbenzene, 1,3,5-	2.6E-03	-
14	Cumene	6.8E-04	-
15	Benzo-a-pyrene	5.5E-08	5.1E-13
16	Benzo-b-fluoranthene	-	6.2E-15
17	Benzo-a-anthracene	-	5.9E-15
18	Chrysene	-	1.9E-16
19	Indeno-1,2,3-cd-pyrene	-	6.8E-19

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
- HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.10 (page 3 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Diesel / Fuel Oil

Indoor Vapor Intrusion (Diffusion Driven)			
Exposure Route:		Inhalation	
Source Medium:		Subsurface Soil	
Depth to Source (m):		0.15	
Note: Assumes no biodegradation			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	3.3E+01	9.4E-04
2	Xylenes (mixed isomers)	3.2E+00	-
3	TPH - Aromatic >C10-C12	2.0E+00	-
4	Naphthalene	1.1E+00	-
5	TPH - Aliphatic >C08-C10	9.9E-01	-
6	TPH - Aliphatic >C10-C12	3.8E-01	-
7	Toluene	2.3E-01	-
8	TPH - Aromatic >C12-C16	2.2E-01	-
9	TPH - Aliphatic >C12-C16	1.7E-01	-
10	Ethyl benzene	1.7E-01	-
11	Biphenyl, 1,1-	6.7E-02	-
12	TPH - Aliphatic >C06-C08	4.7E-02	-
13	Trimethylbenzene, 1,3,5-	2.9E-02	-
14	Cumene	7.2E-03	-
15	Benzo-a-pyrene	6.2E-07	5.7E-12
16	Benzo-b-fluoranthene	-	1.1E-13
17	Benz-a-anthracene	-	6.8E-14
18	Chrysene	-	3.1E-15
19	Indeno-1,2,3-cd-pyrene	-	1.1E-17

Indoor Vapor Intrusion (Convection Driven)			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Note: Assumes no biodegradation			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	1.9E+00	5.4E-05
2	Xylenes (mixed isomers)	1.4E-01	-
3	TPH - Aromatic >C10-C12	1.2E-01	-
4	Naphthalene	7.2E-02	-
5	TPH - Aliphatic >C08-C10	3.9E-02	-
6	TPH - Aromatic >C12-C16	1.7E-02	-
7	TPH - Aliphatic >C10-C12	1.5E-02	-
8	Toluene	1.1E-02	-
9	Ethyl benzene	6.9E-03	-
10	TPH - Aliphatic >C12-C16	6.8E-03	-
11	Biphenyl, 1,1-	4.6E-03	-
12	TPH - Aliphatic >C06-C08	1.9E-03	-
13	Trimethylbenzene, 1,3,5-	1.1E-03	-
14	Cumene	2.5E-04	-
15	Benzo-a-pyrene	4.7E-08	4.3E-13
16	Benzo-b-fluoranthene	-	5.2E-15
17	Benz-a-anthracene	-	5.0E-15
18	Chrysene	-	1.6E-16
19	Indeno-1,2,3-cd-pyrene	-	5.8E-19

Notes:

1. Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-5.
2. HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
3. CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
4. Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.10 (page 4 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Diesel / Fuel Oil

Indoor Vapor Intrusion (Diffusion Driven)			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Note: Assumes no biodegradation			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	1.6E+00	1.1E-04
2	Xylenes (mixed isomers)	1.3E-01	-
3	Naphthalene	1.2E-01	-
4	TPH - Aromatic >C10-C12	1.1E-01	-
5	TPH - Aliphatic >C08-C10	2.8E-02	-
6	TPH - Aromatic >C12-C16	1.9E-02	-
7	TPH - Aliphatic >C10-C12	1.1E-02	-
8	Toluene	8.8E-03	-
9	Biphenyl, 1,1-	8.5E-03	-
10	Ethyl benzene	5.6E-03	-
11	TPH - Aliphatic >C12-C16	4.8E-03	-
12	TPH - Aliphatic >C06-C08	1.3E-03	-
13	Trimethylbenzene, 1,3,5-	9.3E-04	-
14	Cumene	1.9E-04	-
15	Benzo-a-pyrene	1.3E-07	2.7E-12
16	Benzo-b-fluoranthene	-	3.2E-14
17	Benz-a-anthracene	-	3.2E-14
18	Chrysene	-	9.7E-16
19	Indeno-1,2,3-cd-pyrene	-	3.9E-18

Surface Soil Ingestion			
Exposure Route:		Ingestion	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Ingestion Risk	
		HQmax	CRmax
1	TPH - Aliphatic >C12-C16	5.0E+00	-
2	Methyl naphthalene, 2-	4.9E+00	-
3	TPH - Aromatic >C12-C16	3.2E+00	-
4	TPH - Aromatic >C10-C12	2.2E+00	-
5	Benzene	3.4E-01	1.9E-06
6	Benzo-a-pyrene	7.3E-03	1.2E-06
7	TPH - Aliphatic >C10-C12	8.7E-01	-
8	TPH - Aliphatic >C16-C21	3.4E-01	-
9	Naphthalene	2.4E-01	-
10	TPH - Aliphatic >C08-C10	2.2E-01	-
11	Methyl naphthalene, 1-	1.5E-01	-
12	Toluene	5.7E-02	-
13	Phenanthrene	4.5E-02	-
14	Fluorene	3.7E-02	-
15	Xylenes (mixed isomers)	2.9E-02	-
16	Ethyl benzene	2.1E-02	-
17	Biphenyl, 1,1-	2.0E-02	-
18	TPH - Aromatic >C16-C21	1.4E-02	-
19	Trimethylbenzene, 1,3,5-	1.3E-02	-
20	Fluoranthene	2.7E-03	9.8E-09
21	Pyrene	3.1E-03	-
22	Benz-a-anthracene	4.6E-04	2.1E-09
23	Benzo-b-fluoranthene	2.5E-04	1.1E-09
24	Cumene	7.6E-04	-
25	Indeno-1,2,3-cd-pyrene	1.2E-04	5.7E-10
26	Anthracene	4.1E-04	-
27	TPH - Aliphatic >C06-C08	3.6E-04	-
28	Chrysene	6.7E-05	3.1E-10
29	TPH - Aromatic >C21-C35	2.3E-04	-
30	Benzo-e-pyrene	3.0E-05	-
31	Benzo-g,h,i-perylene	1.1E-05	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway. Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
- HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.10 (page 5 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Diesel / Fuel Oil

Surface Soil Dermal Contact			
Exposure Route:		Dermal Contact	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Dermal Contact Risk	
		HQmax	CRmax
1	<i>Benzo-a-pyrene</i>	6.0E-03	<i>5.5E-06</i>
2	<i>TPH - Aliphatic >C12-C16</i>	<i>3.1E+00</i>	-
3	<i>TPH - Aromatic >C12-C16</i>	<i>2.0E+00</i>	-
4	TPH - Aliphatic >C16-C21	2.1E-01	-
5	Naphthalene	2.0E-01	-
6	Fluoranthene	2.2E-03	4.3E-08
7	Phenanthrene	3.7E-02	-
8	Fluorene	3.0E-02	-
9	Biphenyl, 1,1-	2.6E-02	-
10	Benz-a-anthracene	3.7E-04	9.3E-09
11	TPH - Aromatic >C16-C21	9.1E-03	-
12	Xylenes (mixed isomers)	5.5E-03	-
13	Benzo-b-fluoranthene	2.0E-04	5.0E-09
14	Pyrene	2.6E-03	-
15	Chrysene	5.5E-05	1.4E-09
16	Anthracene	3.3E-04	-
17	Indeno-1,2,3-cd-pyrene	9.2E-06	2.3E-10
18	TPH - Aromatic >C21-C35	1.5E-04	-
19	Benzo-e-pyrene	2.8E-05	-
20	Benzo-g,h,i-perylene	9.2E-06	-

Combined Surface Soil Direct Contact			
Exposure Route:		Ingestion, Dermal Contact, Inhalation of Vapors and Particulates	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Combined Direct Contact Risk	
		HQmax	CRmax
1	<i>TPH - Aliphatic >C12-C16</i>	<i>8.1E+00</i>	-
2	<i>Benzo-a-pyrene</i>	1.3E-02	<i>6.7E-06</i>
3	<i>TPH - Aromatic >C12-C16</i>	<i>5.1E+00</i>	-
4	<i>Methyl naphthalene, 2-</i>	<i>4.9E+00</i>	-
5	<i>Benzene</i>	3.6E-01	<i>2.4E-06</i>
6	<i>TPH - Aromatic >C10-C12</i>	<i>2.2E+00</i>	-
7	TPH - Aliphatic >C10-C12	8.7E-01	-
8	TPH - Aliphatic >C16-C21	5.6E-01	-
9	Naphthalene	4.4E-01	-
10	TPH - Aliphatic >C08-C10	2.2E-01	-
11	Methyl naphthalene, 1-	1.5E-01	-
12	Phenanthrene	8.1E-02	-
13	Fluorene	6.7E-02	-
14	Toluene	5.7E-02	-
15	Fluoranthene	4.8E-03	5.3E-08
16	Biphenyl, 1,1-	4.7E-02	-
17	Xylenes (mixed isomers)	4.1E-02	-
18	TPH - Aromatic >C16-C21	2.4E-02	-
19	Ethyl benzene	2.1E-02	-
20	Trimethylbenzene, 1,3,5-	1.3E-02	-
21	Benz-a-anthracene	8.3E-04	1.1E-08
22	Benzo-b-fluoranthene	4.5E-04	6.2E-09
23	Pyrene	5.7E-03	-
24	Chrysene	1.2E-04	1.7E-09
25	Indeno-1,2,3-cd-pyrene	1.3E-04	8.0E-10
26	Cumene	7.8E-04	-
27	Anthracene	7.4E-04	-
28	TPH - Aromatic >C21-C35	3.8E-04	-
29	TPH - Aliphatic >C06-C08	3.8E-04	-
30	Benzo-e-pyrene	5.8E-05	-
31	Benzo-g,h,i-perylene	2.0E-05	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
- HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.10 (page 6 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Diesel / Fuel Oil

Groundwater Ingestion			
Exposure Route:		Ingestion	
Source Medium:		Groundwater	
Depth to Source (m):		NA	
Rank	Constituent	Ingestion Risk	
		HQmax	CRmax
1	Benzene	6.0E+01	1.3E-03
2	Methyl naphthalene, 2-	6.8E+00	-
3	TPH - Aromatic >C10-C12	3.3E+00	-
4	Toluene	2.5E+00	-
5	TPH - Aromatic >C12-C16	9.6E-01	-
6	Naphthalene	4.6E-01	-
7	Xylenes (mixed isomers)	3.8E-01	-
8	Ethyl benzene	2.6E-01	-
9	Methyl naphthalene, 1-	2.4E-01	-
10	Trimethylbenzene, 1,3,5-	4.3E-02	-
11	Biphenyl, 1,1-	7.8E-03	-
12	TPH - Aliphatic >C08-C10	5.6E-03	-
13	Fluorene	3.4E-03	-
14	Cumene	2.5E-03	-
15	Phenanthrene	1.6E-03	-
16	TPH - Aliphatic >C10-C12	1.5E-03	-
17	TPH - Aromatic >C16-C21	3.9E-04	-
18	Fluoranthene	2.1E-05	3.1E-10
19	Benzo-a-pyrene	3.7E-07	2.5E-10
20	TPH - Aliphatic >C06-C08	1.5E-04	-
21	TPH - Aliphatic >C12-C16	1.5E-04	-
22	Pyrene	1.7E-05	-
23	Benzo-a-anthracene	1.5E-07	2.7E-12
24	Anthracene	7.8E-07	-
25	Benzo-b-fluoranthene	1.2E-08	2.1E-13
26	Chrysene	3.7E-09	6.8E-14
27	TPH - Aromatic >C21-C35	5.0E-08	-
28	TPH - Aliphatic >C16-C21	2.5E-08	-
29	Indeno-1,2,3-cd-pyrene	7.8E-11	1.4E-15
30	Benzo-e-pyrene	8.1E-10	-
31	Benzo-g,h,i-perylene	8.3E-11	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
- HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.11 (page 1 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Kerosene / Jet Fuel

Direct NAPL Intrusion to Enclosed Space			
Exposure Route:		Inhalation	
Source Medium:		NAPL	
Depth to Source (m):		0	
Note: Saturated vapor, diluted in breathing space			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	5.9E+2	1.7E-2
2	Xylenes (mixed isomers)	6.2E+1	-
3	TPH - Aliphatic >C08-C10	5.2E+1	-
4	TPH - Aliphatic >C05-C06	2.1E+1	-
5	TPH - Aliphatic >C06-C08	1.7E+1	-
6	TPH - Aromatic >C10-C12	5.6E+0	-
7	TPH - Aliphatic >C10-C12	5.4E+0	-
8	Toluene	3.5E+0	-
9	Naphthalene	3.5E+0	-
10	Ethyl benzene	2.5E+0	-
11	n-Heptane	1.6E+0	-
12	TPH - Aromatic >C12-C16	8.2E-1	-
13	Trimethylbenzene, 1,3,5-	5.4E-1	-
14	TPH - Aliphatic >C12-C16	3.5E-1	-

Outdoor Inhalation - Vapors and Particulates			
Exposure Route:		Inhalation	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	9.6E-2	2.7E-6
2	Xylenes (mixed isomers)	4.0E-2	-
3	TPH - Aliphatic >C08-C10	1.0E-2	-
4	Naphthalene	8.3E-3	-
5	TPH - Aromatic >C10-C12	7.4E-3	-
6	TPH - Aromatic >C12-C16	2.5E-3	-
7	TPH - Aliphatic >C10-C12	2.4E-3	-
8	TPH - Aliphatic >C06-C08	1.6E-3	-
9	TPH - Aliphatic >C05-C06	1.3E-3	-
10	Toluene	8.5E-4	-
11	Ethyl benzene	7.3E-4	-
12	TPH - Aliphatic >C12-C16	3.4E-4	-
13	Trimethylbenzene, 1,3,5-	2.6E-4	-
14	n-Heptane	1.3E-4	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway. Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
- HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.11 (page 2 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Kerosene / Jet Fuel

Outdoor Inhalation - Vapors			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	4.7E-2	1.3E-6
2	Xylenes (mixed isomers)	4.3E-3	-
3	TPH - Aliphatic >C08-C10	2.8E-3	-
4	TPH - Aliphatic >C05-C06	1.1E-3	-
5	TPH - Aliphatic >C06-C08	9.2E-4	-
6	Naphthalene	6.4E-4	-
7	TPH - Aromatic >C10-C12	5.8E-4	-
8	TPH - Aliphatic >C10-C12	3.0E-4	-
9	Toluene	2.4E-4	-
10	Ethyl benzene	1.5E-4	-
11	TPH - Aromatic >C12-C16	1.4E-4	-
12	n-Heptane	5.8E-5	-
13	Trimethylbenzene, 1,3,5-	2.9E-5	-
14	TPH - Aliphatic >C12-C16	1.9E-5	-

Indoor Vapor Intrusion (Convection Driven)			
Exposure Route:		Inhalation	
Source Medium:		Subsurface Soil	
Depth to Source (m):		0.15	
Note: Assumes no biodegradation			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	2.2E+1	6.3E-4
2	TPH - Aliphatic >C08-C10	2.2E+0	-
3	Xylenes (mixed isomers)	1.9E+0	-
4	TPH - Aliphatic >C05-C06	8.9E-1	-
5	TPH - Aliphatic >C06-C08	7.2E-1	-
6	TPH - Aromatic >C10-C12	2.4E-1	-
7	TPH - Aliphatic >C10-C12	2.3E-1	-
8	Toluene	1.3E-1	-
9	Naphthalene	8.7E-2	-
10	Ethyl benzene	8.1E-2	-
11	n-Heptane	4.6E-2	-
12	TPH - Aromatic >C12-C16	3.5E-2	-
13	TPH - Aliphatic >C12-C16	1.5E-2	-
14	Trimethylbenzene, 1,3,5-	1.4E-2	-

Notes:

1. Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
2. HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
3. CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
4. Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.11 (page 3 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Kerosene / Jet Fuel

Indoor Vapor Intrusion (Diffusion Driven)			
Exposure Route:		Inhalation	
Source Medium:		Subsurface Soil	
Depth to Source (m):		0.15	
Note: Assumes no biodegradation			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	1.9E+2	5.4E-3
2	Xylenes (mixed isomers)	1.9E+1	-
3	TPH - Aliphatic >C08-C10	1.8E+1	-
4	TPH - Aliphatic >C06-C08	5.8E+0	-
5	TPH - Aliphatic >C05-C06	2.3E+0	-
6	TPH - Aromatic >C10-C12	1.9E+0	-
7	TPH - Aliphatic >C10-C12	1.8E+0	-
8	Toluene	1.1E+0	-
9	Naphthalene	9.7E-1	-
10	Ethyl benzene	7.8E-1	-
11	n-Heptane	4.8E-1	-
12	TPH - Aromatic >C12-C16	2.8E-1	-
13	Trimethylbenzene, 1,3,5-	1.6E-1	-
14	TPH - Aliphatic >C12-C16	1.2E-1	-

Indoor Vapor Intrusion (Convection Driven)			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Note: Assumes no biodegradation			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	9.7E+0	2.7E-4
2	Xylenes (mixed isomers)	8.6E-1	-
3	TPH - Aliphatic >C08-C10	7.1E-1	-
4	TPH - Aliphatic >C05-C06	2.8E-1	-
5	TPH - Aliphatic >C06-C08	2.3E-1	-
6	TPH - Aromatic >C10-C12	1.1E-1	-
7	TPH - Aliphatic >C10-C12	7.3E-2	-
8	Naphthalene	6.4E-2	-
9	Toluene	5.3E-2	-
10	Ethyl benzene	3.2E-2	-
11	TPH - Aromatic >C12-C16	2.1E-2	-
12	n-Heptane	1.4E-2	-
13	Trimethylbenzene, 1,3,5-	6.1E-3	-
14	TPH - Aliphatic >C12-C16	4.7E-3	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway. Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
- HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.11 (page 4 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Kerosene / Jet Fuel

Indoor Vapor Intrusion (Diffusion Driven)			
Exposure Route:		Inhalation	
Source Medium:		Groundwater	
Depth to Source (m):		3	
Note: Assumes no biodegradation			
Rank	Constituent	Inhalation Risk	
		HQmax	CRmax
1	Benzene	8.2E+0	5.4E-4
2	Xylenes (mixed isomers)	7.5E-1	-
3	TPH - Aliphatic >C08-C10	5.0E-1	-
4	TPH - Aliphatic >C05-C06	2.0E-1	-
5	TPH - Aliphatic >C06-C08	1.6E-1	-
6	Naphthalene	1.1E-1	-
7	TPH - Aromatic >C10-C12	1.0E-1	-
8	TPH - Aliphatic >C10-C12	5.2E-2	-
9	Toluene	4.3E-2	-
10	Ethyl benzene	2.6E-2	-
11	TPH - Aromatic >C12-C16	2.3E-2	-
12	n-Heptane	1.0E-2	-
13	Trimethylbenzene, 1,3,5-	5.1E-3	-
14	TPH - Aliphatic >C12-C16	3.4E-3	-

Surface Soil Ingestion			
Exposure Route:		Ingestion	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Ingestion Risk	
		HQmax	CRmax
1	Benzene	2.0E+0	1.1E-5
2	TPH - Aliphatic >C10-C12	4.7E+0	-
3	TPH - Aromatic >C12-C16	4.5E+0	-
4	TPH - Aliphatic >C08-C10	4.4E+0	-
5	Methyl naphthalene, 2-	4.3E+0	-
6	TPH - Aliphatic >C12-C16	3.9E+0	-
7	TPH - Aromatic >C10-C12	2.3E+0	-
8	Toluene	3.1E-1	-
9	TPH - Aromatic >C16-C21	2.8E-1	-
10	Naphthalene	2.4E-1	-
11	Xylenes (mixed isomers)	2.0E-1	-
12	Methyl naphthalene, 1-	1.2E-1	-
13	Ethyl benzene	1.1E-1	-
14	Trimethylbenzene, 1,3,5-	7.8E-2	-
15	TPH - Aliphatic >C06-C08	5.0E-2	-
16	TPH - Aliphatic >C16-C21	2.3E-2	-
17	Phenanthrene	2.3E-2	-
18	TPH - Aliphatic >C05-C06	1.2E-2	-
19	Acenaphthylene	1.4E-3	6.5E-9
20	n-Heptane	5.7E-3	-
21	TPH - Aromatic >C21-C35	5.2E-3	-
22	Fluorene	1.6E-3	-
23	Fluoranthene	3.4E-4	1.2E-9
24	Acenaphthene	1.2E-3	6.8E-10
25	Pyrene	1.3E-4	-
26	Anthracene	6.3E-6	-

Notes:

1. Table presents ranking of risk-driving fuel constituents by exposure pathway. Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQmax > 1.0, or ii) CRmax > 1.0E-6.
2. HQmax = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
3. CRmax = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
4. Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.11 (page 5 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Kerosene / Jet Fuel

Surface Soil Dermal Contact			
Exposure Route:		Dermal Contact	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Dermal Contact Risk	
		HQ _{max}	CR _{max}
1	<i>TPH - Aromatic >C12-C16</i>	<i>2.8E+0</i>	-
2	<i>TPH - Aliphatic >C12-C16</i>	<i>2.5E+0</i>	-
3	Naphthalene	2.0E-1	-
4	TPH - Aromatic >C16-C21	1.8E-1	-
5	Xylenes (mixed isomers)	3.7E-2	-
6	Acenaphthylene	1.2E-3	2.9E-8
7	Phenanthrene	1.9E-2	-
8	TPH - Aliphatic >C16-C21	1.5E-2	-
9	Fluoranthene	2.8E-4	5.5E-9
10	TPH - Aromatic >C21-C35	3.3E-3	-
11	Acenaphthene	1.0E-3	3.0E-9
12	Fluorene	1.3E-3	-
13	Pyrene	1.0E-4	-
14	Anthracene	5.1E-6	-

Combined Surface Soil Direct Contact			
Exposure Route:		Ingestion, Dermal Contact, Inhalation of Vapors and Particulates	
Source Medium:		Surface Soil	
Depth to Source (m):		0	
Rank	Constituent	Combined Direct Contact Risk	
		HQ _{max}	CR _{max}
1	<i>Benzene</i>	<i>2.1E+0</i>	<i>1.3E-5</i>
2	<i>TPH - Aromatic >C12-C16</i>	<i>7.3E+0</i>	-
3	<i>TPH - Aliphatic >C12-C16</i>	<i>6.4E+0</i>	-
4	<i>TPH - Aliphatic >C10-C12</i>	<i>4.7E+0</i>	-
5	<i>TPH - Aliphatic >C08-C10</i>	<i>4.4E+0</i>	-
6	<i>Methyl naphthalene, 2-</i>	<i>4.3E+0</i>	-
7	<i>TPH - Aromatic >C10-C12</i>	<i>2.3E+0</i>	-
8	TPH - Aromatic >C16-C21	4.6E-1	-
9	Naphthalene	4.5E-1	-
10	Toluene	3.1E-1	-
11	Xylenes (mixed isomers)	2.7E-1	-
12	Methyl naphthalene, 1-	1.2E-1	-
13	Ethyl benzene	1.1E-1	-
14	Trimethylbenzene, 1,3,5-	7.8E-2	-
15	TPH - Aliphatic >C06-C08	5.2E-2	-
16	Phenanthrene	4.1E-2	-
17	TPH - Aliphatic >C16-C21	3.8E-2	-
18	Acenaphthylene	2.6E-3	3.5E-8
19	TPH - Aliphatic >C05-C06	1.3E-2	-
20	TPH - Aromatic >C21-C35	8.5E-3	-
21	Fluoranthene	6.1E-4	6.7E-9
22	n-Heptane	5.8E-3	-
23	Acenaphthene	2.2E-3	3.7E-9
24	Fluorene	3.0E-3	-
25	Pyrene	2.3E-4	-
26	Anthracene	1.1E-5	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway. Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQ_{max} > 1.0, or ii) CR_{max} > 1.0E-6.
- HQ_{max} = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CR_{max} = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.

Table S.11 (page 6 of 6)

Relative Upper-Bound Risk Due to Exposure to Fuel Constituents: Kerosene / Jet Fuel

Groundwater Ingestion			
Exposure Route:		Ingestion	
Source Medium:		Groundwater	
Depth to Source (m):		NA	
Rank	Constituent	Ingestion Risk	
		HQ _{max}	CR _{max}
1	<i>Benzene</i>	<i>3.0E+2</i>	<i>6.7E-3</i>
2	<i>Toluene</i>	<i>1.2E+1</i>	-
3	<i>Methyl naphthalene, 2-</i>	<i>5.3E+0</i>	-
4	<i>TPH - Aromatic >C10-C12</i>	<i>3.1E+0</i>	-
5	<i>Xylenes (mixed isomers)</i>	<i>2.2E+0</i>	-
6	<i>Ethyl benzene</i>	<i>1.2E+0</i>	-
7	<i>TPH - Aromatic >C12-C16</i>	<i>1.2E+0</i>	-
8	Naphthalene	4.1E-1	-
9	Trimethylbenzene, 1,3,5-	2.3E-1	-
10	Methyl naphthalene, 1-	1.7E-1	-
11	TPH - Aliphatic >C08-C10	1.0E-1	-
12	TPH - Aliphatic >C05-C06	3.6E-2	-
13	TPH - Aliphatic >C06-C08	1.9E-2	-
14	TPH - Aliphatic >C10-C12	7.0E-3	-
15	TPH - Aromatic >C16-C21	6.7E-3	-
16	Acenaphthylene	2.5E-4	4.6E-9
17	n-Heptane	1.1E-3	-
18	Phenanthrene	7.2E-4	-
19	Acenaphthene	2.3E-4	5.2E-10
20	Fluorene	1.4E-4	-
21	TPH - Aliphatic >C12-C16	1.0E-4	-
22	Fluoranthene	2.4E-6	3.5E-11
23	TPH - Aromatic >C21-C35	1.0E-6	-
24	Pyrene	5.8E-7	-
25	Anthracene	1.1E-8	-
26	TPH - Aliphatic >C16-C21	1.5E-9	-

Notes:

- Table presents ranking of risk-driving fuel constituents by exposure pathway.
Constituent risk rank based on maximum degree of exceedance of either of two criteria: i) HQ_{max} > 1.0, or ii) CR_{max} > 1.0E-6.
- HQ_{max} = Maximum estimated hazard quotient: Risks assume upper-end average concentration of each constituent in the fuel.
- CR_{max} = Maximum estimated cancer risk: Risks assume upper-end average concentration of each constituent in the fuel.
- Constituents listed in bold italics are identified on Table 9 as potentially risk-driving Constituents of Potential Concern (COPCs) for the corresponding pathway.