APPENDIX D-3C

INHALATION RISK ASSESSMENT FOR SHELL POLYMERS MONACA BEAVER COUNTY, PENNSYLVANIA

September 2024 (Revised May 2025, September 2025, October 2025)

Inhalation Risk Assessment

1.0 GENERAL DISCUSSION

This inhalation risk assessment for Shell Chemical Appalachia LLC (Shell) Polymers Monaca (SPM) evaluates the potential cancer and non-cancer inhalation risks from the compounds of potential concern (COPC) emitted from the facility. The approach used to conduct the assessment is based on guidance provided by the Pennsylvania Department of Environmental Protection (DEP) as outlined in the approved Inhalation Risk Assessment Protocol.[1]

1.1 Chronic Cancer and Non-cancer Risks

Chronic cancer and non-cancer impacts were estimated for each COPC at approximately 10,000 habitable points on a receptor grid surrounding SPM. As detailed in Appendix D-3B, dispersion factors having the unit of microgram per cubic meter ($\mu g/m^3$) per pound per hour (lb/hr) were determined for each receptor by modeling a unit emission rate of 1 lb/hr from each emission source at SPM. The resulting dispersion factors were then multiplied by the estimated annual hourly average emissions rate for each COPC from each emission source to obtain pollutant-specific concentrations. Annual average emission rates used in this analysis are summarized in Tables 2a and 2b in Appendix D-3A. For the chronic excess lifetime cancer risk (ELCR), the concentration of each pollutant at each receptor was multiplied by the compound-specific unit risk factor. The compound-specific unit risk factors used in the ELCR calculation are presented in Table 1 herein and have been updated from those used in the previous analysis based on data from the Risk Assessment Information System (RAIS) database and discussion with DEP.[2] Compound-specific unit risk factors for the chronic cancer risk analysis are based on a conservative basis of a continuous exposure over a 70-year lifetime (i.e., a person remained in that location for 24 hours per day, 365 days per year for 70 years). For COPCs that have a mutagenic mode of action (i.e., benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, indeno[1,2,3-cd]pyrene, hexavalent chromium, chrysene, dibenzo[a,h]anthracene, 7,12-

[1] Email from A. Binder, DEP to P. May, RTP Environmental Assoc., January 12, 2015.
[2] http://rais.ornl.gov.

dimethylbenz[a]anthracene, formaldehyde, 3-methylcholanthrene, methylene chloride, and vinyl chloride), an age-dependent adjustment factor (ADAF) of 1.63 was applied[3]. The ADAF-adjusted values account for increased susceptibility to cancer and tumor development in children from exposure to mutagens.

The aggregate ELCR was then determined for each receptor by summing the individual COPC ELCR. Table 2 presents the aggregate ELCR and Chronic HQ for the maximum receptor. All calculations and a Python script for combining the dispersion factors, emission rates, and health risk values are provided electronically along with the AERMOD input and output files. As shown in Figure 1, the receptor with the highest ELCR is located on the fenceline of SPM. The ELCR at the maximum receptor is 0.89 in 100,000 (*i.e.,*8.93E-6) which is less than DEP's inhalation risk management facility-wide target level of cancer risk of 1 in 100,000 (i.e., 1eE-5).

For the chronic non-cancer risk, the concentration of each pollutant at each receptor was divided by the compound-specific inhalation reference concentration (RfC) to determine the hazard quotient (HQ) for that COPC. Chronic non-cancer reference concentrations are designed to address continuous exposures from one year up to a lifetime. The inhalation reference concentrations used for this analysis are presented in Table 1. As with the unit risk factors, the RfCs were updated using the RAIS database and discussion with DEP. The aggregate health index (HI) was determined for each receptor by summing the individual COPC HQ values. The HQ for each COPC and the aggregate HI at each receptor, along with supporting calculations, are provided electronically. As shown in Figure 1, the receptor with the highest HI is located on SPM's fenceline. The HI at this receptor is 0.18, which is less than DEP's inhalation risk management facility-wide target level for non-cancer HI of 0.25.

The maximum aggregate ELCR and chronic HI both occur on SPM's fenceline, in locations zoned as industrial, where individuals would not be expected to remain for extended periods. Based on the magnitude and location of the maximum impacts, SPM is not expected to result in adverse chronic health effects in the surrounding area.

[3] EPA Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens, March 2005.

1.2 Acute Non-cancer Risks

To assess the potential for acute health impacts resulting from SPM, dispersion factors were obtained using AERMOD by modeling a unit emission rate of 1 lb/hr for each emission source for the 1-hour averaging period. The resulting dispersion factor ($\mu g/m^3$ per lb/hr) for each emission source at each receptor was then multiplied by the source's estimated hourly emission rate to obtain pollutant-specific concentrations for each source, for each COPC, at each receptor. Hourly emission rates used in this analysis are summarized in Tables 3a and 3b in Appendix D-3A. The resulting pollutant-specific concentration for each source was then summed on a receptor-by-receptor basis to obtain the total facility-wide 1-hour concentration for each COPC. This approach is conservative because it assumes that for each receptor, the maximum impact from each emission source occurs during the same hour, which it does not. Although this results in an overestimate of the acute health effects, this conservative assumption eliminates the need to perform an individual AERMOD run for each of the individual COPCs that has an acute inhalation RfC.

The acute HQ was determined for a one-hour average exposure to each COPC at all points in the receptor grid. For each pollutant, the highest 1-hour concentration was divided by compound-specific inhalation RfC values derived from short-term exposure levels to determine the HQ for each pollutant. The compound-specific inhalation RfC values are presented in Table 1. As with the unit risk factors, the RfCs were updated using the RAIS database. Each HQ was then compared to the threshold of 1.0, the level at which no adverse effect would be expected from the exposure per DEP guidance. As presented in Table 3, the HQ for each COPC is less than 1. The pollutant with the highest HQ is hexavalent chromium, with an HQ of 0.64. This is below the threshold of 1, even with the conservative approach utilized in this analysis. As shown in Figure 1, the receptor with the highest acute HQ is located on SPM's fenceline. It's unlikely that an individual would be located on or along this location for an hour. Given the magnitude and location of the maximum acute impact, SPM is not expected to result in adverse acute health effects in the surrounding area.

1.3 Sensitive Receptors

The following sensitive receptors are in the vicinity of SPM, and the referenced distances to the receptors are measured from the center of SPM.

- The nearest school is Todd Lane Elementary School, approximately 2 miles southeast of SPM.
- The nearest daycare or pre-school is Tiny Sprouts Daycare Center, approximately 1.3 miles southeast of SPM.
- The nearest church is located approximately 1 mile east of SPM.
- The nearest hospital is Heritage Valley Beaver Hospital, approximately 2.9 miles north of SPM.
- The nearest convalescent home is Brighton Rehabilitation and Wellness Center, approximately 2.4 miles north of SPM.

Given the distance between these sites and the maximum receptors identified in Figure 1, and the low model-predicted concentrations at the sites, SPM is not expected to result in adverse health effects at these sensitive receptors. This health risk analysis assumes a lifetime exposure for the purpose of cancer risk and chronic non-cancer risk. The actual exposure duration at sensitive receptors would be significantly less than the assumption of 70 years of continuous exposure.

Table 1. Chronic and Acute Risk Factors for Inhalation Risk Assessment[1]

Compound of Potential Concern	Chemical Abstracts Service (CAS) Number	Inhalation Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Unit Risk Reference	Chronic Inhalation Reference Concentration (mg/m^3)	Chronic Inhalation Reference Concentration Reference	Acute Inhalation Reference Concentration (mg/m^3)	Acute Inhalation Reference Concentration Reference
Acenaphthene	83-32-9						
Acenaphthylene	208-96-8						
Acetaldehyde	75-07-0	2.20E-06	IRIS	0.009	IRIS	0.47	CALEPA
Acrolein	107-02-8			2.00E-05	IRIS	0.0025	Cal OEHHA
Ammonia	7664-41-7			0.2	Cal OEHHA	1.18	ATSDR Final
Anthracene	120-12-7					0.03	NIOSH
Arsenic, Inorganic	7440-38-2	4.30E-03	IRIS	1.50E-05	IRIS	2.00E-04	CALEPA
Barium	7440-39-3			5.00E-04	HEAST	0.075	DEP
Benzene	71-43-2	7.80E-06	IRIS	0.003	Cal OEHHA	0.027	Cal OEHHA
Benzo[a]anthracene	56-55-3	6.00E-05	EPA/RPF			0.03	DEP
Benzo[a]pyrene	50-32-8	6.00E-04	IRIS	2.00E-06	IRIS	0.03	DEP
Benzo[b]fluoranthene	205-99-2	6.00E-05	EPA/RPF				
Benzo(e)pyrene	192-97-2			2.00E-06	PPRTV		
Benzo[g,h,i]perylene	191-24-2						
Benzo[k]fluoranthene	207-08-9	6.00E-06	EPA/RPF				
Beryllium and compounds	7440-41-7	0.0024	IRIS	7.00E-07	Cal OEHHA	7.50E-06	ACGIH
Biphenyl	92-52-4			4.00E-04	SCREEN Current	0.15	NIOSH
Butadiene, 1,3-	106-99-0	3.00E-05	IRIS	0.002	IRIS	0.66	CALEPA
Butane, n-	106-97-8					3.57E+02	ACGIH
Butyr/Isobutyraldehyde	123-72-8						
Cadmium	7440-43-9	0.0018	IRIS	1.00E-05	ATSDR Final	3.00E-05	ATSDR Final
Carbon Tetrachloride	56-23-5	6.00E-06	IRIS	1.00E-01	IRIS	1.90E+00	CalEPA
Chlorobenzene	108-90-7			5.00E-02	PPRTV	6.91E+00	ACGIH
Chloroethane	75-00-3						
Chloroform	67-66-3	2.30E-05	IRIS	3.00E-01	Cal OEHHA	0.15	Cal OEHHA

Compound of Potential Concern	Chemical Abstracts Service (CAS) Number	Inhalation Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Unit Risk Reference	Chronic Inhalation Reference Concentration (mg/m^3)	Chronic Inhalation Reference Concentration Reference	Acute Inhalation Reference Concentration (mg/m^3)	Acute Inhalation Reference Concentration Reference
Chromium(III)	16065-83-1			6.00E-05	Cal OEHHA	4.80E-04	Cal OEHHA
Chromium(VI)	18540-29-9	1.10E-02	IRIS	3.00E-05	IRIS	1.25E-05	ACGIH
Chrysene	218-01-9	6.00E-07	EPA/RPF			0.03	DEP
Cobalt	7440-48-4	0.009	PPRTV Current	6.00E-06	PPRTV Current	0.003	DEP
Copper	7440-50-8					0.1	CALEPA
Cyclopentane	287-92-3					4.30E+02	ACGIH
Dibenzo[a,h]anthracene	53-70-3	6.00E-04	EPA/RPF				
Dibutylphthalate	84-74-2					7.50E-01	ACGIH
Dichlorobenzene	106-46-7	1.10E-05	Cal OEHHA	0.8	IRIS	7.5	CALEPA
Dichloroethane, 1,1-	75-34-3	1.60E-06	CalEPA			6.07E+01	ACGIH
Dichloroethane, 1,2-	107-06-2	2.60E-05	IRIS	7.00E-03	PPRTV		
Dichloropropane, 1,2	78-87-5	3.70E-06	PPRTV	4.00E-03	IRIS		
Dichloropropene, 1,3-	542-75-6	4.00E-06	IRIS	2.00E-02	IRIS	6.81E-01	ACGIH
Dimethylbenz(a)anthracene, 7,12-	57-97-6	0.071	Cal OEHHA				
Ethane	74-84-0						
Ethylbenzene	100-41-4	2.50E-06	CALEPA	1	IRIS	13.0	ACGIH
Ethylene Dibromide	106-93-4	6.00E-04	IRIS	9.00E-03	IRIS		
Fluoranthene	206-44-0						
Fluorene	86-73-7						
Formaldehyde	50-00-0	1.10E-05	IRIS	7.00E-03	IRIS	0.049	ATSDR Final
Heptane	142-82-5			4.00E-01	PPRTV	5.12E+01	ACGIH
Hexane, n-	110-54-3			0.7	IRIS	2.64E+01	ACGIH
Indeno[1,2,3-cd]pyrene	193-39-5	6.00E-05	EPA/RPF				
Lead and Compounds	7439-92-1	1.20E-05	CALEPA			0.0075	DEP
Manganese	7439-96-5			5.00E-05	IRIS	3.30E-03	ACGIH
Mercury (elemental)	7439-97-6			3.00E-05	Cal OEHHA	6.00E-04	CALEPA
Methanol	67-56-1			4	Cal OEHHA	28	CALEPA

Compound of Potential Concern	Chemical Abstracts Service (CAS) Number	Inhalation Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Unit Risk Reference	Chronic Inhalation Reference Concentration (mg/m^3)	Chronic Inhalation Reference Concentration Reference	Acute Inhalation Reference Concentration (mg/m^3)	Acute Inhalation Reference Concentration Reference
Methylcholanthrene, 3-	56-49-5	0.0063	Cal OEHHA				
Methylcyclohexane	108-87-2			9.50E-02	PPRTV	6.02E+01	ACGIH
Methylene Chloride	75-09-2	1.00E-08	IRIS	6.00E-01	IRIS	1.40E+01	CalEPA
Methylnaphthalene, 2-	91-57-6					4.37E-01	ACGIH
Molybdenum	7439-98-7			0.002	ATSDR	0.45	CALEPA
Naphthalene	91-20-3	3.40E-05	Cal OEHHA	0.003	IRIS	2.0	DEP
Nickel	7440-02-0	2.60E-04	Cal OEHHA	1.40E-05	CALEPA	2.00E-04	CALEPA
Nonane, n-	111-84-2			2.00E-02	PPRTV	1.57E+02	ACGIH
Octane, n-	111-65-9					2.10E+02	ACGIH
PAH (polycyclic aromatic hydrocarbons)	NA	7.10E-02	Cal OEEHA			3.00E-02	DEP/OSHA
Pentane	109-66-0			1	PPRTV Current	2.66E+02	CalEPA
Perchloroethylene	127-18-4	2.60E-07	IRIS	4.00E-02	PPRTV	1.70E+01	ACGIH
Phenanthrene	85-01-8					3.00E-02	ACGIH
Phenol	108-95-2			0.2	CALEPA	5.8	CALEPA
Propane	74-98-6					2.71E+02	OSHA
Propylene	115-07-1			3.00E+00	CalEPA	1.29E+02	ACGIH
Propylene Oxide	75-56-9	3.70E-06	IRIS	0.03	IRIS	3.1	CALEPA
Pyrene	129-00-0					0.03	NIOSH
Selenium	7782-49-2			0.02	CALEPA	0.03	DEP
Styrene	100-42-5			0.9	Cal OEHHA	21.0	Cal OEHHA
Tetrachloroethane, 1,1,2,2-	79-34-5	5.80E-05	CalEPA			1.03E+00	ACGIH
Trichloroethane, 1,1,2-	79-00-5	1.60E-05	IRIS			8.18E+00	ACGIH
Trimethylbenzene, 1,2,3-	526-73-8			6.00E-02	IRIS		
Trimethylbenzene, 1,2,4-	95-63-6			6.00E-02	IRIS		
Trimethylbenzene, 1,3,5-	108-67-8			6.00E-02	IRIS		
Toluene	108-88-3			0.42	Cal OEHHA	5.0	Cal OEHHA

Compound of Potential Concern	Chemical Abstracts Service (CAS) Number	Inhalation Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Unit Risk Reference	Chronic Inhalation Reference Concentration (mg/m^3)	Chronic Inhalation Reference Concentration Reference	Acute Inhalation Reference Concentration (mg/m^3)	Acute Inhalation Reference Concentration Reference
Vanadium	7440-62-2			1.00E-04	ATSDR	8.00E-04	ATSDR Final
Vinyl Chloride	75-01-4	4.40E-06	IRIS			1.80E+02	CalEPA
Xylenes	1330-20-7			0.1	IRIS	8.68	ATSDR Final
Zinc	7440-66-6						

[1]Source: http://rais.ornl.gov. Propane is not a listed chemical in the RAIS database. Additional health risk values determined based on DEP feedback.

Figure 1. Location of Receptors with the Highest ELCR, Highest Chronic HI, and Highest Acute HQ

Table 2. Estimated Health Effects from COPCs at Receptors with the Highest Aggregate ELCR and Chronic HQ

Compound of Potential Concern	Mutagenic?[1]	Excess Lifetime Cancer Risk	Chronic
Acenaphthene		--	--
Acenaphthylene		--	--
Acetaldehyde		3.63E-10	1.84E-05
Acrolein		--	3.45E-03
Ammonia		--	3.06E-04
Anthracene		--	--
Arsenic		9.62E-09	1.49E-04
Barium		--	9.85E-05
Benzene		1.87E-06	7.97E-02
Benzo(a)anthracene	Y	6.52E-12	--
Benzo(a)pyrene	Y	1.82E-11	9.32E-06
Benzo(b)fluoranthene	Y	2.37E-12	--
Benzo(e)pyrene		--	1.63E-06
Benzo(g,h,i)perylene		--	--
Benzo(k)fluoranthene	Y	2.39E-13	--
Beryllium		3.22E-10	1.92E-04
Biphenyl		--	4.49E-06
Butadiene, 1,3-		4.72E-06	7.87E-02
Butane		--	--
Butyr/Isobutyraldehyde		--	--
Cadmium		2.21E-08	1.23E-03
Carbon Tetrachloride		2.39E-12	3.98E-09
Chlorobenzene		--	6.38E-09
Chloroethane		--	--
Chloroform		3.82E-10	5.54E-08
Chromium III		--	4.89E-04
Chromium VI	Y	2.56E-07	4.76E-04
Chrysene	Y	3.46E-14	--
Cobalt		8.46E-09	1.57E-04
Copper		--	--
Cyclopentane		--	--
Dibenzo(a,h)anthracene	Y	2.89E-11	--
Dibutylphthalate		--	--
Dichlorobenzene		1.48E-10	1.68E-08
Dichloroethane, 1,1-		4.09E-13	--
Dichloroethane, 1,2-		6.64E-12	3.65E-08
Dichloropropane, 1,2-		1.08E-12	7.30E-08
Dichloropropene, 1,3-		1.14E-12	1.43E-08
Dimethylbenz(a)anthracene, 7,12-		2.07E-08	--

Compound of Potential Concern	Mutagenic?[1]	Excess Lifetime Cancer Risk	Chronic
Ethane		--	--
Ethylbenzene		2.20E-08	8.81E-06
Ethylene Dibromide		2.88E-10	5.33E-08
Fluoranthene		--	--
Fluorene		--	--
Formaldehyde	Y	3.43E-08	2.74E-04
Heptane		--	5.20E-05
Hexane		--	1.21E-05
Indeno(1,2,3-cd)pyrene	Y	2.99E-12	--
Lead		8.00E-11	--
Manganese		--	8.50E-05
Mercury		--	9.69E-05
Methanol		--	5.96E-05
Methylcholanthrene, 3-	Y	2.07E-10	--
Methylcyclohexane		--	1.02E-07
Methylene Chloride	Y	6.72E-15	6.87E-10
Methylnaphthalene, 2-		--	--
Molybdenum		--	6.15E-06
Naphthalene		9.14E-07	8.96E-03
Nickel		6.11E-09	1.68E-03
n-Nonane		--	4.32E-08
n-Octane		--	--
PAH	Y	1.05E-06	--
Pentane		--	1.08E-04
Perchloroethylene		5.07E-15	4.87E-10
Phenanthrene		--	--
Phenol		--	2.11E-08
Propane		--	--
Propylene		--	3.27E-05
Propylene Oxide		1.63E-10	1.47E-06
Pyrene		--	--
Selenium		--	1.34E-08
Styrene		--	2.52E-05
Tetrachloroethane, 1,1,2,2-		2.73E-11	--
Toluene		--	3.85E-04
Trichloroethane, 1,1,2-		5.51E-12	--
Trimethylbenzene, 1,2,3-		--	3.01E-09
Trimethylbenzene, 1,2,4-		--	1.87E-09
Trimethylbenzene, 1,3,5-		--	4.43E-09
Trimethylpentane, 2,2,4-		--	--
Vanadium		--	2.57E-04

Compound of Potential Concern	Mutagenic?[1]	Excess Lifetime Cancer Risk	Chronic
Vinyl Chloride	Y	1.16E-12	--
Xylenes		--	1.51E-04
Zinc		--	--
Total at Receptor with Highest Impact		**8.93E-06**	**0.18**
Approval Criteria		**1.00E-05**	**0.25**
Percent of Approval Criteria		**89%**	**71%**

[1] COPCs with mutagenic mode of action are scaled by Age Dependent Adjustment Factor of 1.63, consistent with EPA guidance.

[2] AP-42 factors for stationary combustion turbines are not available for individual PAH compounds. For this assessment, PAH emissions from SPM's combustion turbines were conservatively assumed to be 7,12-dimethylbenz(a)anthracene. Mutagenic ADAF was applied to PAHs.

"--" Denotes no available IUR and/or inhalation RfC.

Table 3. Acute Non-Cancer Risk Assessment

Compound of Potential Concern	Acute HQ
Acenaphthene	--
Acenaphthylene	--
Acetaldehyde	1.57E-03
Acrolein	1.94E-01
Ammonia	1.02E-02
Anthracene	1.43E-05
Arsenic	5.47E-03
Barium	3.21E-04
Benzene	2.22E-01
Benzo(a)anthracene	9.33E-06
Benzo(a)pyrene	1.23E-06
Benzo(b)fluoranthene	--
Benzo(e)pyrene	--
Benzo(g,h,i)perylene	--
Benzo(k)fluoranthene	--
Beryllium	8.76E-03
Biphenyl	5.24E-05
Butadiene, 1,3-	1.02E-02
Butane	9.08E-04
Butyr/Isobutyraldehyde	--
Cadmium	2.01E-01
Carbon Tetrachloride	1.70E-06
Chlorobenzene	3.61E-07
Chloroethane	--
Chloroform	1.82E-05
Chromium III	3.20E-02
Chromium VI	6.39E-01
Chrysene	3.08E-06
Cobalt	1.53E-04
Copper	4.65E-05
Cyclopentane	1.96E-08
Dibenzo(a,h)anthracene	--
Dibutylphthalate	1.17E-07
Dichlorobenzene	8.76E-07
Dichloroethane, 1,1-	3.41E-08
Dichloroethane, 1,2-	--
Dichloropropane, 1,2-	--
Dichloropropene, 1,3-	3.42E-06
Dimethylbenz(a)anthracene, 7,12-	--
Ethane	--

Compound of Potential Concern	Acute HQ
Ethylbenzene	1.37E-05
Ethylene Dibromide	--
Fluoranthene	--
Fluorene	--
Formaldehyde	9.75E-02
Heptane	4.15E-06
Hexane	4.61E-05
Indeno(1,2,3-cd)pyrene	--
Lead	3.81E-04
Manganese	6.93E-04
Mercury	2.37E-03
Methanol	1.60E-04
Methylcholanthrene, 3-	--
Methylcyclohexane	7.57E-07
Methylene Chloride	3.65E-07
Methylnaphthalene, 2-	3.12E-06
Molybdenum	1.34E-05
Naphthalene	2.96E-04
Nickel	5.75E-02
n-Nonane	2.60E-08
n-Octane	6.19E-08
PAH	1.44E-03
Pentane	6.67E-03
Perchloroethylene	5.41E-09
Phenanthrene	1.76E-04
Phenol	1.91E-07
Propane	1.25E-04
Propylene	2.30E-05
Propylene Oxide	1.62E-06
Pyrene	2.89E-05
Selenium	4.38E-06
Styrene	2.37E-05
Tetrachloroethane, 1,1,2,2-	4.05E-06
Toluene	6.68E-04
Trichloroethane, 1,1,2-	3.42E-07
Trimethylbenzene, 1,2,3-	--
Trimethylbenzene, 1,2,4-	--
Trimethylbenzene, 1,3,5-	--
Trimethylpentane, 2,2,4-	--
Vanadium	1.57E-02
Vinyl Chloride	7.30E-09

Compound of Potential Concern	Acute HQ
Xylenes	3.88E-05
Zinc	--
Maximum Hazard Quotient	6.39E-01
Approval Criteria	1
Percent of Approval Criteria	64%

[1] AP-42 factors for stationary combustion turbines are not available for individual PAH compounds. For this assessment, PAH emissions from SPM's combustion turbines were conservatively assumed to be benzo(a)pyrene.

"--" Denotes no available inhalation RfC.