

Alberta Tier 1 Hydrocarbon Guidelines for Fine Surface Soil

| Land Use | Exposure Pathway | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl- benzene (mg/kg) | Xylenes (mg/kg) | B(a)P (mg/kg) | F1 (mg/kg) | F2 (mg/kg) | F3 (mg/kg) | F4 (mg/kg) |
|--------------|--|--------------------|--------------------|------------------------------|--------------------|------------------|-------------------|-------------------|-------------------|--------------------|
| Agricultural | Human Soil Ingestion | 1200 | 22000 | 10000 | RES | 4.9 | <u>15000</u> | <u>8000</u> | <u>18000</u> | <u>25000</u> |
| | Human Demal Contact | 2700 | RES | RES | RES | 4.3 | <u>RES</u> | <u>RES</u> | <u>RES</u> | <u>RES</u> |
| | Human Vapour Inhalation (basement) ¹ | 1.9 | 4600 | 2000 | 500 | N/A | <u>940</u> | <u>5200</u> | <u>N/A</u> | <u>N/A</u> |
| | Human Vapour Inhalation (slab-on-grade) ¹ | 1.9 | 4600 | 2000 | 500 | N/A | <u>940</u> | <u>5200</u> | <u>N/A</u> | <u>N/A</u> |
| | Protection of Potable Groundwater * | 0.073 | 0.86 | 0.19 | 25 | N/A | 1900 | 2600 | N/A | N/A |
| | Soil Contact (Plants and Invertebrates) | 14 | 300 | 450 | 1200 | F3 | <u>260</u> | <u>900</u> | <u>800</u> | <u>5600</u> |
| | Soil Ingestion (Livestock) | 33 | 1800 | 1200 | 4900 | F3 | 4000 | 3700 | 6000 | 4000 |
| | Protection of Groundwater for Aquatic Life * | RES | RES | RES | RES | F3 | <u>TBD</u> | <u>TBD</u> | <u>N/A</u> | <u>N/A</u> |
| | Protection of Groundwater for Livestock | RES | RES | RES | RES | F3 | <u>TBD</u> | <u>TBD</u> | <u>N/A</u> | <u>N/A</u> |

Alberta Tier 1 Hydrocarbon Guidelines for Coarse Surface Soil

| Land Use | Exposure Pathway | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl- benzene (mg/kg) | Xylenes (mg/kg) | B(a)P (mg/kg) | F1 (mg/kg) | F2 (mg/kg) | F3 (mg/kg) | F4 (mg/kg) |
|--------------|--|--------------------|--------------------|------------------------------|--------------------|------------------|-------------------|-------------------|-------------------|--------------------|
| Agricultural | Human Soil Ingestion | 1200 | 22000 | 10000 | RES | 4.9 | <u>15000</u> | <u>8000</u> | <u>18000</u> | <u>25000</u> |
| | Human Demal Contact | 2700 | RES | RES | RES | 4.3 | <u>RES</u> | <u>RES</u> | <u>RES</u> | <u>RES</u> |
| | Human Vapour Inhalation (basement) ¹ | 0.077 | 200 | 88 | 22 | N/A | <u>50</u> | <u>240</u> | <u>N/A</u> | <u>N/A</u> |
| | Human Vapour Inhalation (slab-on-grade) ¹ | 0.048 | 120 | 54 | 14 | N/A | <u>30</u> | <u>150</u> | <u>N/A</u> | <u>N/A</u> |
| | Protection of Potable Groundwater * | 0.13 | 1.6 | 0.36 | 49 | N/A | 3700 | 5100 | N/A | N/A |
| | Soil Contact (Plants and Invertebrates) | 8.3 | 24 | 91 | 90 | F3 | <u>130</u> | <u>450</u> | <u>400</u> | <u>2800</u> |
| | Soil Ingestion (Livestock) | 33 | 1800 | 1200 | 4900 | F3 | 4000 | 3700 | 6000 | 4000 |
| | Protection of Groundwater for Aquatic Life * | 1.6 | 0.16 | 79 | 59 | F3 | 360 | 230 | N/A | N/A |
| | Protection of Groundwater for Livestock | 2.2 | 2200 | 16000 | 25000 | F3 | 11000 | 8600 | N/A | N/A |

Alberta Tier 1 Hydrocarbon Guidelines for Fine Subsoil

| Land Use | Exposure Pathway | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl- benzene (mg/kg) | Xylenes (mg/kg) | B(a)P (mg/kg) | F1 (mg/kg) | F2 (mg/kg) | F3 (mg/kg) | F4 (mg/kg) |
|--------------|--|--------------------|--------------------|------------------------------|--------------------|------------------|---------------|---------------|---------------|---------------|
| Agricultural | Human Soil Ingestion | N/A | N/A | N/A | N/A | N/A | <u>RES</u> | <u>RES</u> | <u>RES</u> | <u>RES</u> |
| | Human Demal Contact | N/A | N/A | N/A | N/A | N/A | <u>RES</u> | <u>RES</u> | <u>RES</u> | <u>RES</u> |
| | Human Vapour Inhalation (basement) ¹ | 1.9 | 4600 | 2000 | 500 | N/A | <u>940</u> | <u>5200</u> | <u>N/A</u> | <u>N/A</u> |
| | Human Vapour Inhalation (slab-on-grade) ¹ | 1.9 | 4800 | 2100 | 520 | N/A | <u>990</u> | <u>5500</u> | <u>N/A</u> | <u>N/A</u> |
| | Protection of Potable Groundwater * | 0.073 | 0.86 | 0.19 | 25 | N/A | 1900 | 2600 | N/A | N/A |
| | Soil Contact (Plants and Invertebrates) | 28 | 300 | 450 | 1200 | F3 | 750 | 2200 | 3500 | 10000 |
| | Soil Ingestion (Livestock) | N/A | N/A | N/A | N/A | F3 | <u>N/A</u> | <u>N/A</u> | <u>N/A</u> | <u>N/A</u> |
| | Protection of Groundwater for Aquatic Life * | RES | RES | RES | RES | F3 | <u>TBD</u> | <u>TBD</u> | <u>N/A</u> | <u>N/A</u> |
| | Protection of Groundwater for Livestock | RES | RES | RES | RES | F3 | <u>TBD</u> | <u>TBD</u> | <u>N/A</u> | <u>N/A</u> |

Note: Subsoil guidelines are only available within 30m of the wellhead.

Alberta Tier 1 Hydrocarbon Guidelines for Coarse Subsoil

| Land Use | Exposure Pathway | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl- benzene (mg/kg) | Xylenes (mg/kg) | B(a)P (mg/kg) | F1 (mg/kg) | F2 (mg/kg) | F3 (mg/kg) | F4 (mg/kg) |
|--------------|--|--------------------|--------------------|------------------------------|--------------------|------------------|---------------|---------------|---------------|---------------|
| Agricultural | Human Soil Ingestion | N/A | N/A | N/A | N/A | N/A | RES | RES | RES | RES |
| | Human Demal Contact | N/A | N/A | N/A | N/A | N/A | RES | RES | RES | RES |
| | Human Vapour Inhalation (basement) ¹ | 0.077 | 200 | 88 | 22 | N/A | 50 | 240 | N/A | N/A |
| | Human Vapour Inhalation (slab-on-grade) ¹ | 0.054 | 140 | 61 | 15 | N/A | 40 | 190 | N/A | N/A |
| | Protection of Potable Groundwater * | 0.13 | 1.6 | 0.36 | 49 | N/A | 3700 | 5100 | N/A | N/A |
| | Soil Contact (Plants and Invertebrates) | 17 | 48 | 180 | 180 | F3 | 350 | 1500 | 2500 | 10000 |
| | Soil Ingestion (Livestock) | N/A | N/A | N/A | N/A | F3 | N/A | N/A | N/A | N/A |
| | Protection of Groundwater for Aquatic Life * | 1.6 | 0.16 | 79 | 59 | F3 | 360 | 230 | N/A | N/A |
| | Protection of Groundwater for Livestock | 2.2 | 2200 | 16000 | 25000 | F3 | 11000 | 8600 | N/A | N/A |