AWARE (untamed)

# MERCURY CONCENTRATIONS IN BERRY'S CREEK

Prepared For

VELSICOL CHEMICAL COMPANY
Chicago, Illinois




AWARE inc.
ASSOCIATED WATER & AIR RESOURCES ENGINEERS, INC.

*consultants in air, water, and waste management*
Nashville, Tennessee · Houston, Texas · Milan, Italy



Newark Bay Study Area
NBSA-00062

| Figure Number | Site Number | Distance[1] From Outfall (feet) | Section[2] | Length of Sediment Column in Section (in.)[3] | | | | Percent Solids By Weight | Mercury Concentration | | Average Mercury Values[5] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Left Bank | Center | Right Bank | Mean[4] | | Wet Weight (mg/kg) | Dry Weight (mg/kg) | Wet Weight (mg/kg) | Dry Weight (mg/kg) |
| 2 | 1 | -1,200 | A | 10 | NT | 3 | 6½ | 77.2 | 3.9 | 5.1 | 2.9 | 3.8 |
| | | | B | 9 | NT | -- | 9 | 76.8 | 2.2 | 2.9 | | |
| | 2 | -500 | A | 10 | NT | 10 | 10 | 65.0 | 78 | 120 | 55 | 96 |
| | | | B | 9 | NT | 10 | 9½ | 61.1 | 30 | 50 | | |
| | 3 | -400 | A | 7 | NT | 9 | 8 | 59.8 | 84 | 140 | 84 | 140 |
| | 4 | -300 | A | 8 | NT | 10 | 9 | 54.2 | 160 | 290 | 100 | 171 |
| | | | B | -- | NT | 10 | 10 | 76.3 | 50 | 65 | | |
| | 5 | -200 | A | 6 | 10 | 10 | 8½ | 57.9 | 81 | 140 | 89 | 150 |
| | | | B | 6 | 10 | 10 | 8½ | 60.8 | 97 | 160 | | |
| | 6 | -100 | A | 7 | 6 | 7 | 6½ | 43.8 | 320 | 730 | 190 | 420 |
| | | | B | -- | 5 | 6 | 5½ | 62.1 | 30 | 49 | | |
| | 7 | -50 | A | 9 | 10 | 9 | 9½ | 52.4 | 140 | 270 | 240 | 410 |
| | | | B | -- | -- | 9 | 9 | 61.1 | 340 | 550 | | |
| | 8 | 0 | A | 10 | 6 | 3 | 6½ | 59.0 | 130 | 220 | 320 | 700 |
| | | | B | 10 | 5 | 8 | 7½ | 43.4 | 400 | 1,100 | | |
| | 9 | 50 | A | 8 | 6 | 6 | 6½ | 60.3 | 16 | 26 | 25 | 38 |
| | | | B | 6 | -- | 5 | 5½ | 68.2 | 35 | 52 | | |
| | 10 | 100 | A | 8 | 6 | 7 | 7 | 62.5 | 110 | 180 | 200 | 370 |
| | | | B | 9 | -- | 8 | 8½ | 53.1 | 320 | 600 | | |
| | | | C | 8 | -- | 8 | 8 | 56.9 | 160 | 290 | | |
| | 11 | 150 | A | 5½ | 7½ | 7½ | 7 | 57.0 | 120 | 210 | 85 | 140 |
| | | | B | 5½ | 7½ | 7½ | 7 | 63.5 | 50 | 78 | | |
| | 12 | 200 | A | 8½ | 7½ | 7½ | 8 | 69.8 | 120 | 170 | 150 | 230 |
| | | | B | -- | 7½ | 7½ | 7½ | 60.1 | 180 | 300 | | |

TABLE 2

NON-COMPOSITED SEDIMENT SAMPLES

| Figure Number | Site Number | Distance from Outfall (feet) | Left Bank | | | Center | | | Right Bank | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Interval in Sediment Sampled (in.) | Percent Solids by Weight | Hg Conc. Dry Weight (mg/kg) | Interval in Sediment Sampled (in.) | Percent Solids by Weight | Hg Conc. Dry Weight (mg/kg) | Interval in Sediment Sampled (in.) | Percent Solids by Weight | Hg Conc. Dry Weight (mg/kg) |
| 2 | 5 | -200 | 0-10<br>10-20 | 58.9<br>65.7 | 12<br>4.4 | 0-10<br>10-20 | Not Reported<br>63.6 | <br>440 | 0-6<br>6-12 | 56.5 | 290<br>1,400 |
| | 6 | -100 | 0-7<br>7-13 | 35.1<br>65.7 | 1,800<br>4.4 | 0-6<br>6-11 | 71.0 | 31<br>160 | 0-7 | 40.1 | 150 |
| | 8 | 0 | 0-8<br>8-11 | 49.1<br>60.0 | 79<br>2.3 | | | | | | |
| | 9 | 50 | 0-6<br>6-11 | 57.6<br>58.5 | 5.7<br>1.8 | 0-6 | 68.4 | 52 | 0-8<br>8-14 | 69.3<br>71.6 | 42<br>99 |
| | 13 | 250 | 0-8 | 70.0 | 45 | 0-9 | 71.3 | 110 | 0-6<br>6-12 | 75.5<br>72.6 | 57<br>110 |
| 3 | 16 | 400 | 0-10<br>10-20 | 55.1<br>57.3 | 110<br>2.0 | 0-6<br>6-12 | 69.9<br>64.3 | 54<br>260 | 0-10<br>10-19 | 66.2<br>66.3 | 69<br>310 |
| | 19 | 550 | 0-11<br>11-21 | 32.9<br>50.7 | 1,200<br>5.7 | 0-10<br>10-20 | 48.5<br>58.0 | 140<br>2.1 | 0-11<br>11-21 | 48.0<br>50.7 | 21<br>5.7 |
| | 22 | 700 | 0-11 | 53.3 | 190 | 0-5.5<br>5.5-11 | 36.0<br>71.2 | 1,600<br>69 | 0-7.5 | 66.8 | 190 |

## CONCLUSIONS

The following conclusions are apparent from inspection of Figure 6 through Figure 11:

1. Figure 6 indicates that the mercury concentrations from approximately 500 ft above the outfall to approximately 2,500 ft below are, in general, markedly higher than in other areas of the creek.
2. Figure 7 indicates that the mercury values obtained from the top layer of the core sample are generally slightly higher than are those values representative of the entire station.
3. Figure 8 indicates that the layer of sediment subjacent to the top layer is generally lower in mercury concentration than is the top layer. However, the mercury concentrations near the former outfall are similar in magnitude between the two layers.
4. Figure 9 indicates that the mercury values obtained from depths below the B level are generally the lowest of the three values.
5. Figure 10 and Figure 11 do not indicate any general trend of the mercury concentrations with respect to sediment location across the creek (center and left and right bank).

In summary, the area of higher concentration of mercury in the sediments has been defined. However, in that there is no indication of any present health hazard by reason of the mercury presence in these sediments and the degree of any material downstream migration

has not been determined, opportunity exists to study the mechanisms and extent of transport and whether on that basis remedial action is advisable.