**Alaska Department of Environmental Conservation**
Office of the State Veterinarian Fish Monitoring Program
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# Arsenic in Fish and Shellfish Caught in Alaskan Waters

### Fish Samples collected: 2001-2024

### Concentration in mg/Kg wet weight

**ND = Non-detect** in greater then 50% of fish samples

**Visit the Fish Monitoring Program webpage for more information**:
**http://www.dec.alaska.gov/eh/vet/fish-monitoring-program**

**For State of Alaska fish consumption recommendations visit**:
**https://health.alaska.gov/dph/Epi/eph/Pages/fish/default.aspx**

Table 1: Arsenic in Marine Fish

| | | | | mg/Kg wet weight | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | Tissue | n | ND | Mean | SD | SEM | Median | Min | Max |
| Alaska Plaice | Fillet | 31 | 0 | 11.175 | 5.191 | 0.932 | 9.56 | 4.24 | 22.3 |
| Arctic Flounder | Whole Body | 4 | 0 | 1.6 | 0.141 | 0.071 | 1.55 | 1.5 | 1.8 |
| Arctic Sculpin | Whole Body | 1 | 0 | 0.85 | NA | NA | 0.85 | 0.85 | 0.85 |
| Arrowtooth Flounder | Fillet | 14 | 0 | 1.87 | 0.741 | 0.198 | 1.64 | 0.668 | 3.19 |
| Atka Mackerel | Fillet | 4 | 0 | 0.532 | 0.192 | 0.096 | 0.475 | 0.37 | 0.81 |
| Atka Mackerel | Whole Body | 5 | 0 | 0.952 | 0.169 | 0.076 | 0.96 | 0.69 | 1.1 |
| Big Skate | Fillet | 112 | 0 | 16.998 | 9.782 | 0.924 | 14 | 1.82 | 49 |
| Big Skate | Liver | 20 | 0 | 5.02 | 2.423 | 0.542 | 4.3 | 3.2 | 14 |
| Black Rockfish | Fillet | 85 | 0 | 0.391 | 0.182 | 0.02 | 0.36 | 0.159 | 1.6 |
| Black Rockfish | Whole Body | 7 | 0 | 1.181 | 0.928 | 0.351 | 0.73 | 0.6 | 3.2 |
| Blue Shark | Fillet | 1 | 0 | 1.844 | NA | NA | 1.844 | 1.844 | 1.844 |
| Butter Sole | Whole Body | 1 | 0 | 1.7 | NA | NA | 1.7 | 1.7 | 1.7 |
| China Rockfish | Fillet | 1 | 0 | 0.61 | NA | NA | 0.61 | 0.61 | 0.61 |
| Copper Rockfish | Fillet | 4 | 0 | 0.775 | 0.13 | 0.065 | 0.775 | 0.64 | 0.91 |
| Dusky Rockfish | Fillet | 64 | 0 | 0.54 | 0.296 | 0.037 | 0.469 | 0.14 | 1.59 |
| Dusky Rockfish | Whole Body | 20 | 0 | 0.691 | 0.254 | 0.057 | 0.63 | 0.25 | 1.3 |
| Flathead Sole | Fillet | 15 | 0 | 3.968 | 1.131 | 0.292 | 3.82 | 2.6 | 7.16 |
| Fourhorn Sculpin | Whole Body | 6 | 0 | 0.91 | 0.685 | 0.28 | 1 | 0.092 | 1.8 |
| Fourhorn Sculpin | C-Whole Body | 1 | 0 | 0.542 | NA | NA | 0.542 | 0.542 | 0.542 |
| Great Sculpin | Whole Body | 2 | 0 | 2 | 1.273 | 0.9 | 2 | 1.1 | 2.9 |
| Kelp Greenling | Fillet | 1 | 0 | 0.26 | NA | NA | 0.26 | 0.26 | 0.26 |
| Kelp Greenling | Whole Body | 18 | 0 | 0.746 | 0.22 | 0.052 | 0.72 | 0.5 | 1.3 |
| Lamprey | Whole Body | 10 | 0 | 0.948 | 0.185 | 0.058 | 0.927 | 0.66 | 1.25 |
| Lingcod | Fillet | 301 | 0 | 0.669 | 0.434 | 0.025 | 0.54 | 0.12 | 2.552 |
| Longnose Skate | Fillet | 114 | 0 | 19.432 | 11.678 | 1.094 | 15.792 | 5.1 | 69 |
| Longnose Skate | Liver | 20 | 0 | 5.855 | 2.195 | 0.491 | 5.55 | 2.8 | 11 |
| Northernrock Sole | Fillet | 20 | 0 | 6.093 | 2.876 | 0.643 | 5.015 | 2.43 | 15.6 |
| Northernrock Sole | Whole Body | 18 | 0 | 2.428 | 1.341 | 0.316 | 2.15 | 1.1 | 6.4 |
| Pacific Cod | Fillet | 255 | 0 | 7.429 | 5.58 | 0.349 | 6.03 | 0.242 | 31.6 |
| Pacific Cod | Comp | 5 | 0 | 3.676 | 0.423 | 0.189 | 3.64 | 3.18 | 4.35 |
| Pacific Halibut | Fillet | 3655 | 1 | 1.718 | 1.231 | 0.02 | 1.4 | 0.098 | 17.457 |
| Pacific Halibut | Comp | 5 | 0 | 1.358 | 0.199 | 0.089 | 1.48 | 1.09 | 1.52 |
| Pacific Halibut | Plug | 7 | 0 | 1.427 | 0.737 | 0.278 | 1.1 | 0.691 | 2.62 |
| Pacific Ocean Pearch | Fillet | 78 | 0 | 1.218 | 0.456 | 0.052 | 1.261 | 0.184 | 2.355 |
| Quillback Rockfish | Fillet | 22 | 0 | 1.38 | 0.899 | 0.192 | 0.97 | 0.27 | 3.4 |
| Red Irish Lord | Whole Body | 11 | 0 | 0.633 | 0.221 | 0.067 | 0.56 | 0.37 | 1.1 |
| Rock Greenling | Whole Body | 16 | 0 | 0.742 | 0.299 | 0.075 | 0.7 | 0.39 | 1.4 |
| Rougheye Rockfish | Fillet | 72 | 0 | 2.429 | 1.46 | 0.172 | 2.55 | 0.22 | 6.2 |
| Sablefish | Fillet | 408 | 2 | 0.943 | 0.512 | 0.025 | 0.85 | 0.1 | 2.84 |
| Sablefish | Comp | 5 | 0 | 1.37 | 0.139 | 0.062 | 1.39 | 1.21 | 1.54 |
| Sablefish | Whole Body | 3 | 0 | 0.867 | 0.146 | 0.085 | 0.89 | 0.71 | 1 |
| Salmon Shark | Fillet | 110 | 0 | 1.288 | 0.428 | 0.041 | 1.252 | 0.35 | 2.431 |

Table 1: Arsenic in Marine Fish *(continued)*

| | | | | mg/Kg wet weight | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | Tissue | n | ND | Mean | SD | SEM | Median | Min | Max |
| Shortraker Rockfish | Fillet | 8 | 0 | 1.286 | 0.913 | 0.323 | 1.13 | 0.37 | 2.8 |
| Silvergray Rockfish | Fillet | 10 | 0 | 0.322 | 0.127 | 0.04 | 0.314 | 0.096 | 0.55 |
| Sleeper Shark | Fillet | 1 | 0 | 8.1 | NA | NA | 8.1 | 8.1 | 8.1 |
| Southernrock Sole | Whole Body | 1 | 0 | 1.8 | NA | NA | 1.8 | 1.8 | 1.8 |
| Spiny Dogfish | Fillet | 69 | 0 | 2.817 | 0.691 | 0.083 | 2.726 | 1.5 | 4.54 |
| Starry Flounder | Fillet | 1 | 0 | 1.4 | NA | NA | 1.4 | 1.4 | 1.4 |
| Starry Flounder | Whole Body | 1 | 0 | 3.1 | NA | NA | 3.1 | 3.1 | 3.1 |
| Starry Flounder | C-Whole Body | 3 | 0 | 0.467 | 0.186 | 0.107 | 0.495 | 0.269 | 0.637 |
| Tiger Rockfish | Fillet | 1 | 0 | 0.48 | NA | NA | 0.48 | 0.48 | 0.48 |
| Walleye Pollock | Fillet | 279 | 0 | 2.521 | 4.023 | 0.241 | 1.26 | 0.149 | 37.6 |
| Walleye Pollock | Comp | 7 | 0 | 1.556 | 0.32 | 0.121 | 1.5 | 1.18 | 1.96 |
| Yellow Irish Lord | Fillet | 2 | 0 | 0.37 | 0.099 | 0.07 | 0.37 | 0.3 | 0.44 |
| Yellow Irish Lord | Whole Body | 10 | 0 | 0.63 | 0.303 | 0.096 | 0.53 | 0.3 | 1.2 |
| Yelloweye Rockfish | Fillet | 131 | 0 | 0.942 | 0.886 | 0.077 | 0.71 | 0.157 | 7.14 |
| Yellowfin Sole | Fillet | 45 | 0 | 4.066 | 2.271 | 0.339 | 3.55 | 1.39 | 12.6 |
| Yellowtail Rockfish | Fillet | 7 | 0 | 0.786 | 0.284 | 0.107 | 0.76 | 0.471 | 1.3 |

*Note:*

n= sample size

ND = non-detect

Mean = arithmetic mean

SD = standard deviation

SEM = standard error

C = Composite of multiple individuals

Reporting limits: As, Cd, Cu, Pb = 0.05 mg/Kg; Se = 0.25 mg/Kg; Hg = 0.01 mg/Kg

Table 2: Arsenic in Salmonids (Salmon, Whitefish, Grayling, Char)

| | | | | mg/Kg wet weight | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | Tissue | n | ND | Mean | SD | SEM | Median | Min | Max |
| Arctic Char | Fillet | 30 | 8 | 0.385 | 0.444 | 0.081 | 0.119 | 0.025 | 1.24 |
| Arctic Char | Whole Body | 10 | 0 | 0.14 | 0.094 | 0.03 | 0.088 | 0.058 | 0.29 |
| Arctic Cisco | Fillet | 25 | 0 | 0.787 | 0.171 | 0.034 | 0.744 | 0.569 | 1.21 |
| Arctic Cisco | Whole Body | 1 | 0 | 1.1 | NA | NA | 1.1 | 1.1 | 1.1 |
| Arctic Grayling | Fillet | 120 | 39 | 0.038 | 0.031 | 0.003 | 0.028 | 0.01 | 0.263 |
| Arctic Grayling | Whole Body | 4 | 0 | 0.26 | 0.361 | 0.181 | 0.1 | 0.039 | 0.8 |
| Arctic Grayling | C-Whole Body | 11 | 0 | 0.184 | 0.306 | 0.092 | 0.041 | 0.013 | 1 |
| Bering Cisco | Fillet | 5 | 0 | 0.593 | 0.337 | 0.151 | 0.46 | 0.271 | 1.1 |
| Broad Whitefish | Fillet | 52 | 26 | ND | NA | NA | ND | 0.018 | 0.156 |
| Chum Salmon | Fillet | 343 | 14 | 0.239 | 0.115 | 0.006 | 0.217 | 0.055 | 1.103 |
| Chum Salmon | Whole Body | 2 | 0 | 0.226 | 0.076 | 0.054 | 0.226 | 0.172 | 0.28 |
| Coho Salmon | Fillet | 355 | 8 | 0.332 | 0.134 | 0.007 | 0.32 | 0.089 | 0.83 |
| Coho Salmon | Whole Body | 62 | 0 | 0.377 | 0.116 | 0.015 | 0.355 | 0.13 | 0.75 |
| Coho Salmon | Eggs | 20 | 0 | 0.47 | 0.089 | 0.02 | 0.46 | 0.32 | 0.63 |
| Cutthroat Trout | Whole Body | 7 | 0 | 0.053 | 0.062 | 0.023 | 0.038 | 0.008 | 0.19 |
| Dolly Varden | Fillet | 65 | 5 | 0.59 | 0.578 | 0.072 | 0.492 | 0.025 | 2.44 |
| Dolly Varden | Whole Body | 49 | 0 | 0.694 | 0.525 | 0.075 | 0.661 | 0.049 | 2.43 |
| Humpback Whitefish | Fillet | 110 | 29 | 0.15 | 0.229 | 0.022 | 0.064 | 0.025 | 1.1 |
| Humpback Whitefish | Whole Body | 24 | 1 | 0.121 | 0.041 | 0.008 | 0.125 | 0.025 | 0.19 |
| King Salmon | Fillet | 272 | 3 | 0.503 | 0.296 | 0.018 | 0.447 | 0.071 | 1.95 |
| King Salmon | Whole Body | 20 | 0 | 0.373 | 0.179 | 0.04 | 0.36 | 0.033 | 0.74 |
| Lake Trout | Fillet | 55 | 12 | 0.079 | 0.047 | 0.006 | 0.073 | 0.025 | 0.236 |
| Lake Trout | Whole Body | 33 | 2 | 0.115 | 0.055 | 0.01 | 0.12 | 0.025 | 0.28 |
| Least Cisco | Fillet | 42 | 2 | 0.513 | 0.449 | 0.069 | 0.609 | 0.02 | 1.817 |
| Least Cisco | Whole Body | 1 | 0 | 1.2 | NA | NA | 1.2 | 1.2 | 1.2 |
| Pink Salmon | Fillet | 222 | 25 | 0.265 | 0.131 | 0.009 | 0.251 | 0.025 | 0.845 |
| Pygmy Whitefish | Whole Body | 1 | 0 | 0.39 | NA | NA | 0.39 | 0.39 | 0.39 |
| Rainbow Trout | Fillet | 137 | 35 | 0.197 | 0.172 | 0.015 | 0.154 | 0.025 | 0.941 |
| Rainbow Trout | Whole Body | 11 | 0 | 0.198 | 0.101 | 0.03 | 0.18 | 0.08 | 0.45 |
| Round Whitefish | Fillet | 14 | 12 | ND | NA | NA | ND | 0.021 | 0.072 |
| Round Whitefish | Whole Body | 1 | 0 | 0.083 | NA | NA | 0.083 | 0.083 | 0.083 |
| Sheefish | Fillet | 44 | 0 | 8.941 | 6.49 | 0.978 | 8.6 | 0.128 | 24 |
| Sheefish | Whole Body | 5 | 0 | 9.18 | 4.212 | 1.884 | 8.4 | 4.6 | 16 |
| Sheefish | Eggs | 1 | 0 | 1.4 | NA | NA | 1.4 | 1.4 | 1.4 |
| Sockeye Salmon | Fillet | 361 | 18 | 0.293 | 0.125 | 0.007 | 0.278 | 0.051 | 0.95 |
| Sockeye Salmon | Whole Body | 56 | 0 | 0.416 | 0.166 | 0.022 | 0.392 | 0.12 | 0.878 |
| Sockeye Salmon | Eggs | 2 | 0 | 0.355 | 0.247 | 0.175 | 0.355 | 0.18 | 0.53 |
| Sockeye Salmon | C-Whole Body | 1 | 0 | 0.552 | NA | NA | 0.552 | 0.552 | 0.552 |

Table 2: Arsenic in Salmonids (Salmon, Whitefish, Grayling, Char) *(continued)*

| | | | | mg/Kg wet weight | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | Tissue | n | ND | Mean | SD | SEM | Median | Min | Max |

*Note:*
n= sample size
ND = non-detect
Mean = arithmetic mean
SD = standard deviation
SEM = standard error
C = Composite of multiple individuals
Reporting limits: As, Cd, Cu, Pb = 0.05 mg/Kg; Se = 0.25 mg/Kg; Hg = 0.01 mg/Kg

Table 3: Arsenic in Marine Forage Fish

| | | | | mg/Kg wet weight | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | Tissue | n | ND | Mean | SD | SEM | Median | Min | Max |
| Capelin | C-Whole Body | 1 | 0 | 0.82 | NA | NA | 0.82 | 0.82 | 0.82 |
| Eulachon | C-Whole Body | 7 | 0 | 0.933 | 0.039 | 0.015 | 0.92 | 0.87 | 0.98 |
| Pacific Herring | Fillet | 30 | 0 | 1.904 | 1.095 | 0.2 | 1.785 | 0.615 | 4.63 |
| Pacific Herring | Eggs | 1 | 0 | 1.09 | NA | NA | 1.09 | 1.09 | 1.09 |
| Pacific Herring | C-Whole Body | 16 | 0 | 2.045 | 0.901 | 0.225 | 1.95 | 0.213 | 3.6 |
| Rainbow Smelt | Whole Body | 10 | 0 | 1.358 | 0.561 | 0.178 | 1.25 | 0.68 | 2.3 |
| Saffron Cod | Whole Body | 22 | 0 | 4.746 | 2.16 | 0.46 | 4.485 | 0.964 | 8.8 |
| Sand Lance | C-Whole Body | 1 | 0 | 0.83 | NA | NA | 0.83 | 0.83 | 0.83 |

*Note:*

n= sample size

ND = non-detect

Mean = arithmetic mean

SD = standard deviation

SEM = standard error

C = Composite of multiple individuals

Reporting limits: As, Cd, Cu, Pb = 0.05 mg/Kg; Se = 0.25 mg/Kg; Hg = 0.01 mg/Kg

Table 4: Arsenic in Marine Invertebrates

| | | | | mg/Kg wet weight | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | Tissue | n | ND | Mean | SD | SEM | Median | Min | Max |
| Bairdi Crab | Comp | 3 | 0 | 13.133 | 0.643 | 0.371 | 13.4 | 12.4 | 13.6 |
| Bairdi Crab | Invert Muscle | 40 | 0 | 13.098 | 5.062 | 0.8 | 12 | 7.24 | 23.8 |
| Blue Mussel | Invert Whole Tissue | 4 | 0 | 1.455 | 0.444 | 0.222 | 1.35 | 1.1 | 2.02 |
| Blue Mussel | C-Invert Whole | 38 | 0 | 1.868 | 0.732 | 0.119 | 1.7 | 1.18 | 5 |
| Butter Clam | Invert Whole Tissue | 5 | 0 | 1.44 | 0.385 | 0.172 | 1.3 | 1.1 | 1.9 |
| Butter Clam | C-Invert Whole | 4 | 0 | 2.095 | 0.498 | 0.249 | 2.255 | 1.39 | 2.48 |
| Chiton | Invert Whole Tissue | 2 | 0 | 1.4 | 0.141 | 0.1 | 1.4 | 1.3 | 1.5 |
| Cockle | Invert Whole Tissue | 5 | 0 | 1.172 | 0.288 | 0.129 | 1.1 | 0.86 | 1.6 |
| Cockle | C-Invert Whole | 16 | 0 | 1.758 | 2.306 | 0.577 | 1.125 | 0.814 | 10.3 |
| Coonstriped Shrimp | C-Invert Whole | 2 | 0 | 10.555 | 2.044 | 1.445 | 10.555 | 9.11 | 12 |
| Decorator Crab | Invert Whole Tissue | 1 | 0 | 5.6 | NA | NA | 5.6 | 5.6 | 5.6 |
| Dungeness Crab | Invert Whole Tissue | 2 | 0 | 4.65 | 2.475 | 1.75 | 4.65 | 2.9 | 6.4 |
| Golden King Crab | Invert Muscle | 2 | 0 | 14.05 | 0.778 | 0.55 | 14.05 | 13.5 | 14.6 |
| Hairytriton Snail | Invert Whole Tissue | 1 | 0 | 10 | NA | NA | 10 | 10 | 10 |
| Hermit Crab | Invert Whole Tissue | 1 | 0 | 1.5 | NA | NA | 1.5 | 1.5 | 1.5 |
| Horse Clam | C-Invert Whole | 1 | 0 | 3.95 | NA | NA | 3.95 | 3.95 | 3.95 |
| Little Neck Clam | Invert Whole Tissue | 4 | 0 | 3.614 | 0.49 | 0.245 | 3.723 | 2.925 | 4.085 |
| Little Neck Clam | C-Invert Whole | 2 | 0 | 3.095 | 2.128 | 1.505 | 3.095 | 1.59 | 4.6 |
| Neptunea hero | Invert Whole Tissue | 3 | 0 | 11.067 | 6.288 | 3.63 | 9.11 | 5.99 | 18.1 |
| Opilio Crab | Comp | 1 | 0 | 9.97 | NA | NA | 9.97 | 9.97 | 9.97 |
| Opilio Crab | Invert Muscle | 27 | 0 | 9.475 | 5.007 | 0.964 | 8.41 | 3.55 | 28.1 |
| Oysters | Invert Whole Tissue | 16 | 0 | 1.818 | 0.484 | 0.121 | 1.684 | 1.299 | 3.058 |
| Razor Clam | Invert Muscle | 2 | 0 | 1.328 | 0.071 | 0.05 | 1.328 | 1.278 | 1.379 |
| Red King Crab | Comp | 1 | 0 | 3.92 | NA | NA | 3.92 | 3.92 | 3.92 |
| Red King Crab | Invert Muscle | 20 | 0 | 3.963 | 0.813 | 0.182 | 3.78 | 3.05 | 6.46 |
| Ribbon Worm | Invert Whole Tissue | 2 | 0 | 3.2 | 0.707 | 0.5 | 3.2 | 2.7 | 3.7 |
| Scallop | Invert Whole Tissue | 20 | 0 | 1.009 | 0.131 | 0.029 | 1.05 | 0.78 | 1.2 |
| Sea Cucumber | Invert Whole Tissue | 3 | 0 | 1.8 | 0.624 | 0.361 | 2 | 1.1 | 2.3 |
| Softshell Clam | Invert Whole Tissue | 4 | 0 | 1.302 | 0.082 | 0.041 | 1.305 | 1.2 | 1.4 |
| Softshell Clam | C-Invert Whole | 10 | 0 | 13.049 | 23.821 | 7.533 | 2.05 | 1.1 | 66 |
| Squid | C-Invert Whole | 5 | 0 | 0.688 | 0.176 | 0.079 | 0.57 | 0.55 | 0.89 |

*Note:*

n= sample size

ND = non-detect

Mean = arithmetic mean

SD = standard deviation

SEM = standard error

C = Composite of multiple individuals

Reporting limits: As, Cd, Cu, Pb = 0.05 mg/Kg; Se = 0.25 mg/Kg; Hg = 0.01 mg/Kg

Table 5: Arsenic in Freshwater Fishes

| | | | | mg/Kg wet weight | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | Tissue | n | ND | Mean | SD | SEM | Median | Min | Max |
| Alaska Blackfish | Whole Body | 3 | 0 | 0.074 | 0.013 | 0.007 | 0.07 | 0.064 | 0.088 |
| Alaska Blackfish | C-Whole Body | 3 | 0 | 0.119 | 0.098 | 0.056 | 0.108 | 0.028 | 0.222 |
| Burbot | Fillet | 58 | 1 | 0.387 | 1.302 | 0.171 | 0.108 | 0.051 | 8.84 |
| Burbot | Liver | 5 | 0 | 0.618 | 0.28 | 0.125 | 0.566 | 0.345 | 1.06 |
| Longnose Sucker | Fillet | 3 | 3 | ND | NA | NA | ND | 0.025 | 0.025 |
| Longnose Sucker | Whole Body | 2 | 0 | 0.18 | 0.057 | 0.04 | 0.18 | 0.14 | 0.22 |
| Northern Pike | Fillet | 538 | 124 | 0.161 | 0.197 | 0.008 | 0.108 | 0.018 | 3.32 |
| Northern Pike | Whole Body | 40 | 12 | 0.102 | 0.073 | 0.012 | 0.081 | 0.025 | 0.24 |
| NS Stickleback | C-Whole Body | 13 | 0 | 0.146 | 0.158 | 0.044 | 0.103 | 0.03 | 0.64 |
| Slimy Sculpin | Whole Body | 66 | 0 | 0.215 | 0.129 | 0.016 | 0.175 | 0.051 | 0.59 |
| Slimy Sculpin | C-Whole Body | 15 | 5 | 0.162 | 0.202 | 0.052 | 0.12 | 0.025 | 0.77 |
| TS Stickleback | Whole Body | 3 | 0 | 0.063 | 0.014 | 0.008 | 0.06 | 0.052 | 0.079 |
| TS Stickleback | C-Whole Body | 8 | 0 | 0.448 | 0.385 | 0.136 | 0.42 | 0.034 | 1.22 |

*Note:*

n= sample size

ND = non-detect

Mean = arithmetic mean

SD = standard deviation

SEM = standard error

C = Composite of multiple individuals

Reporting limits: As, Cd, Cu, Pb = 0.05 mg/Kg; Se = 0.25 mg/Kg; Hg = 0.01 mg/Kg