

HAZLETON ENVIRONMENTAL SCIENCES

Table A-1. U.S. Environmental Protection Agency's crosscheck program, comparison of EPA and Hazleton ES results for milk and water samples, 1982^a.

| Lab Code | Sample Type | Date Coll. | Analysis | Concentration in pCi/lb | |
|----------|-------------|------------|-------------|-----------------------------|------------------------------------|
| | | | | HES Result $\pm 2\sigma$ | EPA Result $\pm 3\sigma$, n=1d |
| STW-270 | Water | Jan. 1982 | Sr-89 | 24.3 \pm 2.0 | 21.0 \pm 5.0 |
| | | | Sr-90 | 9.4 \pm 0.5 | 12.0 \pm 1.5 |
| STW-273 | Water | Jan. 1982 | I-131 | 8.6 \pm 0.6 | 8.4 \pm 1.5 |
| STW-275 | Water | Feb. 1982 | H-3 | 1580 \pm 147 | 1820 \pm 342 |
| STW-276 | Water | Feb. 1982 | Cr-51 | <61 | 0 |
| | | | Co-60 | 26.0 \pm 3.7 | 20 \pm 5 |
| | | | Zn-65 | <13 | 15 \pm 5 |
| | | | Ru-106 | <46 | 20 \pm 5 |
| | | | Cs-134 | 26.8 \pm 0.7 | 22 \pm 5 |
| | | | Cs-137 | 29.7 \pm 1.4 | 23 \pm 5 |
| STW-277 | Water | Mar. 1982 | Ra-226 | 11.9 \pm 1.9 | 11.6 \pm 1.7 |
| STW-278 | Water | Mar. 1982 | Gross alpha | 15.6 \pm 1.9 | 19 \pm 5 |
| | | | Gross beta | 19.2 \pm 0.4 | 19 \pm 5 |
| STW-280 | Water | Apr. 1982 | H-3 | 2690 \pm 80 | 2860 \pm 360 |
| STW-281 | Water | Apr. 1982 | Gross alpha | 75 \pm 7.9 | 85 \pm 21 |
| | | | Gross beta | 114.1 \pm 5.9 | 106 \pm 5.3 |
| | | | Sr-89 | 17.4 \pm 1.8 | 24 \pm 5 |
| | | | Sr-90 | 10.5 \pm 0.6 | 12 \pm 1.5 |
| | | | Ra-226 | 11.4 \pm 2.0 | 10.9 \pm 1.5 |
| | | | Co-60 | <4.6 | 0 |
| STW-284 | Water | May 1982 | Gross alpha | 31.5 \pm 6.5 | 27.5 \pm 7 |
| | | | Gross beta | 25.9 \pm 3.4 | 29 \pm 5 |
| STW-285 | Water | June 1982 | H-3 | 1970 \pm 1408 | 1830 \pm 340 |
| STW-286 | Water | June 1982 | Ra-226 | 12.6 \pm 1.5 | 13.4 \pm 3.5 |
| | | | Ra-228 | 11.1 \pm 2.5 | 8.7 \pm 2.3 |
| STW-287 | Water | June 1982 | I-131 | 6.5 \pm 0.3 | 4.4 \pm 0.7 |
| STW-290 | Water | Aug. 1982 | H-3 | 3210 \pm 140 | 2890 \pm 619 |
| STW-291 | Water | Aug. 1982 | I-131 | 94.6 \pm 2.5 | 87 \pm 15 |
| STW-292 | Water | Sept 1982 | Sr-89 | 22.7 \pm 3.8 | 24.5 \pm 8.7 |
| | | | Sr-90 | 10.9 \pm 0.3 | 14.5 \pm 2.6 |

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Table A-1. (continued)

| Lab Code | Sample Type | Date Coll. | Analysis | Concentration in pCi/l ^b | |
|----------|-------------|------------|-------------|--|--|
| | | | | HES Result $\pm 2\sigma$ ^c | EPA Result $\pm 3\sigma$, n=1 ^d |
| STW-296 | Water | Oct. 1982 | Co-60 | 20.0 \pm 1.0 | 20 \pm 8.7 |
| | | | Zn-65 | 32.3 \pm 5.1 | 24 \pm 8.7 |
| | | | Cs-134 | 15.3 \pm 1.5 | 19.0 \pm 8.7 |
| | | | Cs-137 | 21.0 \pm 1.7 | 20.0 \pm 8.7 |
| STW-297 | Water | Oct. 1982 | H-3 | 2470 \pm 20 | 2560 \pm 612 |
| STW-298 | Water | Oct. 1982 | Gross alpha | 32 \pm 30 | 55 \pm 24 |
| | | | Gross beta | 81.7 \pm 6.1 | 81 \pm 8.7 |
| | | | Sr-89 | <2 | 0 |
| | | | Sr-90 | 14.1 \pm 0.9 | 17.2 \pm 2.6 |
| | | | Cs-134 | <2 | 1.8 \pm 8.7 |
| | | | Cs-137 | 22.7 \pm 0.6 | 20 \pm 8.7 |
| | | | Ra-226 | 13.6 \pm 0.3 | 12.5 \pm 3.2 |
| | | | Ra-228 | 3.9 \pm 1.0 | 3.6 \pm 0.9 |
| STW-301 | Water | Nov. 1982 | Gross alpha | 12.0 \pm 1.0 | 19.0 \pm 8.7 |
| | | | Gross beta | 34.0 \pm 2.7 | 24.0 \pm 8.7 |
| STW-302 | Water | Dec. 1982 | I-131 | 40.0 \pm 0.0 | 37.0 \pm 10 |

^aResults obtained by the Nuclear Sciences Department of Hazleton Environmental Sciences as a participant in the environmental sample crosscheck program operated by the Intercomparison and Calibration Section, Quality Assurance Branch, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, (EPA), Las Vegas, Nevada.

^bAll results are in pCi/l, except for elemental potassium (K) data which are in mg/l.

^cUnless otherwise indicated, the HES results given as the mean $\pm 2\sigma$ standard deviations for three determinations.

^dUSEPA results are presented as the known values \pm control limits of 3σ for n=1.

^eMean $\pm 2\sigma$ standard deviations of two determinations.

^fNA = Not analyzed.

^gAnalyzed but not reported to the EPA.