UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555 - 0001

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NOTE: For the file
Troxler Model Core Reader Exemption Request

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SUBJECT: CALCULATION OF INDIVIDUAL DOSE RATE FOR WASTE COLLECTORS AT MUNICIPAL LANDFILLS

This note documents the staff's calculation of the individual dose rate for waste collectors at municipal landfill for the environmental assessment (EA) entitled "ENVIRONMENTAL ASSESSMENT AND FINAL FINDING OF NO SIGNIFICANT IMPACT REGARDING TROXLER ELECTRONIC LABORATORIES, INC. REQUEST FOR EXEMPTION FROM 10 CFR 32.14" (Accession Number ML023450624).

The staff calculated the dose rate to waste collectors based on the report "Systematic Radiological Assessment of Exemptions for Source and Byproduct Materials," NUREG 1717, June 2001. Table A.2.1 in the report provides the values for exposures to waste collectors at municipal landfills. Specifically, Table A.2.1. lists the value of 4.6×10^{-10} rem/μCi individual effective dose equivalent for external exposure to Cs-137 which is the radionuclide in the Model CoreReader device.

For the EA it was estimated, based on the manufacturers projected annual production and device retirement rate, that 17.5 units would be disposed in a landfill, each with an activity level of 64μCi (i.e. the initial activity level of 80 μCi/unit decayed by the time of disposal to 64μCi/unit). Accordingly, the dose rate is calculated as follows:

Total activity at one waste site: 17.5 units x 64 µCi/unit =1120 µCi = 1.12E3 µCi

Total dose per site: 4.6E-10 rem/µCi x 1.12E3 µCi = 5.15E-4 mrem $\approx$0.0005 mrem

Inhalation exposure and ingestion exposure rates, also referenced in Table A.2.1, are not applicable to such sealed sources such as those used in the CoreReader device and were not included in the dose rate calculation.