Appendix A. Errata

Appendix A. Errata

Corrections for the *Oak Ridge Reservation Annual Site Environmental Report for 2003* (DOE/ORO/2185)

On page 1-5, Fig. 1.4 was corrected to appear as follows.

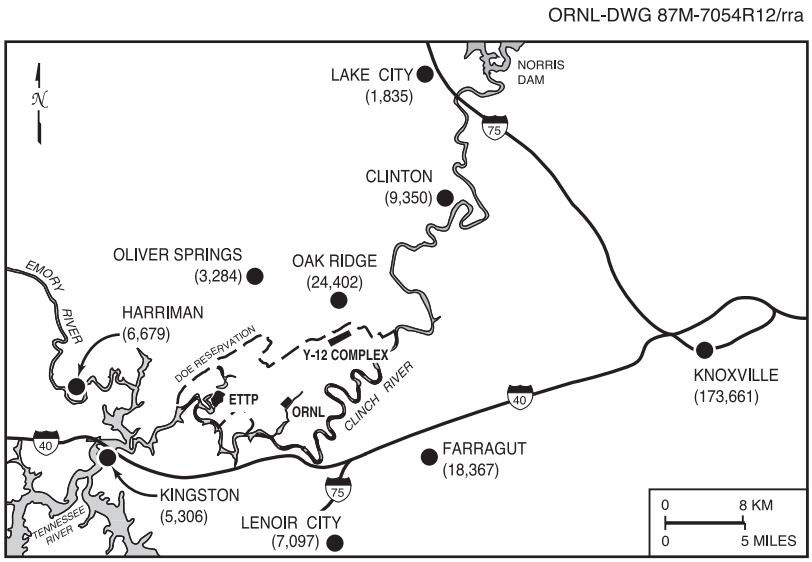

Fig. 1.4. Locations and populations of towns nearest to the Oak Ridge Reservation (UTCBER 2000).

On page 4-4, the "total major" values for ^{14}C and ^{85}Kr in Table 4.1 were corrected as follows.

	Total major
^{14}C	1.52E–05
^{85}Kr	1.41E–03

On pages 5-1 through 5-4, Sects. 5.1 and 5.1.2 have been revised to read as follows.

5.1 ORNL Radiological Airborne Effluent Monitoring

Airborne discharges from DOE Oak Ridge facilities, both radioactive and nonradioactive, are subject to regulation by EPA and the TDEC Division of Air Pollution Control. Radioactive emissions are regulated by EPA under NESHAP regulations in 40 CFR 61, Subpart H, and by the rules of the TDEC Division of Air Pollution Control, 1200-3-11.08. (See Appendix F, Table F.1 for a list of radionuclides and their radioactive half-lives.)

Radioactive airborne discharges at ORNL consist primarily of ventilation air from radioactively contaminated or potentially contaminated areas, vents from tanks and processes, and ventilation for hot cell operations and reactor facilities. These airborne emissions are treated and then filtered with high-efficiency particulate air filters and/or charcoal filters before discharge. Radiological airborne emissions from ORNL consist of solid particulates; adsorbable gases (e.g., iodine); tritium (^{3}H); and nonadsorbable gases (i.e., noble gases). The major radiological emission point sources for ORNL consist of the following five stacks located in Bethel and Melton Valleys (Fig. 5.1):

- 2026 High Radiation Level Analytical Laboratory;
- 3020 Radiochemical Processing Plant;

- 3039 central off-gas and scrubber system, which includes 3500 and 4500 areas' cell ventilation system, isotope solid-state ventilation system, 3025 and 3026 areas' cell ventilation system, 3042 ventilation system, and 3092 central off-gas system;
- 7503 (formerly 7512) Molten Salt Reactor Experiment remediation; and
- 7911 Melton Valley complex, which includes the HFIR and the Radiochemical Engineering Development Center (REDC).

In 2003, there were 24 minor point/group sources, and emission calculations/estimates were made for each of these sources.

5.1.2 Results

Annual radioactive airborne emissions for ORNL major sources in 2003 are presented in Table 5.1. All data presented were determined to be statistically different from zero at the 95% confidence level. Any number not statistically different from zero was not included in the emission calculation. Because measuring a radionuclide requires a process of counting random radioactive emissions from a sample, the same result may not be obtained if the sample is analyzed repeatedly. This deviation is referred to as the "counting uncertainty." Statistical significance at the 95% confidence level means that there is a 5% chance that the results could be in error.

Historical trends for ^{3}H and ^{131}I are presented in Figs. 5.2 and 5.3, respectively. The ^{3}H emissions for 2003 totaled approximately 104 Ci (Fig. 5.2), which is an increase from 2002, but consistent with emissions from 1999 and 2000. The ^{131}I emissions for 2003 decreased from that for 2002 to 0.06 Ci (Fig. 5.3). The major contributor to the off-site dose at ORNL historically is ^{41}Ar, which is emitted as a nonadsorbable gas from the 7911 Melton Valley complex stack. Emissions of ^{41}Ar result from HFIR operations and research activities. However due to a long maintenance period in 2001 and changes in HFIR operations, ^{138}Cs has remained the major contributor to the off-site dose since 2001. Emissions of ^{138}Cs result from research activities in REDC which also exhaust through the 7911 Melton Valley complex stack. The ^{138}Cs emissions for 2003 were 2,810 Ci (Fig. 5.4). The calculated radiation dose to the maximally exposed off-site individual from all radiological airborne release points at ORNL during 2003 was 0.2 mrem (0.002 mSv). This dose is well below the NESHAP standard of 10 mrem (0.10 mSv) and is less than 0.1 % of the 300 mrem (3 mSv) that the average individual receives from natural sources of radiation. Refer to Section 8.1.2.1 for an explanation of how the airborne radionuclide dose was determined.

On page 6-1, Sect. 6.1 was corrected to read as follows.

6.1 Y-12 Complex Radiological Airborne Effluent Monitoring

The release of radiological contaminants, primarily uranium, into the atmosphere at the Y-12 National Security Complex (Y-12 Complex) occurs almost exclusively as a result of plant production, maintenance, and waste management activities. NESHAP regulations for radionuclides require continuous emission sampling of major sources (a "major source" is considered to be any emission point that potentially can contribute more than 0.1 mrem/year EDE to an off-site individual). During 2003, 42 of the 55 stacks suitable for continuous monitoring were judged to be major sources. Eighteen of the stacks with the greatest potential to emit significant amounts of uranium are equipped with alarmed breakthrough detectors, which alert operations personnel to process-upset conditions or to a decline in filtration-system efficiencies, allowing them to investigate and correct the problem before a significant release occurs. As of January 1, 2003, the Y-12 Complex had continuous monitoring capability on a total of 55 stacks, 43 of which were active and 12 of which were temporarily shut down.

Emissions from unmonitored process and laboratory exhausts, categorized as minor emission sources, are estimated according to calculation methods approved by the EPA. In 2003, there were 43 unmonitored processes operated by Y-12. These are included as minor sources in the Y-12 Complex source term. Uranium and other radionuclides are handled in millicurie quantities at facilities within the boundary of the Y-12 Complex as part of BJC, UT-Battelle, and BWXT Y-12 laboratory activities. Twenty-seven minor

emission points were identified from laboratory activities at facilities within the boundary of the Y-12 Complex as being operated by BWXT Y-12. In addition, the BWXT Y-12 Analytical Chemistry Organization laboratory is operated in a leased facility that is not within the ORR boundary and is located approximately a mile east of the Y-12 Complex on Union Valley Road. The emissions from the Analytical Chemistry Organization Union Valley laboratory are included in the Y-12 Complex source term. Eight minor emission points were identified at the laboratory. The releases from these emission points are minimal, however, and have a negligible impact on the total Y-12 Complex dose.

Emissions from Y-12 Complex room ventilation systems are estimated from radiation control data collected on airborne radioactivity concentrations in the work areas. Areas where the monthly average concentration exceeded 10% of the DOE derived air concentration worker-protection guidelines are included in the annual emission estimate. One emission point in Building 9204-4 was identified in 2003 where room ventilation emissions exceeded 10% of the guidelines. However, because this enclosure exhausted to stack UB-088, its contribution was not specifically identified and was included in the stack emissions.

On page 6-2, Sect. 6.1.2 was corrected to read as follows.

6.1.2 Results

An estimated 0.012 Ci (2.0 kg) of uranium was released into the atmosphere in 2003 as a result of Y-12 activities (Figs. 6.1 and 6.2). The specific activity of enriched uranium is much greater than that of depleted uranium, and about 85% of the curie release was composed of emissions of enriched uranium particulate, even though approximately 8% of the total mass of uranium released was enriched material.

On page 8-3, Table 8.1 was corrected to replace an incorrect value for Source ID X-7966 and to remove duplicate values for Source IDs K-1435, and K-1435C. The correct values are as follows.

Source ID	Stack height (m)	Stack diameter (m)	Effective exit gas velocity (m/s)	Exit gas temperature (°C)	Distance (m) and direction to the maximally exposed individual	
					Plant maximum	ORR maximum
X-7966	6.1	0.29	8.18	Ambient	4550 ENE	4550 ENE
K-1435	30.5	1.37	5.26	79.1	1950 WSW	11340 E
K-1435-C	18.29	NA	0	Ambient	1950 WSW	11340 E

On page G-5, the information for chromium and chlordane in Table G.1 was corrected to read as follows.

Chemical	Factor	Reference[a]
Elements		
Chromium III	3.4E–1	SF
Chromium IV	3.0E–3	RfD
Compounds		
Chlordane (alpha, gamma)	5.0E–4	RfD

[a]RfD: reference dose (mg^{-1} day^{-1}); SF: slope factor (risk per kg^{-1} day^{-1}).