

TABLE 3.2-8 Estimated Hazard Quotients for Members of the Public near ETTP under Existing Environmental Conditions^a

Environmental Medium	Parameter	Assumed Exposure Concentration	Estimated Chronic Intake (mg/kg-d)	Reference Level ^b (mg/kg-d)	Hazard Quotient ^c
Air ^d	Uranium	0.0014 µg/m ³	3.9×10^{-7}	0.0003	0.0013
Soil ^e	Uranium	6.7 µg/g	8.9×10^{-5}	0.003	0.03
Surface water ^f	Uranium	13 µg/L	7.1×10^{-6}	0.003	0.0024
	Fluoride	180 µg/L	9.9×10^{-5}	0.06	0.0016
Sediment ^g	Uranium	43 µg/g	1.2×10^{-5}	0.003	0.0039
Groundwater ^h	Uranium	25 µg/L	1.8×10^{-4}	0.003	0.24
	Fluoride	4,000 µg/L	1.1×10^{-2}	0.06	1.9

^a The receptor was assumed to be a long-term resident near the site boundary or another off-site monitoring location that would have the highest concentration of the contaminant being addressed; reasonable maximum exposure conditions were assumed. Only the exposure pathway contributing the most to intake levels was considered (i.e., inhalation for air and ingestion for soil, sediment, surface water, and groundwater). Residential exposure scenarios were assumed for air, soil, and groundwater analyses; recreational exposure scenarios were assumed for surface water and sediment analyses. For all environmental media, only uranium and fluoride data (of particular interest for this EIS) are presented, although other substances are also measured.

^b The reference level is an estimate of the daily human exposure level that is likely to be without an appreciable risk of deleterious effects. The reference levels used in this assessment are defined in Appendix F.

^c The hazard quotient is the ratio of the intake of the human receptor to the reference level. A hazard quotient of less than 1 indicates that adverse health effects resulting from exposure to that chemical alone are unlikely.

^d For the uranium air concentration, the maximum average from six monitoring locations was used (DOE 2002d). HF was not measured.

^e Current soil sampling data were unavailable; data presented are from LMES (LMES 1996c). No data were available for fluoride.

^f For uranium, the value is the maximum average for downstream locations (DOE 2002d). Current surface water sampling data for fluoride were unavailable; data presented are from LMES (1996c).

^g Current sediment sampling data were unavailable; data presented are from LMES (1996c).

^h Groundwater data are not provided in the current annual site environmental report (DOE 2002c). The concentration presented for uranium is from LMES (1996c). The value is the maximum annual average for all exit pathway monitoring locations because these are the locations where the general public could most likely be exposed in the future. Alpha activity was used as a surrogate measure of the uranium concentration. The well-specific concentration for fluoride was not available; the exposure concentration given is the drinking water standard. Several wells were stated to have fluoride levels in excess of the standard (LMES 1996b). The hazard index for fluoride could therefore exceed that presented. Several additional substances exceeded drinking water standards or guidelines in 1994 and 1995 monitoring; only substances of particular interest for this EIS are listed here.