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Comparison of LLNL and Rocky Flats Beryllium Area Air Sample Measurements

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The following data is furnished to John. R. Balmes, MD, Department of Medicine, University of California, San Francisco, for possible inclusion in the paper, "Low Prevalence of Chronic Beryllium Disease among Workers at a Nuclear Weapons Research and Development Facility," by Mehrdad Arjomandi, MD, James Seward, MPH, MD, Michael Gotway, MD, Stephen Nishimura, MD, Josef Thundiyil, MD, MPH, Talmadge J. King, MD, Phillip Harber, MD, MPH, and John R. Balmes, MD, and presently under development.

The following data represents area air samples conducted from 1962 to 1993, in the Lawrence Livermore National Laboratory's machine shop, and represents sampling during all activities in the shop. The samples were taken with portable sampling pumps, and represent various flow rates and sample times.

The Rocky Flats sampling details are provided in Viet, et al, (2000).

In the late 1980s and early 1990s, at LLNL, area air sampling was phased out and personal air sampling predominated; current sampling is virtually all personal. There is no correlation between air and personal air sampling. Production at the Rocky Flats plant ceased in 1988/89.

	LLNL Data[1]		**Rocky Flats Data[2]**	
Year	**Number of samples**	**Average Concentration, $\mu g/m^3$**	**Number of samples**	**Average Concentration, $\mu g/m^3$**
1961	–	–	521	0.116
1962	83	0.0140	492	0.152
1963	1843	0.0184	621	0.258
1964	1831	0.0365	481	0.662
1965	1825	0.0091	587	0.593
1966	1080	0.0072	662	0.277
1967	1159	0.0061	528	0.305
1968	1935	0.0160	557	0.407
1969	1318	0.0064	573	0.445
1970	1334	0.0055	308	0.306
1971	1528	0.0053	402	0.355
1972	1707	0.0105	430	0.358
1973	1624	0.0052	430	0.416
1974	1875	0.0047	416	0.228
1975	1834	0.0019	432	0.162
1976	1514	0.0018	431	0.104
1977	933	0.0021	432	0.12

	LLNL Data[1]		Rocky Flats Data[2]	
Year	**Number of samples**	**Average Concentration, $\mu g/m^3$**	**Number of samples**	**Average Concentration, $\mu g/m^3$**
1978	892	0.0010	431	0.134
1979	291	0.0015	369	0.106
1980	270	0.0008	410	0.156
1981	255	0.0017	426	0.137
1982	107	0.0012	432	0.163
1983	335	0.0012	432	0.271
1984	106	0.0004	423	0.23
1985	–	Note 3	396	0.19
1986	–	Note 3	290	0.157
1987	–	Note 3	255	0.083
1988	–	Note 3	310	0.096
1989	–	Note 3	–	–
1990	–	Note 3	–	–
1991	–	Note 3	–	–
1992	497	0.0008	–	–
1993	148	0.0020	–	–

Notes:

1. Data Source: Hazards Control Department, Lawrence Livermore National Laboratory
2. Data Source: Susan Marie Viet, Janet Torma-Krajewski, John Rogers, "Chronic Beryllium Disease and Beryllium Sensitization at Rocky Flats: A Case Controlled Study," AIHAJ, 61:244-254 (2000).
3. Data not available.