

Chapter 5

Pets as Sentinels of Human Exposure to Neurotoxic Metals



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Abstract The idea that animals may be used as sentinels of environmental hazards pending over humans and the associated public health implications is not a new one. Nowadays pets are being used as bioindicators for the effects of environmental contaminants in human populations. This is of paramount importance due to the large increase in the worldwide distribution of synthetic chemicals, particularly in the built environment. Companion animals share the habitat with humans being simultaneously exposed to and suffering the same disease spectrum as their masters. Moreover, their shorter latency periods (due to briefer lifespans) enable them to act as early warning systems, allowing timely public health interventions. The rise on ethical constraints on the use of animals and, consequently, on the sampling they can be subjected to has led to the preferential use of noninvasive matrices, and in this case we are looking into hair. This chapter focuses in three non-essential metals: mercury, lead, and cadmium, due to their ubiquitous presence in the built environment and their ability of affecting the mammal nervous system. There is a fairly short amount of studies reporting the concentrations of these metals in pets' hair, particularly for cats. These studies are characterized, and the metal concentrations corresponding to different parameters (e.g., age, sex, diet, rearing) are described in order to provide the reader with a general vision on the use of this noninvasive matrix on the studies conducted since the last two decades of the twentieth century.

Keywords Surrogacy · Early warning · Latency · Cadmium · Lead · Mercury

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M. R. Pastorinho, A. C. A. Sousa (eds.), *Pets as Sentinels, Forecasters and Promoters of Human Health*, https://doi.org/10.1007/978-3-030-30734-9_5