

Brief Summary: Cd in Ground Calcium Carbonate

Cd is ubiquitous in nature. It is found in sedimentary rocks (like limestone) at higher levels than in igneous or metamorphic rocks. It is present in the earth's crust at 0.1 to 0.5 ppm, in seawater at 0.1 ppm and in marine sediments at 1 ppm.

Limestone is a sedimentary rock composed primarily of calcium carbonate in the form of the mineral calcite and aragonite (which are different crystal forms). It most commonly forms in clear, warm, shallow marine waters and is usually comprised of skeletal fragments or marine organisms such as coral, forams, and shells. Thus limestone is representative of marine sediment.

Kitano(1), et al in Geochemical Journal describes the co-deposition of Cd⁺⁺ and Ca⁺⁺ into calcite crystals. This finding is not surprising given the +2 valence state of both ions. The concentration of the cadmium in the crystal is shown to be a function of the concentration locally in the saline water. Thus the "typical" deposit of limestone would average 1 ppm of Cd. As one ventures further from the mean, the probability of finding such a deposit becomes increasingly problematic. This, in fact, has been our commercial experience in that deposits below 0.5ppm are very rare.

Governmental regulatory bodies setting Cd levels far below those found in nature obviously presents issues.

1. Kitano Y. et. al., Geochemical Journal, 12, 147 (1978)

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