

Environmental Impact of Discarded Nickel-Cadmium Batteries and Their Effect on Human Beings: A Review [†]

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Abstract: Nickel-cadmium (Ni-Cd) batteries are secondary rechargeable batteries that contain nickel oxyhydroxide as cathode and metallic cadmium as anode. Ni-Cd batteries have different applications in aircraft, electronic flash units, toys, emergency lights, medical instrumentation, and cordless applications. These batteries can also be used for over 20 years because of its rechargeable characteristic but after that period of time, large number of Ni-Cd batteries will be discarded into the environment because of the lack of environmental regulations especially in developing countries. The toxic transition elements like nickel and cadmium are still retained in the discarded Ni-Cd batteries, and this might leach into the groundwater and soil when the outer shell of the battery is broken, thus making it unfit for human use. The exposure of nickel and cadmium in batteries can reach humans through food chain and affect human health adversely. So, more importance should be paid to the treatment of discarded Ni-Cd batteries in order to avoid environmental problems and their effects on human health. This review discusses the heavy metals in nickel-cadmium batteries, nickel (Ni) and cadmium (Cd), its effects on environment and humans and then concentrates on methods to restrain them.

Keywords: nickel-cadmium battery; heavy metals; nickel; cadmium; environmental effects.

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Conflicts of Interest

The authors declare no conflict of interest.