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Recycling of liquid crystal display (LCD) devices

Recikliranje naprav z zasloni iz tekočih kristalov

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Povzetek

Odpadne LCD naprave (eng. Liquid Crystal Display) sodijo med električni in elektronski odpadek. Z razvojem uporabe digitalnega signala narašča tudi uporaba LCD naprav in s tem tudi nastajanje tega odpada. Odpadne LCD naprave vsebujejo številne elemente, ki jih je mogoče v postopku recikliranja ločiti, vsebujejo pa tudi snovi, ki so potencijalno škodljive za ljudi in okolje. Ene od najnevarnejših sestavin so UV svetilke z živim srebrom, ki se nahajajo v ozadju LCD zaslona. V prispevku so prikazani rezultati preiskav emisije živega srebra v okolje v procesu razstavljanja in recikliranja LCD naprav. Emisija živega srebra je bila izmerjena v ventilacijskem izstopu iz drobilne naprave, izveden pa je bil tudi test izluževanja iz zdrobljenega materiala. Rezultati so pokazali, da so pri drobljenju, kot eni od možnih tehnologij recikliranja LCD naprav, emisije živega srebra v okolje zanemarljive in da je zdrobljeni material po tem postopku mogoče razvrstiti kot inertni odpadek.

Ključne besede: električni in elektronski odpad, LCD naprave, živo srebro (Hg), recikliranje.

Abstract

Waste LCD devices (eng. Liquid Crystal Display) fall in waste electrical and electronical equipment (WEEE). With introduction of digital signal use of LCD's rises and with that also generation of this waste. Waste LCD devices contain numerous elements that can be removed in recycling process but contain substances potentially harmful to people and the environment. One of potentially most dangerous components are UV lamps with mercury that are placed in the back of LCD panel. In this paper was examined potential emission of mercury in environment during process of disassembling and recycling of LCD devices. Emission of mercury was measured in ventilation outlet of crushing device and a leaching test for crushed material was conducted. The results showed that by crushing as one of possible recycling technology for LCD's the emissions of mercury in the environment are negligible and after this process crushed material can be classified as inert waste.

Key words: WEEE, LCD devices, mercury (Hg), waste recycling.