Fatal case at a workplace involving fluosilicate of zinc

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Some fluosilicates, salts of fluosilicic acid (eg. Al, Zn, Pb, Mg) are used as stone consolidants, another (fluosilicate of sodium) – in production of enamel and milk glass, or as insecticide. Acute poisonings with salts of fluosilicic acid occur relatively rarely. In this paper, a case of accidental ingestion (probably by mistake for mineral water) of zinc fluosilicate solution at a workplace (building), is presented. The death of a 38-year-old man occurred two hours after ingestion of the liquid, in spite of intensive care at the hospitals.

Post-mortem samples were examined by the use of spectrophotometric method with lanthan nitrate and Alizarin complex for fluorine (after isolation of fluoride compounds by microdiffusion method) and using a flame atomic absorption spectrometry method for zinc (after mineralization of biological material by sulphuric and nitric acids). The contents of fluorine and zinc in blood and internal organs were the following: blood – 6.03 μg F/ml, 23.8 μg Zn/ml, brain – 1.39 μg F/g, 7.54 μg Zn/g, stomach – 152 μg Zn/g, stomach content – 293 μg F/g, 84.4 μg Zn/g, small intestine – 37.5 μg Zn/g, small intestine content – 63.4 μg F/g, 19.6 μg Zn/g, liver – 9.49 μg F/g, 81.0 μg Zn/g, kidney – 29.6 μg F/g, 39.2 μg Zn/g, and exceeded many times normal levels of these elements in biological material. In addition, in stomach and liver large amounts of silica were detected.

KEYWORDS: *Fluosilicate of zinc, Post-mortem material, Fluorine, Zinc, Concentration*

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