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The tailings pond of the Cinovec deposit (Czech Republic) as a non-traditional source of lithium

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The sources of commercially viable lithium minerals in the Czech Republic are lithium micas, which are associated with plutonic rocks – granites and pegmatites. Economically significant accumulations of the lithium – tin – tungsten (Li – Sn - W) association in the Czech Republic are widespread in the eastern part of the Krušné hory Mountains. Relevant deposits with the association of Li-Sn-W abound at Cinovec and north of the town Teplice and across the international border into Germany (Zinnwald, Altenberg).

The content of the ore deposit is related both quartz veins and with the greisen bodies in granite. The main minerals of the deposit are quartz, mica prevalent - zinnwaldite, cassiterite, wolframite, less potassium feldspar (adularia, albite), scheelite, topaz (mostly as variety pyknite) and muscovite.

The beginnings of mining the Cinovec vein deposits are in the 14th century. The main mining activity in the district ran from 1959 to the end of mining in 1978. Relics after intensive mining of Sn-W ores are numerous including voluminous tailing dumps and tailings ponds rich in quartz and zinnwaldite. The tailings pond area is 62400 m² and the volume of the deposited material is 783170 m³. The surface of the tailings pond is partially cultivated.

During the intensive mining in the 20th century the main objects of mining were Sn-W minerals. Li minerals for which there was no adequate use at the time, were deposited on the tailings and dumps. At present however, lithium is considered a critical raw material in Europe. The tailings pond could therefore be a potential source.

This paper describes Cinovec deposit tailings pond drilling exploration, its mineralogy and geochemistry of samples and evaluation of tailings pond as a possible source of lithium.

