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THE IRON WASTE FROM TPP AS THE SOURCE OF RADIOACTIVE CONTAMINATION
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The radioactivity control of the iron waste (tubes) raised from the regular maintenance of the „Gacko“ thermo power plant has shown the allocated spots of relatively high surface contamination, mainly beta, and no enhanced levels of absorbed radiation dose in the air. Further laboratory examination of the contaminated tube samples (10-15 cm length) determined the level and source of contamination. Gamma spectrometry (HP Ge, efficiency 23%) has shown the presence of ²¹⁰Pb isotope, beta-emitting radionuclide with 47keV X-ray emission, the member of the ²³⁸U series. The surface contamination and concentration values, determined after samples dissolution in mineral acids, are 2.4 Bq/cm² and 0.6 Bq/g, respectively.

The radioactivity of the tubes originate from the naturally occurring radionuclides in coal, with ²¹⁰Pb activities mostly within 0.01-0.05 Bq/g. During the TPP work, radioactivity is deposited with ash, flying ash and slag and partly released into atmosphere. But, the part of radioactivity is deposited at the tubes and cauldron with gases emanated during the coal combustion. In this way, the iron becomes contaminated by the natural radionuclide during the technological process. Since there are no legislative stipulations about such cases, we have applied the international recommendations saying that dose limit should not be higher than 10MikroSv/year for individuals. On this basis TECDOC 855 define different use of metals contaminated with natural or man-made radionuclides. According this document the contaminated iron with activity lower than 0.7 Bq/g may be further processed in the steel works that is the case with the iron waste produced in the TPP Gacko.