

<p>P-360</p>	<p>OCCUPATIONAL RADIATION EXPOSURE IN UPPER AUSTRIAN WATER SUPPLIES AND SPAS RINGER W¹, SIMADER M¹, BERNREITER M¹, ASPEK W², KAINEDER H³ (1) Austrian Agency for Health and Food Safety, Linz, Austria (2) Austrian Social Insurance for Occupational Risks, Vienna, Austria (3) Federal Government of Upper Austria, Linz, Austria</p>
<p>Presentation preference: Poster Only</p> <p>Major scientific thematic areas: TA4 - Radiation Protection at Workplaces</p>	<p>The Council Directive 96/29/EURATOM lays down the basic safety standards for the protection of the workers and the general public against the dangers arising from ionising radiation, including natural radiation. Based on the directive and on the corresponding Austrian legislation a comprehensive study was conducted to determine the occupational radiation exposure in Upper Austrian water supplies and spas.</p> <p>The study comprises 45 water supplies and 3 spas, one of them being a radon spa. Most measurements taken were to determine the radon concentration in air at different workplaces (n = 184), but also measurements of the dose rate at dehumidifiers (n = 7) and gamma spectrometric measurements of back-washing water (n = 4) were conducted. To determine the maximum occupational radon exposure in a water supply measurements were carried out in all water purification buildings and in at least half of the drinking water reservoirs of the water supply. The results were combined with the respective working times in these locations (these data having been collected by means of a questionnaire). Where the calculated exposure was greater than 1 MBqh/m³ then all drinking water reservoirs of the concerned water supply were measured for their radon concentration to ensure a reliable assessment of the exposure.</p> <p>The results show that the radon concentrations in the water supplies were lower as expected, being in 55% of all measurement sites below 1000 Bq/m³, in 91% below 5000 Bq/m³, and with a maximum value of 38700 Bq/m³. This leads to exposures that are below 2 MBqh/m³ (corresponding to approx. 6 mSv/a) in 42 water supplies. However, for the remaining three water supplies maximal occupational exposures due to radon of 2.8 MBqh/m³ (~ 10 mSv/a), 15 MBqh/m³ (~ 50 mSv/a), and 17 MBqh/m³ (~ 56 mSv/a), respectively, were determined. In these water supplies remediation measures were proposed, based mainly on improved ventilation of and/or reduction of working time in the building(s) concerned. After remediation the exposure will be reassessed using both conventional and personal radon detectors. The exposure due to the dose rate near dehumidifiers is negligible in all cases, with the dose rates ranging from 0.12 to 0.14 µSv/h.</p> <p>The gamma spectrometric measurements of back-washing water yielded Ra-226 and Ra-228 concentrations of up to 1 Bq/l (or 800 Bq/kg dry matter). However, in all cases the back-washing water is discharged into the sewer. The evaluation of the spas is still in progress; the results will be presented at the conference.</p> <p>To conclude, the maximum occupational radiation dose due to the inhalation of radon in Upper Austrian water supplies is below 1 mSv/a in 67% and below 6 mSv/a in 93% of all investigated water supplies. Higher doses were determined in three water supplies which are to be mitigated.</p>