

^{14}C activity level in the surrounding of NPPs and in the reference localities

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Radiocarbon is responsible for dominant contribution to the collective effective dose from all radionuclides released by nuclear power plants (NPP) with light-water pressurized reactors (LWPR) during normal operation. There are three basic ways how to perform monitoring of ^{14}C activity in the environment. The first possibility is based on the monitoring of the atmospheric $^{14}\text{CO}_2$ and/or sum of the carbon forms (including combustible compounds of carbon). The second possible way is sampling of the biota ingrowth during a given vegetation period (tree leaves, herbs). Other possible sampling way is utilizing of tree rings as a material with long term record of ^{14}C . To obtain basic information about level of the ^{14}C activity and its trends in the Czech Republic territory, monitoring of the atmospheric $^{14}\text{CO}_2$ activity in the urban area Prague-Bulovka (bordering part of this city) and the relatively clear rural locality Košetice (monitoring station of the Czech Hydrometeorological Institute) was launched in 2002 and 2003, respectively. In the Czech Republic is performed monitoring of ^{14}C in annual biota from the vicinity of NPPs Temelín and Dukovany since 2002. Due to presence of the light water pressurized reactors in the both NPPs, releases of ^{14}C into environment are relatively small. Possible surplus of ^{14}C activity in the NPP's surrounding is also reduced by a low abundance of the $^{14}\text{CO}_2$ form in the ^{14}C releases from these NPPs (only this form of ^{14}C can be captured by biota). During 2013 and 2014 was also performed sampling of several tree rings close to the both NPPs and in the reference localities. Quantifying of the possible ^{14}C activity surplus in the NPP surrounding is obstructed by several problems causing increase of a resulting uncertainty. These influences will be described and analyzed in our presentation. Likewise, limitations and advantages of applied sampling routines will be discussed.