

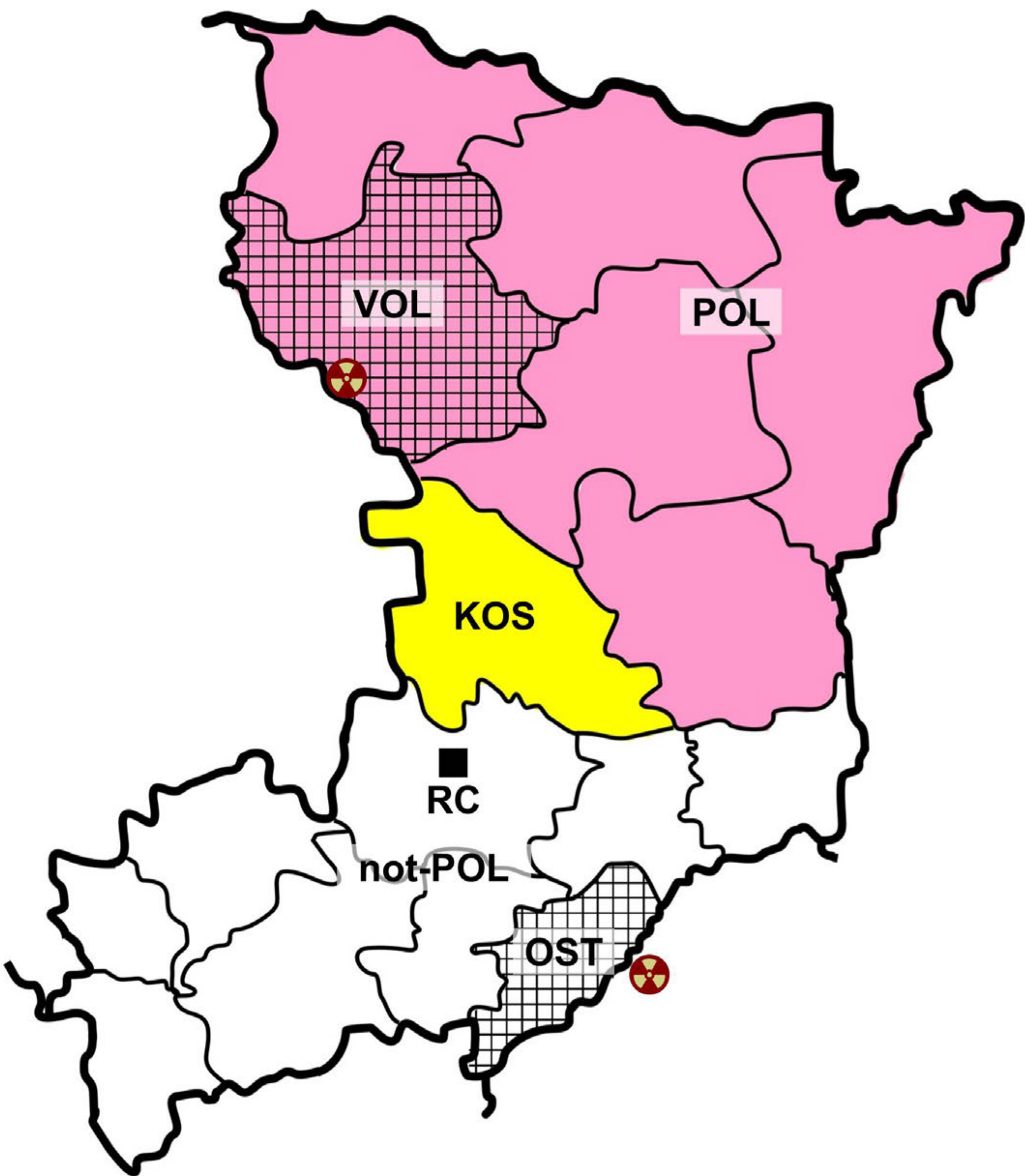
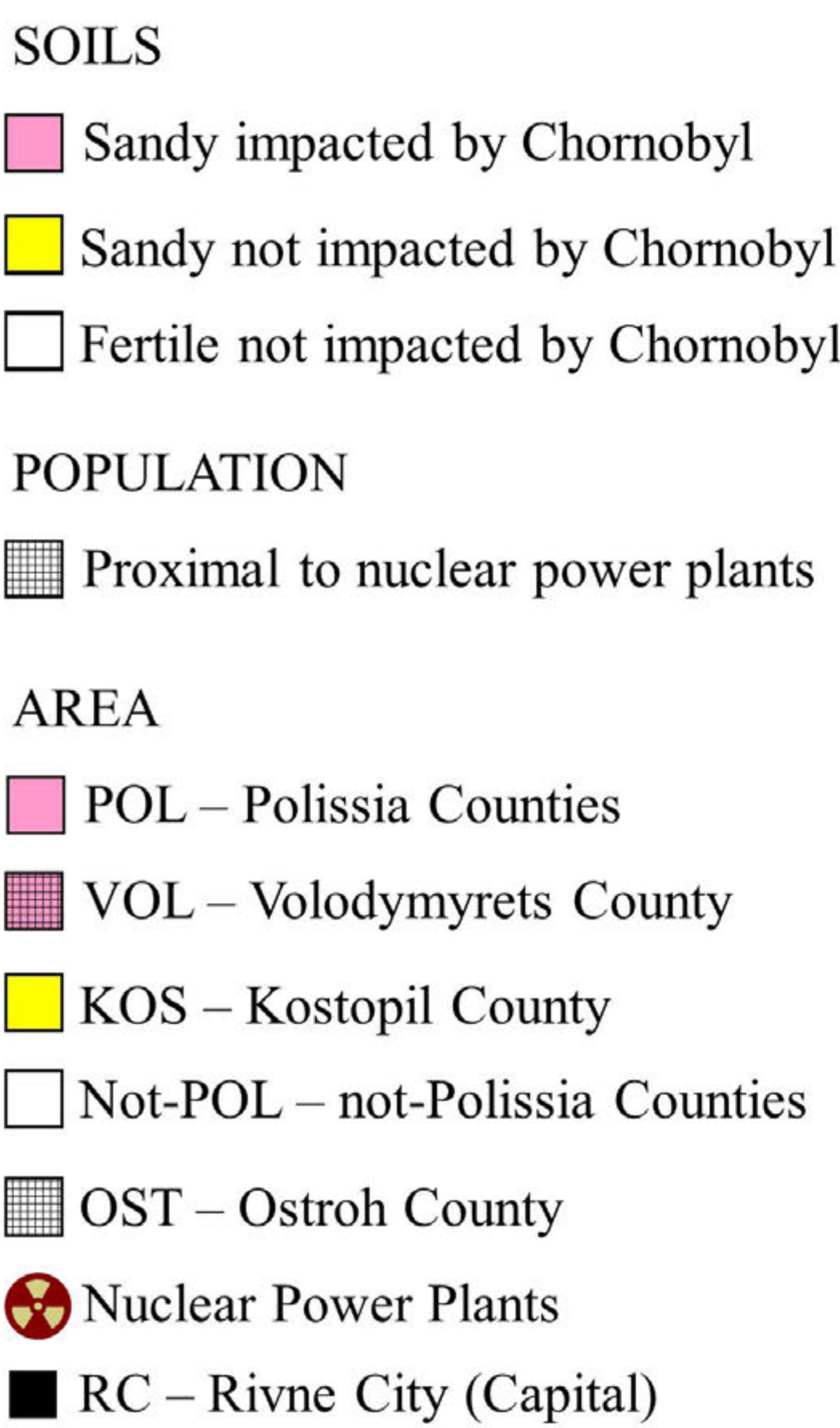
# RADIATION, NEURAL TUBE DEFECTS, AND MICROCEPHALY

Wertelecki<sup>1</sup> Wladimir, Yevtushok<sup>1,2</sup> Lyubov, Kuznietsov<sup>3</sup> Illia, Komov<sup>1,4</sup> Oleksandr, Lapchenko<sup>1,5</sup> Serhii, Akhmedzhanova<sup>1,6</sup> Diana

OMNI-Net for Children International Charitable Fund, Rivne, Ukraine<sup>1</sup>, Rivne Province Regional Medical Diagnostic Center, Rivne, Ukraine<sup>2</sup>, Human and Animal Physiology Department, Lesya Ukrainka Eastern European University, Lutsk, Ukraine<sup>3</sup>, Rivne Regional Laboratory Center of the Ministry of Health of Ukraine, Rivne, Ukraine<sup>4</sup>, Volyn Regional Children's Territorial Medical Center, Lutsk, Ukraine<sup>5</sup>, Khmelnytsky City Perinatal Center, Khmelnytsky, Ukraine<sup>6</sup>

- Whole body counts (WBC) of cesium-137 (Cs-137) incorporated by pregnant women are persistently elevated in areas impacted by Chornobyl radiation.
- Neural tube defects (NTD) and isolated microcephaly rates are statistically significantly higher in areas impacted by Chornobyl radiation when compared to other areas of the province.
- In two counties, each proximal to a nuclear power plant (NPP), the rates of NTD and isolated microcephaly are the highest irrespective of WBC levels of Cs-137. We suspect that if this fact reflects impacts of emissions from the adjoining NPPs, the most likely nuclide is tritium (H3) because it is known that waters emitted by these NPPs contained elevated levels of this nuclide.
- Our investigations demonstrate a statistically significant and persistent association between high WBC Cs-137 levels and elevated population rates of congenital anomalies. However, the descriptive epidemiologic nature of this study design does not allow for assertions of cause-effect.
- **We conclude that there is a strong basis to recommend further investigations by our team with partnerships with international research teams to further define the impacts of chronic low dose radiation ongoing exposures on large populations in Ukraine.**

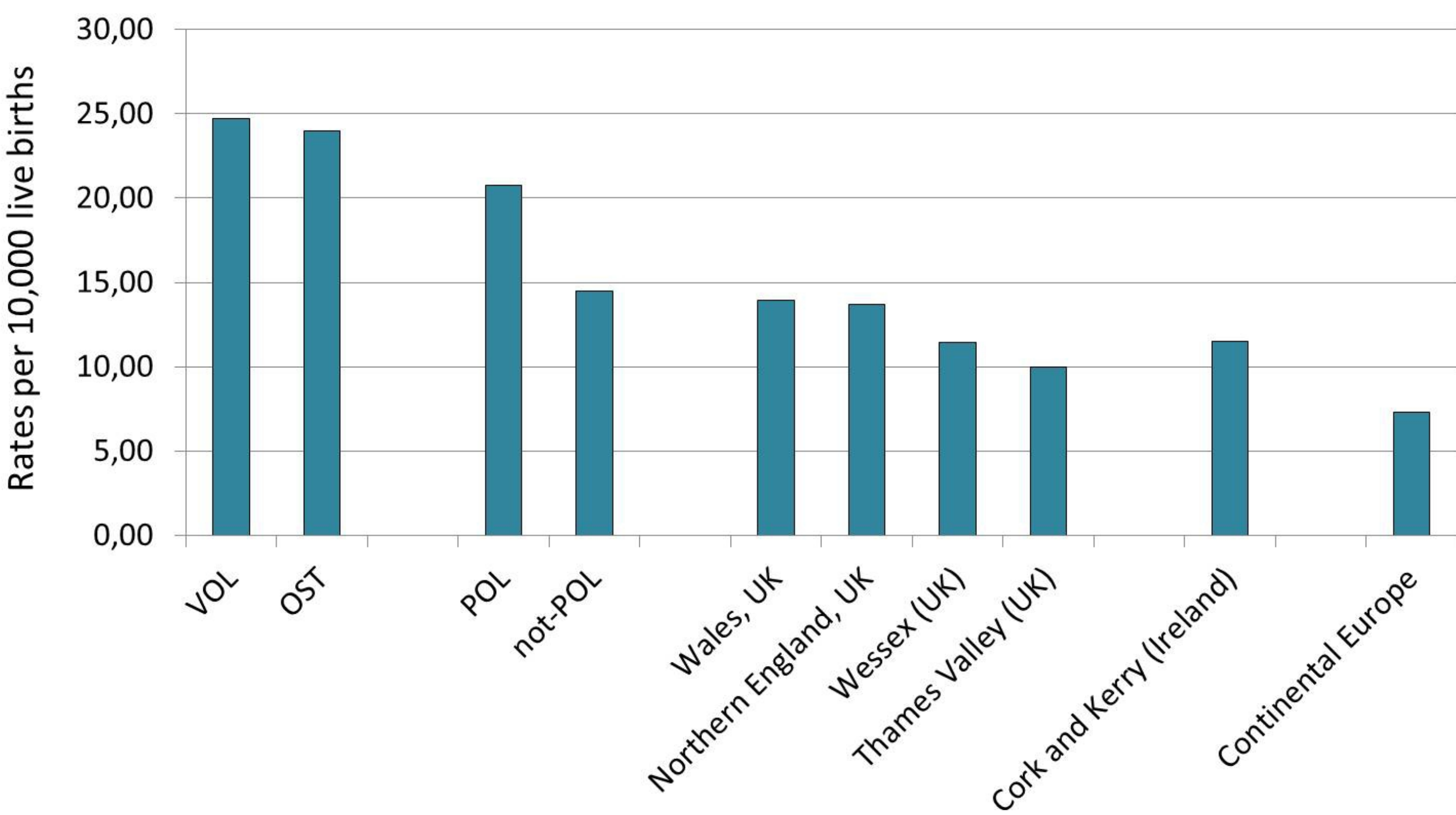
Rivne Province and Polissia soils impacted by Chornobyl ionizing radiation



WBC Cs-137 levels recorded during two time periods (top) and 2000–2015 prevalence rates of neural tube defects (NTD) and microcephaly (MIC) (bottom)



Neural Tube Defects (NTD) prevalence rates during the 2000–2015 period in Europe



## Source

Chornobyl, radiation, neural tube defects, and microcephaly. Eur J Med Genet. 2018 Jun 13. doi: 10.1016/j.ejmg.2018.06.005.

<https://www.sciencedirect.com/science/article/pii/S1769721218301666>