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SOIL POLLUTION AND ITS IMPACT ON THE PREVALENCE OF DISEASES OF POPULATION OF THE SUMY REGION

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Deterioration in the health of the population, the growth of the primary disease and the prevalence of different nosologies aroused the search for causes, which might cause such an increase. Most scientists are agreeing that this factor may be the quality of the environment. Therefore, finding and assessment of the linkages between different types of diseases and parameters of the environment is an important component of medico-ecological research. A direct correlation between the pollution of environment and level of morbidity prevalence of the population we established by the mathematical methods.

Ecological conditions of soil, in particular their radioactive contamination by Cs¹³⁷ (Fig. 1), is most strongly influences to the prevalence of diseases of the endocrine system, especially nodular goiter ($r = 0.476$, $p = 0.04$) and hypothyroidism, particularly the postoperative hypothyroidism ($r = 0.67$, $p < 0.01$).

Postoperative hypothyroidism is also reliably correlates with the radioactive contamination of crop production by Cs¹³⁷ ($r = 0.461$, $p = 0.04$) and Sr⁹⁰ ($r = 0.507$, $p = 0.02$) (Fig. 2). In both cases, the big prevalence of these nosologies is in the Shostka district, where this problem is most acute.

No less acute is problem of soil contamination by heavy metals, especially Pb and Cd, given their negative impact on human health. With these contaminations with medium and large closeness of the relationship are correlate 12 diseases of such nosological classes: blood diseases and blood-forming organs (anemias), endocrine system diseases, digestive disorders, metabolic disorders (obesity), skin diseases (atopic dermatitis),

and diseases of musculoskeletal systems and connective tissue (gouty arthritis and podagra).

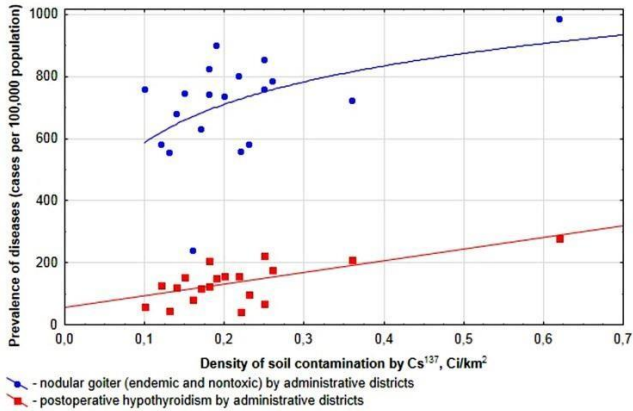


Figure 1 - Dependence the prevalence of goiter in the population of Sumy region from the density of soil contamination by Cs^{137}

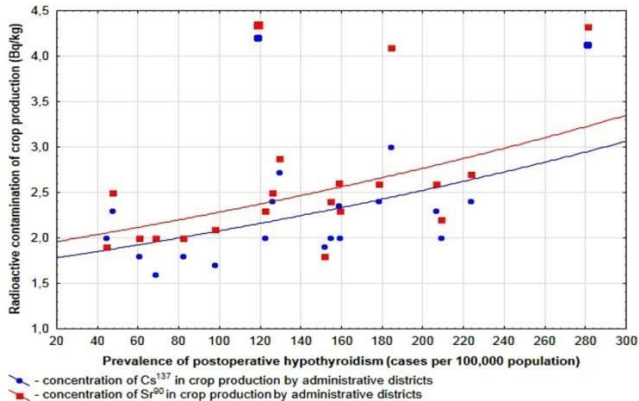


Figure 2 - Correlation between the postoperative hypothyroidism in the population of Sumy region and the radioactive contamination of crop production

However most closely with the content of Pb in soils are correlated the diseases of circulatory system: acute and repeated myocardial infarction ($r = 0.574$, $p = 0.01$), non-rheumatic involvement of cardiac valves ($r = 0.565$, $p = 0.01$), atrial fibrillation and atrial flutter ($r = 0.461$, $p = 0.05$) and

diseases of digestive organs (Fig. 3): duodenal ulcer ($r = 0.539$, $p = 0.02$), gastritis and duodenitis ($r = 0.614$, $p = 0.01$), diseases of peritoneum and bowel ($r = 0.569$, $p = 0.011$), cholelithiasis ($r = 0.6$, $p = 0.01$).

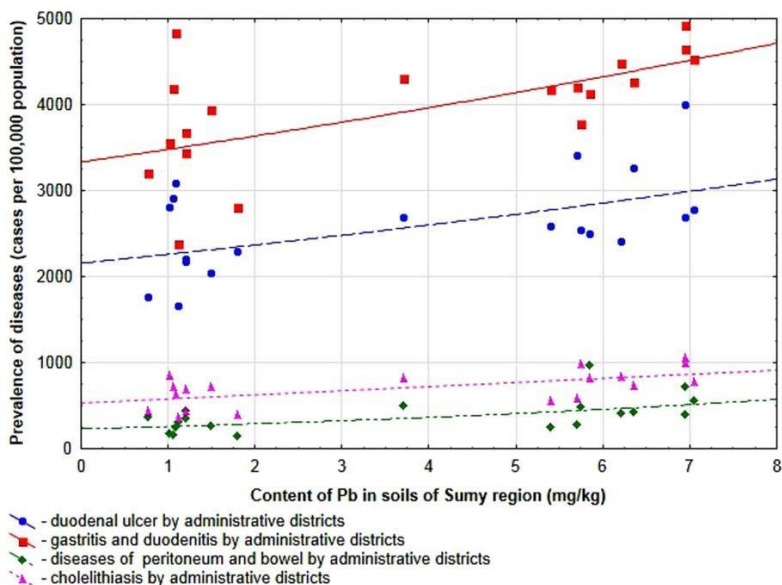


Figure 3 - The impact of soil pollution by Pb on the prevalence of diseases of the digestive system

Somewhat less noticeable is the impact on the prevalence of diseases another heavy metal – Cd. As in the case of Pb, there is a fairly reliable connection between the content of Cd in soils Sumy region and the prevalence of anemia, acute and recurrent myocardial infarction, non-rheumatic involvement of cardiac valves, atopic dermatitis. More close relationship we observe between the content of Cd and prevalence of diseases of the digestive system (Fig. 6): gastric ulcer and duodenal ulcer ($r = 0.57$, $p = 0.01$), gastritis and duodenitis ($r = 0.68$, $p < 0.01$), dyspepsia ($r = 0.509$, $p = 0.03$), peritoneal and intestinal diseases ($r = 0.59$, $p = 0.08$), cholelithiasis ($r = 0.6$, $p = 0.01$).