

# RISK ASSESSMENT OF SOIL CONTAMINATION IN MUNICIPALITY OF ŽALEC, SLOVENIA

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## Background:

- Contamination of soil with cadmium, lead, zinc and copper reported for some areas

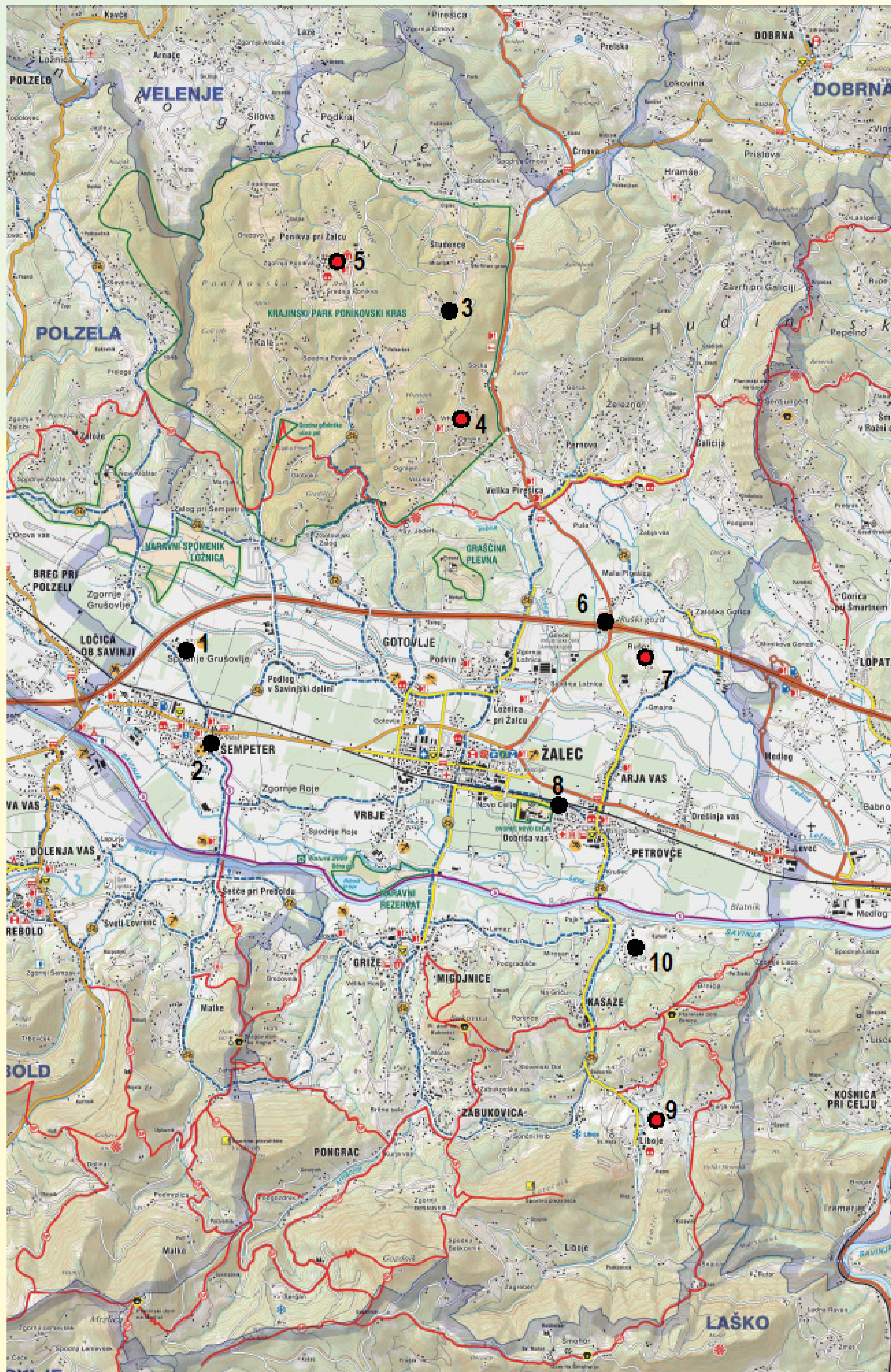
## Available data:

- Metals in drinking water, outdoor air

## Research:

- Sampling and analysis of vegetables grown in the area

## Study area with points of sampling



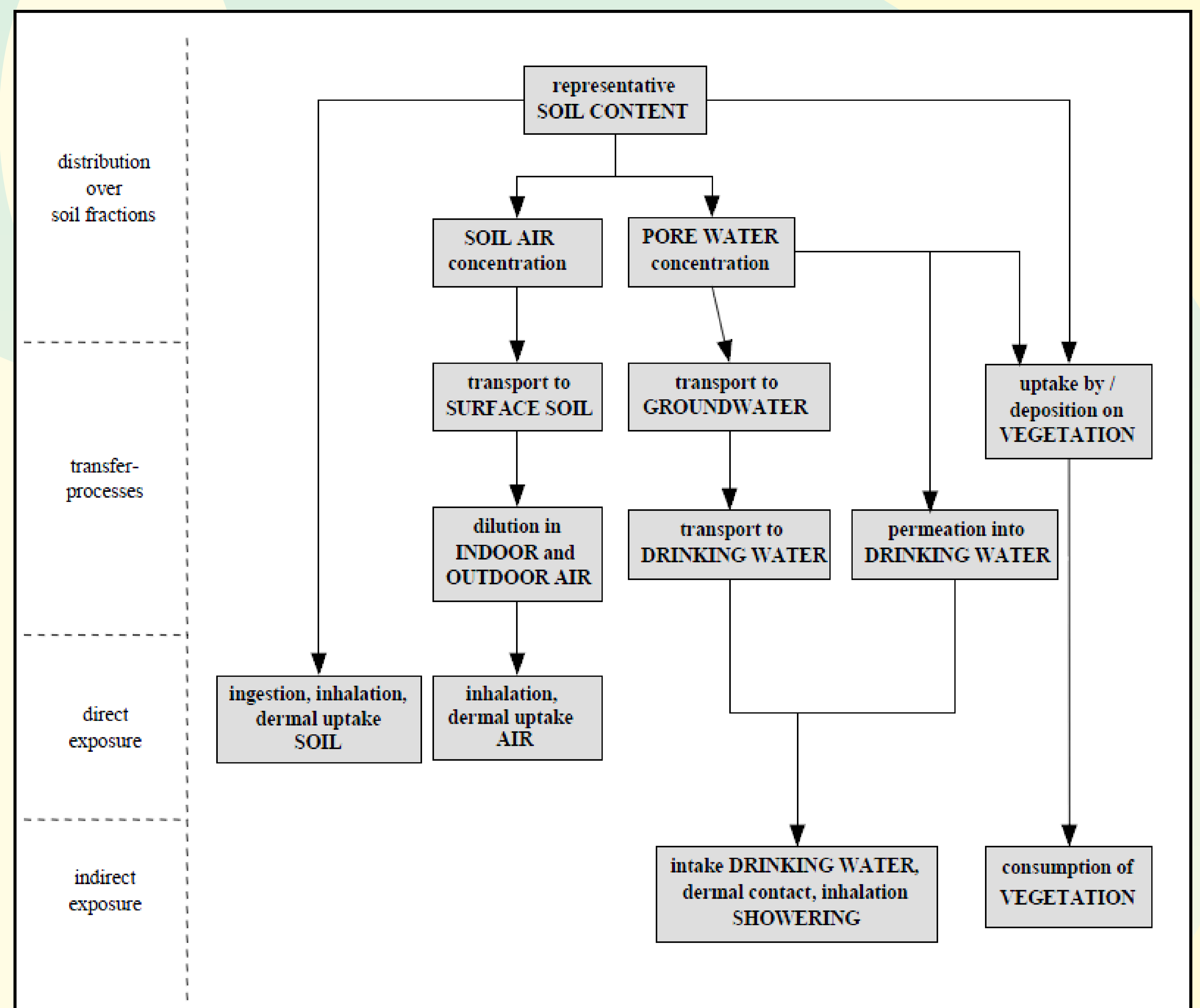
## Contaminants of potential concern identified:

LOCATION OF SAMPLING	CoPCs for vegetables
4 Studence	Cd for carrots
5 Ponikva	Hg and Cd for mushrooms
7 Ruše	Cd for mushrooms
9 Liboje	Cd for carrots
Rest of 10 locations	none

## Contaminants of potential concern identified:

LOCATION	CoPCs in soil	CoPCs in outdoor air	CoPCs in drinking water
Roje	Cd	none	none
Levec	Cd, Cu	none	none
Ložnica at Žalec	Cd, Cu, Pb, Zn, As	none	none
Kasaze	Cd	none	none
Mirosan	Cd, Zn	none	none
Arja vas	Cd, Zn, Cu	none	none

## Human exposure routes used in the model CSOIL 2000



## Tier 1 risk assessment:

- Contaminants of Potential Concern (CoPCs) determined by use of limit values set by Slovenian and international legislation

## Tier 2 risk assessment:

- Use of health criteria: TDI (total daily intake), TCA (Tolerable Concentration in air), RfD (Reference Dose) as incorporated in model used.
- Exposure calculations by conceptual site model CSOIL 2000

**Results: Calculated risk index for all contaminants of potential concern is low.**

Locations with CoPCs	CoPCs in soil	Level of contamination [mg/kg d.m.]	Risk index	Maximal permissible risk (MPR) [mg/kg*day]	Average daily exposure		
					Children: 0-6 years [mg/kg i.g.*d]	Adults: 6-70 years in Life-long [mg/kg i.g.*d]	Lifelong: 0-70 years [mg/kg i.g.*d]
Roje	Cadmium	3,6	0,66	0,0005	0,000464	0,000316	0,000329
Levec	Cadmium	1,7	0,33	0,0005	0,000291	0,000155	0,000167
	Copper	73,9	0,02	0,14	0,00403	0,00192	0,00210
Ložnica pri Žalcu	Cadmium	1,25	0,14	0,0005	0,000120	0,0000670	0,0000716
	Lead	108	0,05	0,00360	0,000649	0,000139	0,000183
	Zinc	286	0,03	0,5	0,0203	0,0128	0,0135
Kasaze	Cadmium	92,9	0,02	0,14	0,00310	0,00162	0,00174
	Arsenic	26,6	0,19	0,001	0,000383	0,000173	0,000191
Mirosan	Cadmium	1,49	0,33	0,0005	0,000290	0,0000155	0,000166
	Cadmium	1,71	0,33	0,0005	0,000291	0,000155	0,000167
Arja vas	Zinc	224	0,02	0,5	0,0173	0,0102	0,0108
	Cadmium	1,50	0,21	0,0005	0,000163	0,0000977	0,000103
Rest of 10 locations	Zinc	221	0,02	0,5	0,0173	0,0102	0,0108
	Copper	139	0,02	0,14	0,00446	0,00196	0,00218

## Conclusions:

Risk for adverse health effects originating from soil contamination in municipality of Žalec is low. Risk management activities for contaminants of potential concern are not necessary.