

# **CALCULATION OF THE TARGET CONCENTRATION FOR REMEDIATION**

**Gyöngyösroszsi abandoned base metal mining site  
in Hungary**

**Theoretical and practical  
examples**

# **Theoretical example**

# CALCULATION OF THE TARGET CONCENTRATION

## 1. Estimation of the Natural Risk Reduction Capacity of the site for the Gyöngyösoroszi abandoned base metal mining area

Emitted concentration from the sources ( $C_e$ )

*Natural Risk Reduction  
Capacity of the site  
(NRRC)*



*$C_e/C_r$*

Concentration in the receiving creek ( $C_r$ )

# CALCULATION OF THE REMEDIATION TARGET CONCENTRATION

2. Water phase related Maximum Permissible Emission from diffuse sources= Remediation target value (Backwards mode Risk Assessment)

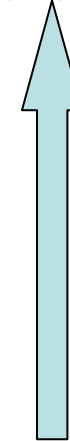
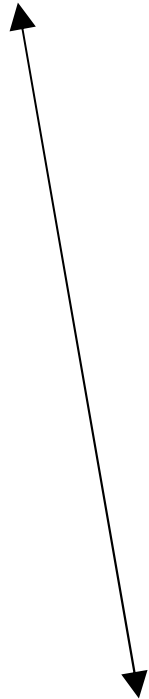
SOURCE

Calculated Maximum Permissible Emission (MPE= EBQC\*NRRC) from the pollution sources to reach the EBQC levels in the receiving creek

Natural Risk Reduction Capacity of the site (NRRC)

RECEIVING CREEK

Effect based Quality Criteria for the receiving creek (EBQC)



# **PRACTICAL EXAMPLE**

# CALCULATION OF THE TARGET CONCENTRATION

## 1. Estimation of the Natural Risk Reduction Capacity of the site for the Gyöngyösoroszi abandoned base metal mining area

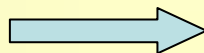


Waste dump

Estimated emitted concentration from the diffuse sources of the Northern catchment

<u>minimum</u>	As: 150 µg/l	Cd: 100 µg/l
	Pb: 100 µg/l	Zn: 25 000 µg/l

*Natural Risk Reduction  
Capacity of the site  
( $NRRC_{min}$ )*



As: 3.0 (66%)	Cd: 50 (98%)
Pb: 3.4 (70%)	Zn: 30 (97%)

Toka creek  
outflow of the  
N. catchment



Toka PEC

As: 50 µg/l	Cd: 2 µg/l
Pb: 30 µg/l	Zn: 800 µg/l

# CALCULATION OF THE TARGET CONCENTRATION

## 2. Water phase related Maximum Permissible Emission from diffuse sources (Backwards mode Risk Assessment) in the Gyöngyösoroszi abandoned base metal mining area



Waste Dump

Calculated Maximum Permissible Emission (MPE) from the pollution sources to reach the EBQC levels in the Toka creek

As: 30 µg/l      Cd: 50 µg/l  
 Pb: 34 µg/l      Zn: 3 000 µg/l

Natural Risk  
 Reduction Capacity of  
 the site (NRRC<sub>min</sub>)

As: 3.0 (66%)      Cd: 50 (98%)  
 Pb: 3.4 (70%)      Zn: 30 (97%)

Toka creek



EBQC Toka (PNEC)

As: 10 µg/l      Cd: 1 µg/l  
 Pb: 10 µg/l      Zn: 100 µg/l

