Monitoring and studying the behavior of specific metals in an industrial wastewater treatment plant in Italy.

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Supplementary Material

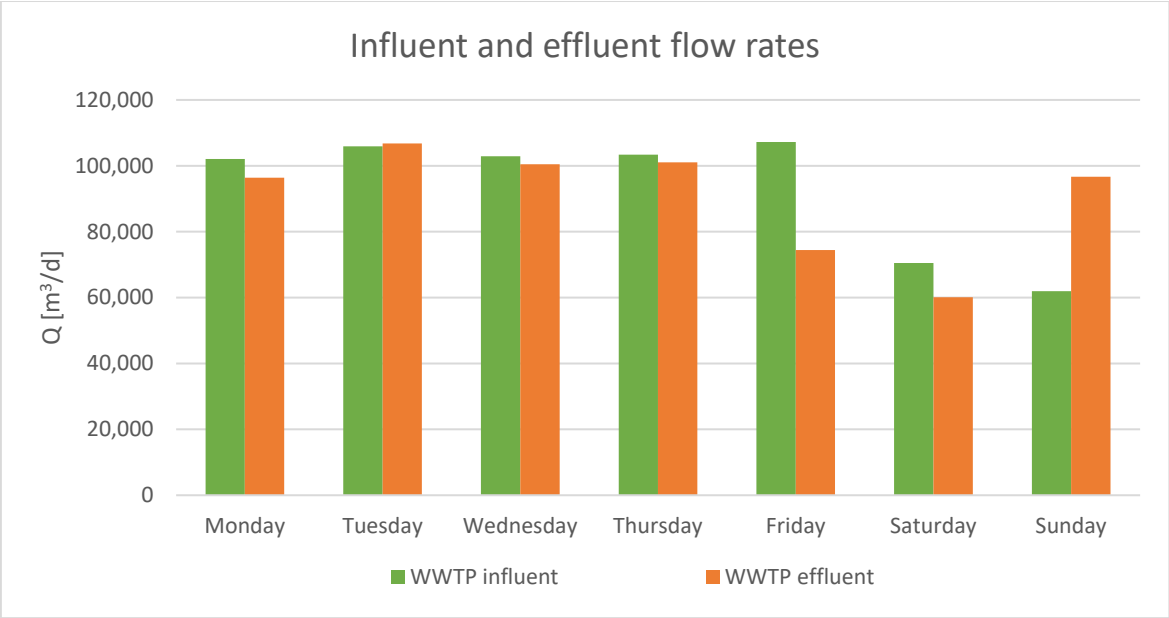


Figure S1. Influent and effluent flow rate trends during the intensive monitoring campaign.

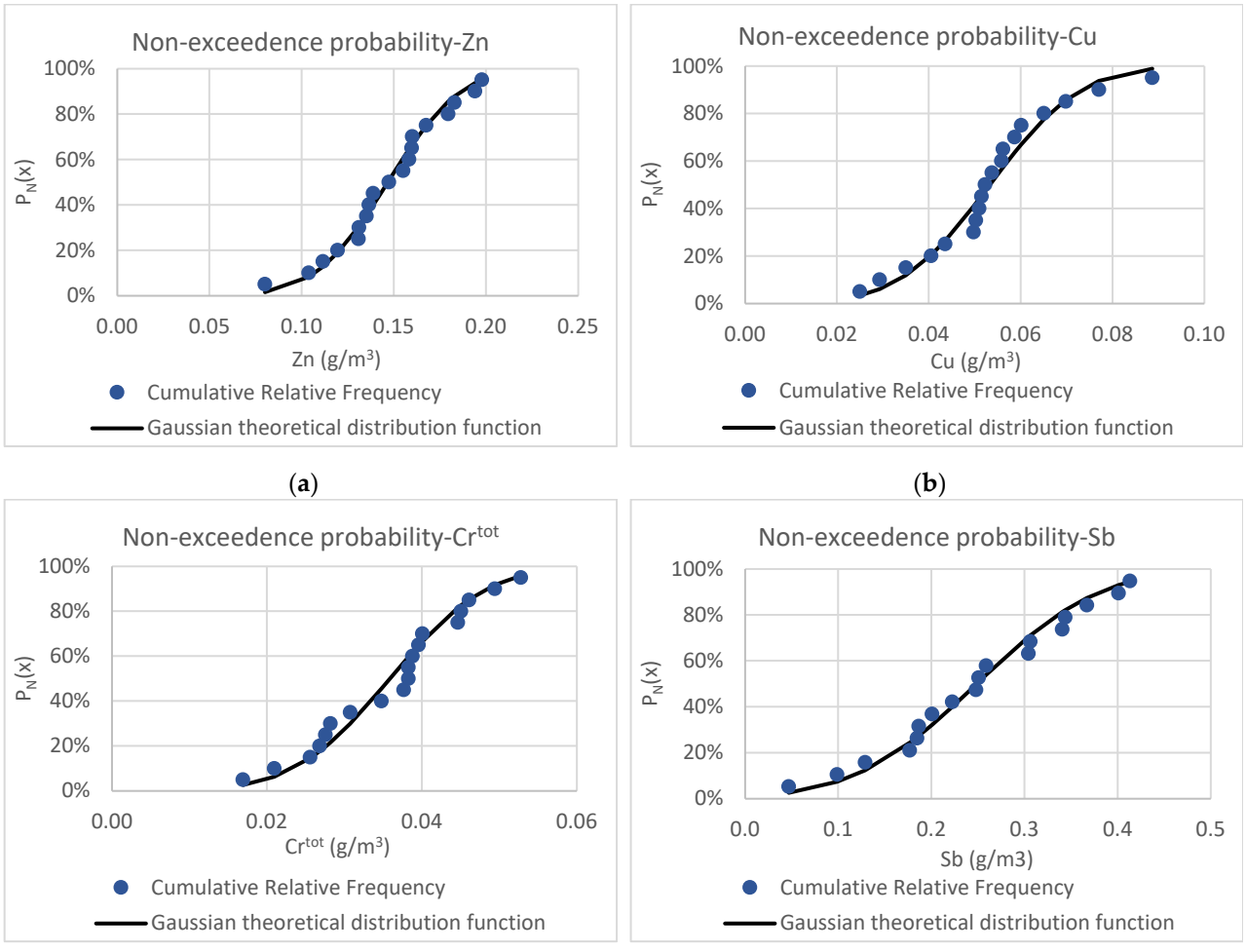
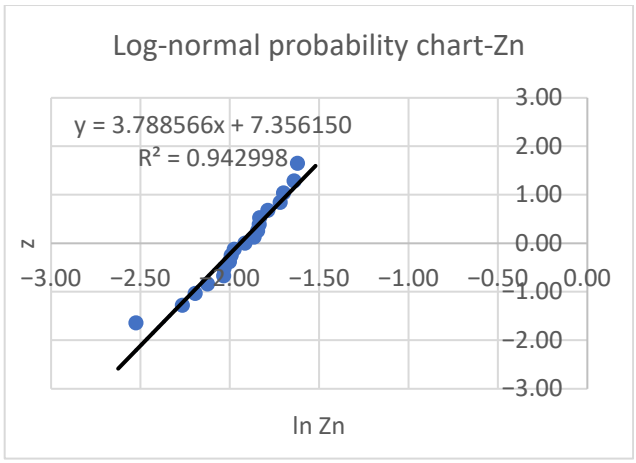
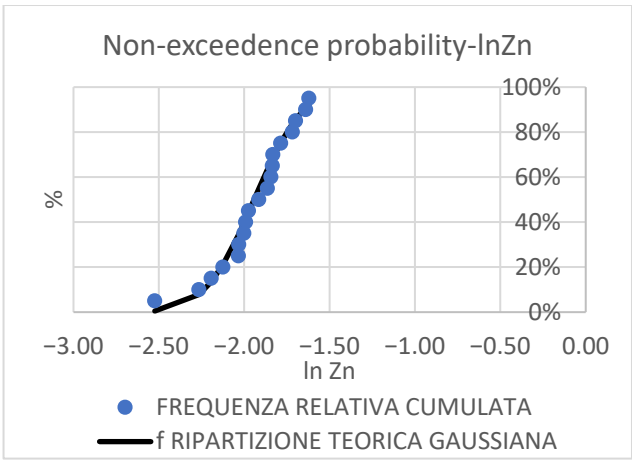


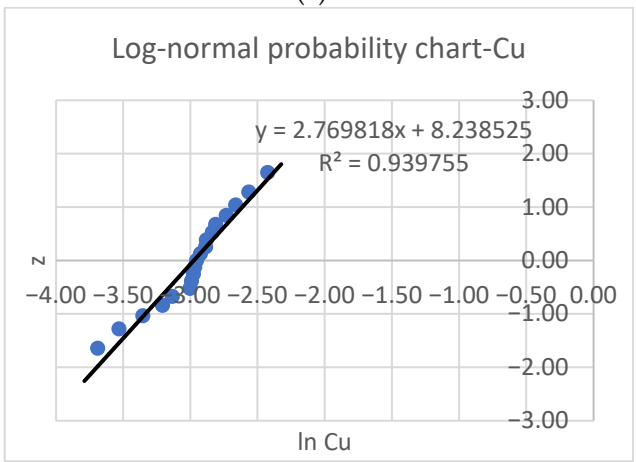
Figure S2. Normal probability of non-exceedance for Zn (a), Cu (b), Cr^{tot}(c), and Sb (d).


Log-normal probability chart-Zn
y = 3.788566x + 7.356150
R² = 0.942998
z
ln Zn

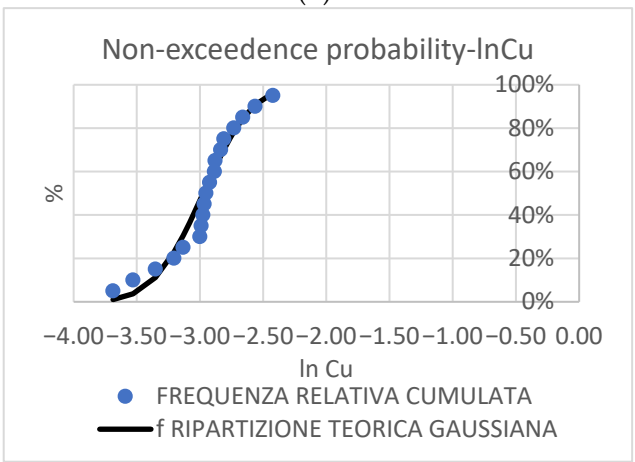
(a)


Non-exceedence probability-lnZn
%
ln Zn
FREQUENZA RELATIVA CUMULATA
f RIPARTIZIONE TEORICA GAUSSIANA

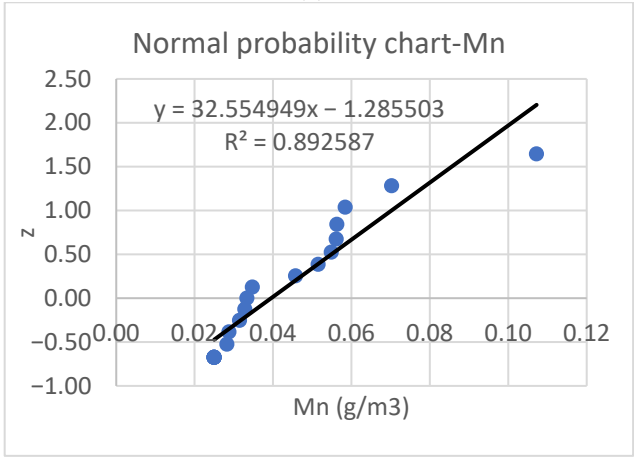
(b)


Log-normal probability chart-Cu
y = 2.769818x + 8.238525
R² = 0.939755
z
ln Cu

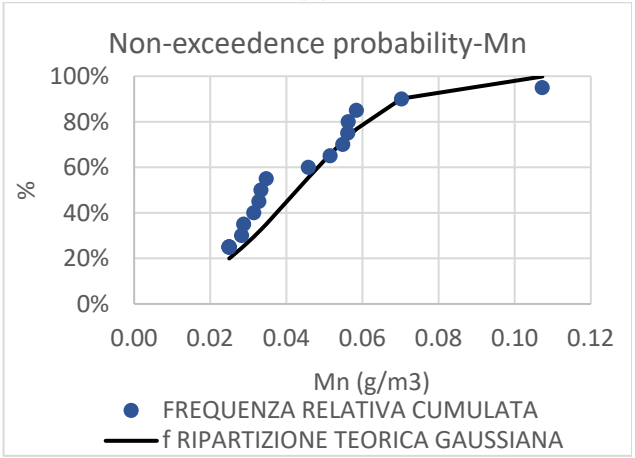
(c)


Non-exceedence probability-lnCu
%
ln Cu
FREQUENZA RELATIVA CUMULATA
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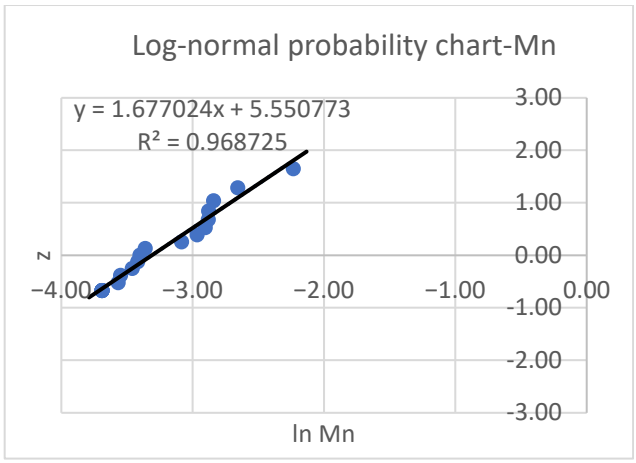
(d)


Normal probability chart-Mn
y = 32.554949x − 1.285503
R² = 0.892587
z
Mn (g/m3)

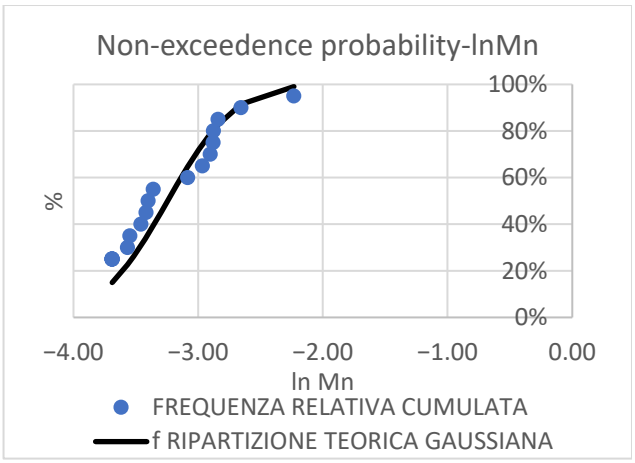
(e)


Non-exceedence probability-Mn
%
Mn (g/m3)
FREQUENZA RELATIVA CUMULATA
f RIPARTIZIONE TEORICA GAUSSIANA

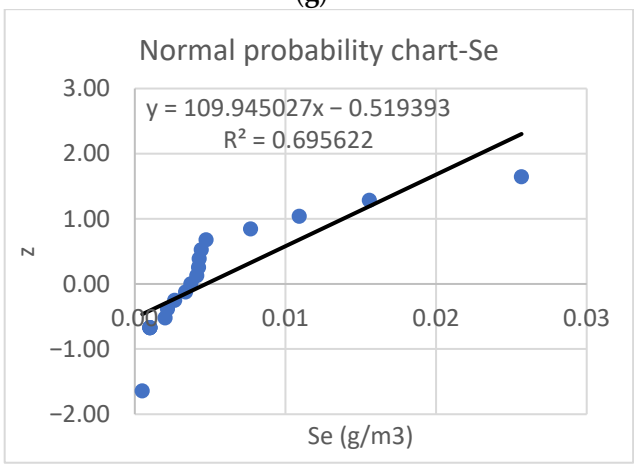
(f)


Log-normal probability chart-Mn
y = 1.677024x + 5.550773
R² = 0.968725
z
ln Mn
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
−4.00
−3.00
−2.00
−1.00
0.00

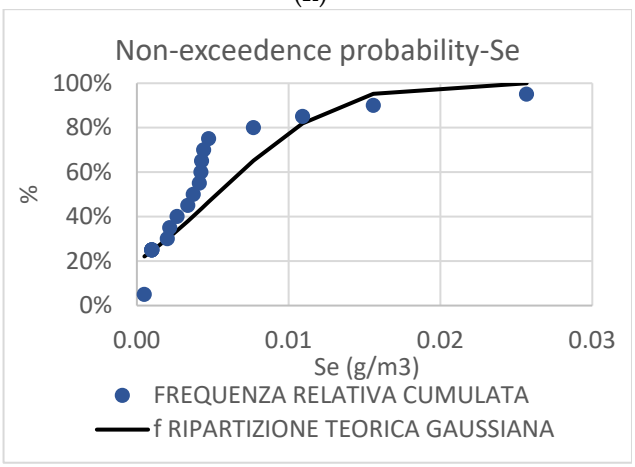
(g)


Non-exceedence probability-lnMn
%
ln Mn
100%
80%
60%
40%
20%
0%
−4.00
−3.00
−2.00
−1.00
0.00
FREQUENZA RELATIVA CUMULATA
f RIPARTIZIONE TEORICA GAUSSIANA

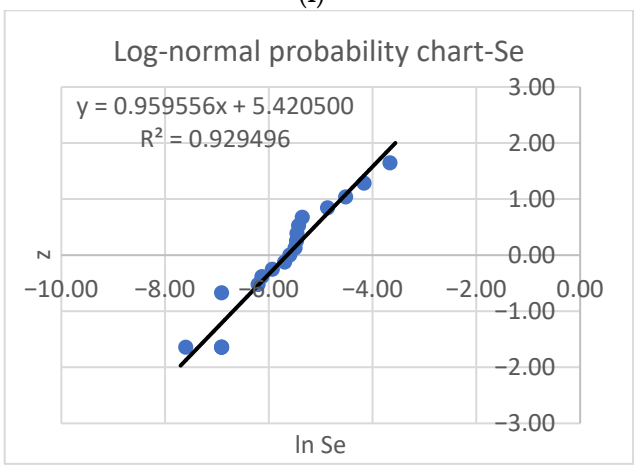
(h)


Normal probability chart-Se
y = 109.945027x − 0.519393
R² = 0.695622
z
Se (g/m3)
3.00
2.00
1.00
0.00
-1.00
-2.00
0.00
0.01
0.02
0.03

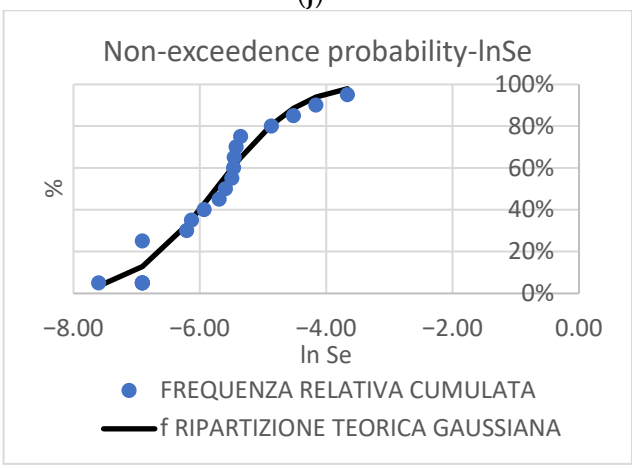
(i)


Non-exceedence probability-Se
%
Se (g/m3)
100%
80%
60%
40%
20%
0%
0.00
0.01
0.02
0.03
FREQUENZA RELATIVA CUMULATA
f RIPARTIZIONE TEORICA GAUSSIANA

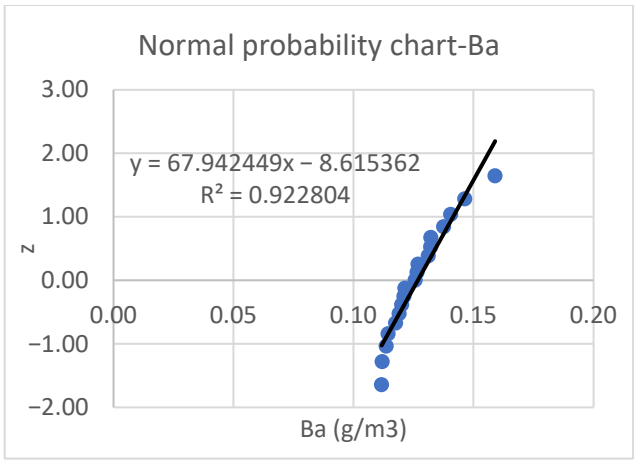
(j)


Log-normal probability chart-Se
y = 0.959556x + 5.420500
R² = 0.929496
z
ln Se
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
−10.00
−8.00
−6.00
−4.00
−2.00
0.00

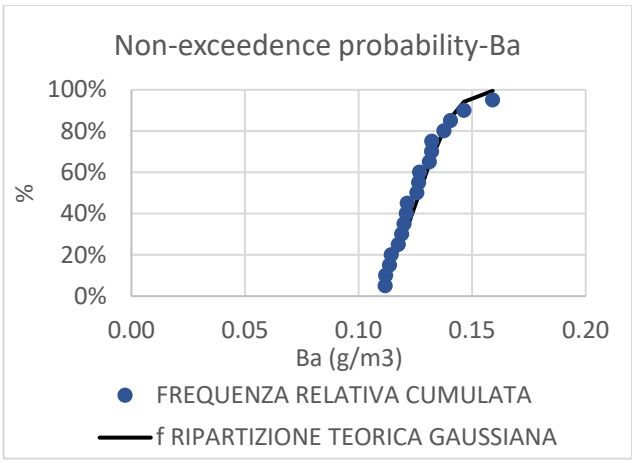
(k)


Non-exceedence probability-lnSe
%
ln Se
100%
80%
60%
40%
20%
0%
−8.00
−6.00
−4.00
−2.00
0.00
FREQUENZA RELATIVA CUMULATA
f RIPARTIZIONE TEORICA GAUSSIANA

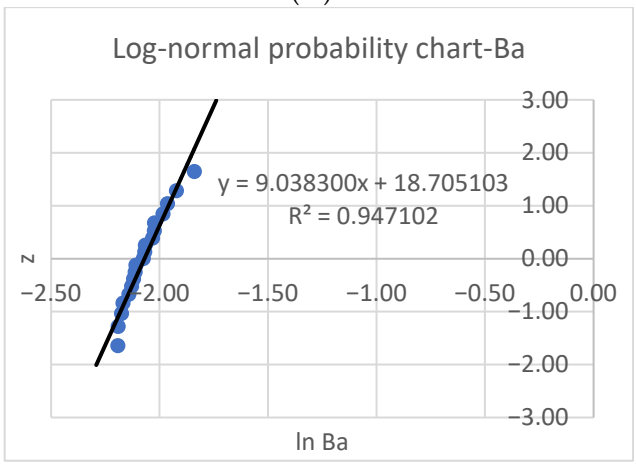
(l)


Normal probability chart-Ba
y = 67.942449x − 8.615362
R² = 0.922804
z
Ba (g/m3)

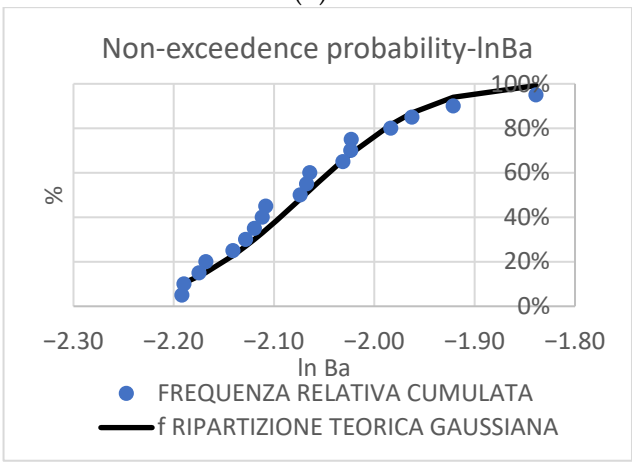
(**m**)


Non-exceedence probability-Ba
%
Ba (g/m3)
FREQUENZA RELATIVA CUMULATA
f RIPARTIZIONE TEORICA GAUSSIANA

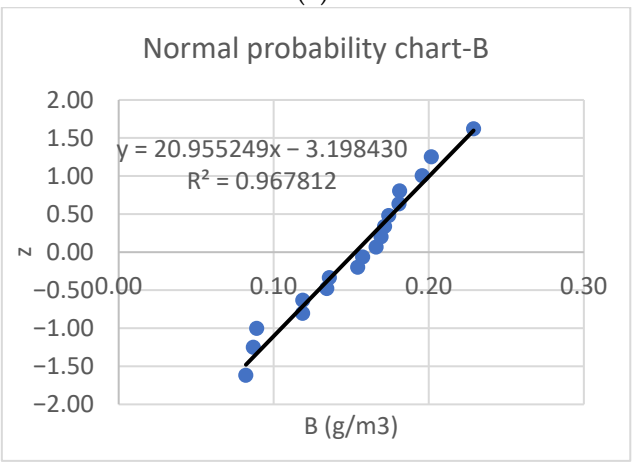
(**n**)


Log-normal probability chart-Ba
y = 9.038300x + 18.705103
R² = 0.947102
z
ln Ba

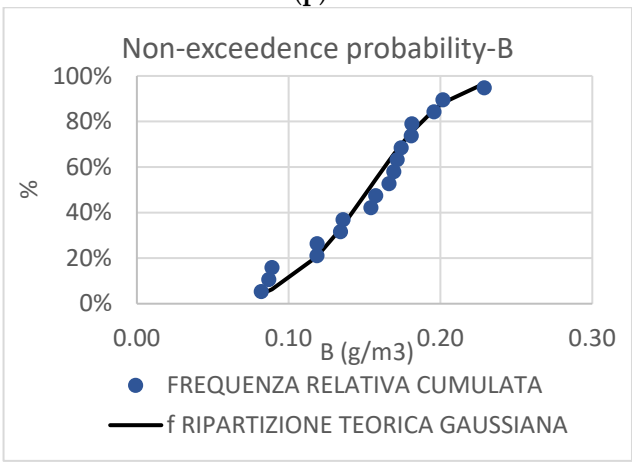
(**o**)


Non-exceedence probability-lnBa
%
ln Ba
FREQUENZA RELATIVA CUMULATA
f RIPARTIZIONE TEORICA GAUSSIANA

(**p**)


Normal probability chart-B
y = 20.955249x − 3.198430
R² = 0.967812
z
B (g/m3)

(**q**)


Non-exceedence probability-B
%
B (g/m3)
FREQUENZA RELATIVA CUMULATA
f RIPARTIZIONE TEORICA GAUSSIANA

(**r**)

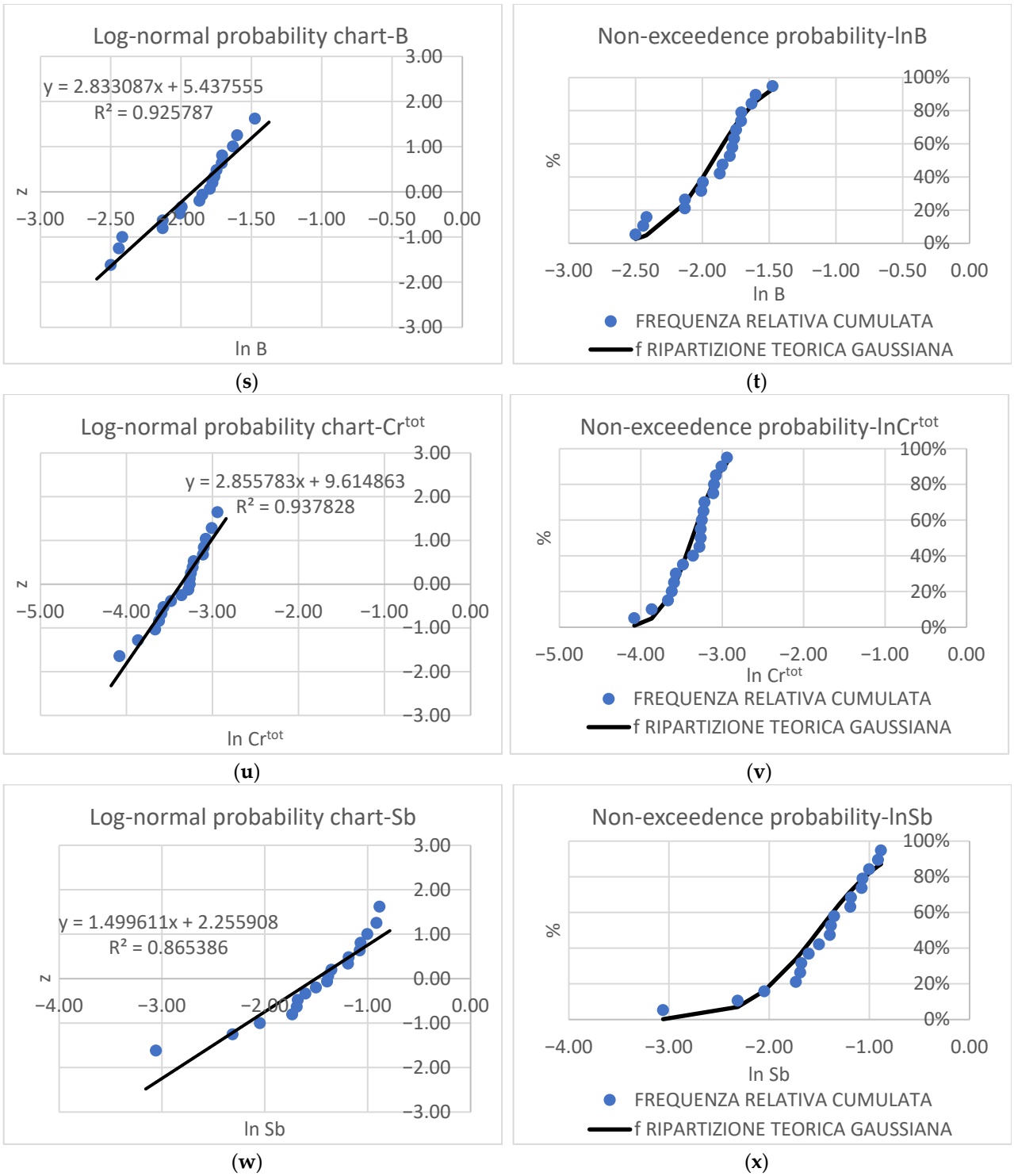


Figure S3. Normal and log-normal probability charts and probability of non-exceedance for the specified heavy metals.

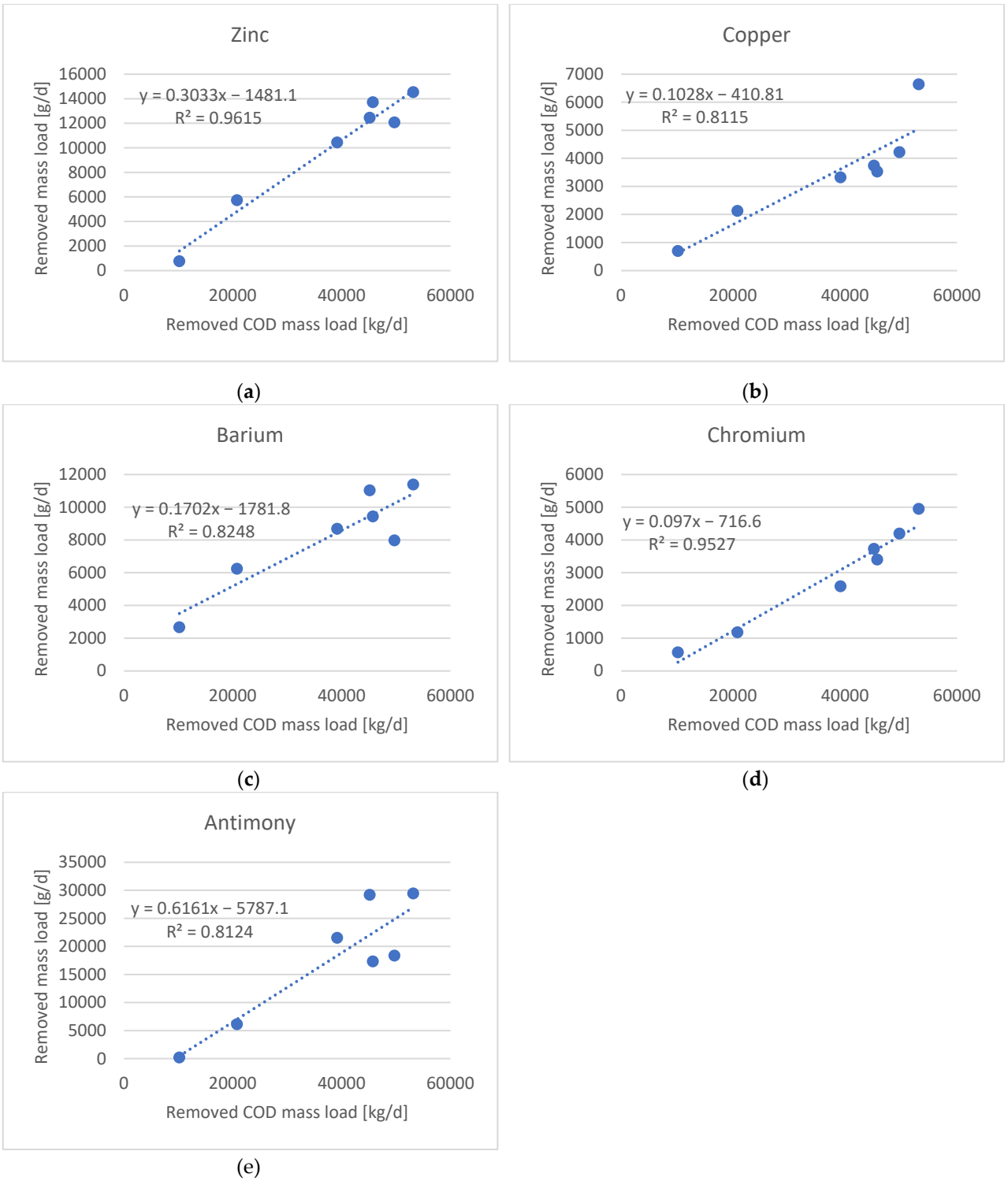


Figure S4. Correlation between the metal load removal and the removed COD: (a) zinc, (b) copper, (c) barium, (d) chromium, (e) antimony

Table S1. pH trends along the wastewater treatment plant

	Extensive Monitoring Campaign		Intensive Monitoring Campaign	
	Mean	STD	Mean	STD
WWTP inlet	7.96	0.16	8.21	0.10
Primary treatment outlet	7.98	0.16	8.15	0.12

Tertiary treatment outlet	7.85	0.15	7.95	0.11
WWTP outlet	7.90	0.16	7.91	0.04