

Influence of the Industrial Sector On The Quality Of Municipal Wastewater

Varvarin Case Study

INTRODUCTION

- In order to create reliable baseline for Waste Water Treatment Plant (WWTP), Jaroslav Cerni Water Institute (JCWI) applied its methodological approaches to solve the wastewater collection and treatment problem in the town of Varvarin with population around 2,000 citizens.
- Before carrying out the investigative works, the construction of WWTP for 3,850 Population Equivalent (PE) was planned
- Three measuring points were defined, which covered the entire catchment area of planned WWTP, and enabled separate analysis of municipal and industrial wastewater
- The measurement period was 14 days including 2 rainy days

RESULTS

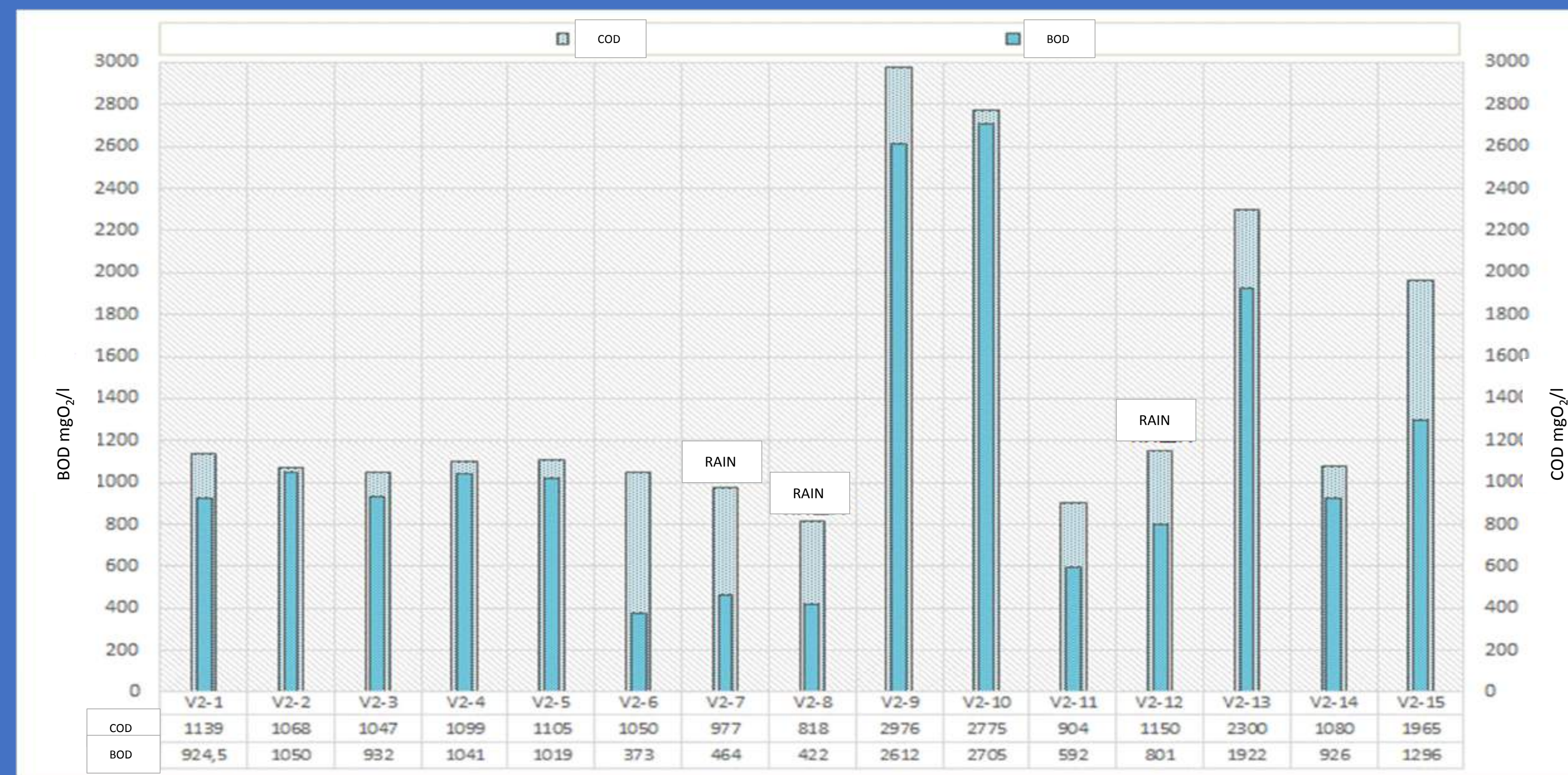


Figure 1. Concentration of BOD and COD at the Industrial wastewater outlet

Sample	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
Date	29.06.22	30.06.22	01.07.22	02.07.22	03.07.22	04.07.22	05.07.22	06.07.22	07.07.22	08.07.22	09.07.22	10.07.22	11.07.22	12.07.22
Flow, l/s	13,4	12,8	13,9	16,0	16,6	17,2	12,9	12,5	12,0	12,4	10,9	6,0	1,3	12,3
BOD ₅ , mg/l	924	1.050	932	1.041	1.019	373	464	422	2.612	2.705	592	801	1.922	926
PE	17.852	19.414	18.682	23.925	24.373	9.217	8.653	7.602	45.173	13.776	9.292	6.921	3.598	16.401
PE with Pretreatment	9.648	9.216	10.008	11.520	11.952	12.384	9.288	9.000	8.640	8.928	7.848	4.320	936	8.856

Table 1. Average mass load during the measurement campaign at Industrial wastewater outlet

CONCLUSIONS

- It was found that industrial entities were discharging wastewater in concentrations that are much higher (around 4 times) than the values set by the current laws and regulations
- If the organic loads are calculated based on the observed flows and Biochemical oxygen demand (BOD) values acquired from all three measuring points, the load on the planned WWTP would be in the range between 8,200 and 47,000 PE, which is much greater than the WWTP's nominal capacity of 3,850 PE.
- After completing the research, the JCWI suggested increasing the WWTP's initial capacity to 15,000 PE. This value would be achievable by enforcing a set of measures that industrial sector has to follow.