

Wastewater influent and effluent concentrations from on-site package plants in Northern Sweden and Finland

SND-ID: 2023-17-1. **Version:** 1. **DOI:** <https://doi.org/10.5878/48t5-qm50>

Download data

20675726 Wastewater temp data ASF2.xlsx (1.14 MB)

20675727 Wastewater temp data ASF3.xlsx (2.37 MB)

20675731 Wastewater temp data SBR1.xlsx (1.18 MB)

SMHI Air temp data ASF2-3.txt (6.02 MB)

SMHI Air temp data SBR1.txt (14.98 MB)

Wastewater_package_plants.xlsx (56.12 KB)

Associated documentation

Data description.docx (25.7 KB)

data_description_pdfa.pdf (351.73 KB)

Download all files

2023-17-1-1.zip (~26.1 MB)

Citation

Vidal, B. (2023) Wastewater influent and effluent concentrations from on-site package plants in Northern Sweden and Finland (Version 1) [Data set]. Luleå University of Technology. Available at: <https://doi.org/10.5878/48t5-qm50>

Creator/Principal investigator(s)

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Description

The data contains influent and effluent concentrations of traditional parameters measured in on-site package plants for domestic wastewater treatment serving single houses or small communities (2-30 person equivalent). The parameters analysed include organic matter, suspended solids, nutrients (phosphorus and nitrogen compounds) and indicator bacteria, as well as other physicochemical parameters such as temperature, pH and turbidity, and chloride as a tracer compound to detect dilution effects. Additional influent and effluent concentrations of micropollutants from two slightly larger plants (serving 12-30 person equivalent) are also included. These micropollutants consisted of 19 selected pharmaceuticals, caffeine and the sweetener Acesulfame K, and 15 phthalates.

The purpose of the collected dataset was to investigate the treatment efficiency of package plants operating in cold climate conditions throughout different seasons. The samples were collected in the northern regions of Sweden (Norrbotten) and Finland (North Ostrobothnia and Lapland) characterised by low winter temperatures and deep frost penetration.

The data has not been processed and consists of results (raw data) obtained directly from our university laboratory in Luleå university of technology (nutrient samples) and accredited laboratories (traditional parameters, microbiology, micropollutants).

The data contains influent and effluent concentrations of traditional parameters measured in on-site package plants for domestic wastewater treatment serving single houses or small communities (2-30 person equivalent). The purpose of the collected dataset was to investigate the treatment efficiency of package plants operating in cold climate conditions throughout different seasons. The samples were collected in the northern regions of Sweden (Norrbotten) and Finland (North Ostrobothnia and Lapland) characterised by low winter temperatures and deep frost penetration.

The investigated facilities included six package plants operated in continuous mode: one with a trickling filter (TF), one with a rotating biological contactor (RBC) and four with activated sludge with phosphorus removal by coagulation (ASC) or alkaline filter (ASF1, ASF2, ASF3) systems. Additionally, five plants supplied by three different manufacturers operated in batch mode with activated sludge and coagulation for phosphorus removal (SBR1-5).

The parameters analysed include organic matter (BOD), suspended solids (TSS), nutrients (phosphorus and nitrogen compounds) and indicator bacteria, as well as other physicochemical parameters such as temperature, pH and turbidity, and chloride as a tracer compound to detect dilution effects. Additional influent and effluent concentrations of micropollutants from two slightly larger plants (ASC and TF, serving 12-30 person equivalent) are also included. These micropollutants consisted of 19 selected pharmaceuticals, caffeine and the sweetener Acesulfame K, and 15 phthalates.

The data set contains multiple files:

- A main excel file called "Wastewater_package_plants" containing the numerical results of influent and effluent concentrations of traditional parameters and selected micropollutants.
- Three excel files called "Wastewater temp data..." containing temperature data logged continuously with a temperature sensor (placed in the biological treatment unit) at three different package plants
- Two text files called "SMHI Air temp data..." with air temperature data retrieved from the Swedish meteorological institute (SMHI) to be used with the wastewater temperature data

All the excel files are provided in xlsx and csv format.

Data contains personal data

No

Language

[English](#)

Time period(s) investigated

2019-08 - 2021-08

Data format / data structure

[Numeric](#)

[Text](#)

Data collection 1

- Mode of collection: Measurements and tests

- Description of the mode of collection: Manual grab sampling of wastewater
- Time period(s) for data collection: 2019-06 – 2021-08
- Instrument: sampler (Technical instrument(s)) - 500mL beaker with telescopic handle

Data collection 2

- Mode of collection: Measurements and tests
- Description of the mode of collection: temperature logging
- Time period(s) for data collection: 2019-10 – 2021-04-21
- Instrument: HOBO® Pendant®MX Temp (MX2201) logger (Technical instrument(s)) - temperature sensor with data logging
- Temporal resolution: 15 minute

Geographic spread

Geographic location: [Sweden](#), [Finland](#)

Geographic description: The samples were collected in several locations in the northern regions of Sweden (Norrbotten) and Finland (North Ostrobothnia and Lapland) characterised by low winter temperatures and deep frost penetration.

Responsible department/unit

Department of Civil, Environmental and Natural Resources Engineering

Funding 1

- Funding agency: Interreg Nord European Regional Development Fund
- Funding agency's reference number: grant no. NYPS 20201833

Funding 2

- Funding agency: Swedish Agency for Marine and Water Management
- Funding agency's reference number: 1634/20 and 00929-2021

Funding 3

- Funding agency: Region Norrbotten
- Funding agency's reference number: grant no. NYPS 20201991

Research area

[Water engineering](#) (Standard för svensk indelning av forskningsämnen 2011)

[Environmental management](#) (Standard för svensk indelning av forskningsämnen 2011)

Keywords

[On-site waste water treatment](#), [Micropollutant](#), [Nitrogen](#), [Pharmaceutical waste](#), [Phosphorus](#), [Bacteria](#), [Phthalates](#), [Bacteria](#), [Package plant](#), [On-site wastewater treatment](#), [Phthalates](#), [Treatment efficiency](#)

Accessibility level

Access to data through SND

Data are freely accessible

Use of data

[Things to consider when using data shared through SND](#)

License

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Versions

Version 1. 2023-06-08

Contact for questions about the data

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Download metadata

[DataCite](#)

[DDI 2.5](#)

[DDI 3.3](#)

[DCAT-AP-SE 2.0](#)

[JSON-LD](#)

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[File overview \(CSV\)](#)

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