



Document title	Background information describing various types of PEs used for characterization of WWTPs
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Background

PLC-7 9-2019 raised question regarding the type of Personal Equivalent parameter reported to the PLC water database: capacity of the WWTP, actual load or number of actually connected residents. In general, the Meeting agreed that the PE parameter should reflect the capacity of the WWTP in the background information and actual load in the annually or periodically reported data and invited Sweden and Finland jointly to prepare a background information describing various types of PEs used for characterization of WWTPs.

This document presents the background information prepared by Sweden and Finland.

Action requested

The Meeting is invited to consider the background document and agree on the definitions of the PE parameters for PLC reporting. The definitions will be further integrated to the PLC water guideline.

Terms and Definitions of population equivalents and organic design capacity in accordance to the Urban Wastewater Treatment Directive 91/271/EEC

Katarina Hansson

The information in this paper is mainly based on document Terms and Definitions of the Urban Wastewater Treatment Directive 91/271/EEC, (2007)¹.

Population equivalent (1 p.e.)

The generated load or the “size” of an agglomeration² is expressed in p.e. *“The organic biodegradable load having a five-day biochemical oxygen demand (BOD₅) of 60 g of oxygen per day” (Article 2(6) of the Directive 91/271/EEC).*

If Member States apply other criteria, such as a BOD₅ of 55 g or 70 g of oxygen per day, or BOD₇ or BOD₂₀, they should convert it and express it in BOD₅ of 60 g oxygen per day. For instance, in Sweden, BOD₇ of 70g of oxygen per day is often used³.

Population equivalents (p.e.) refer to the size of the agglomeration, and not to the capacity of the plant. The requirements concerning capacity of the treatment plant cannot exist in isolation from the generated load of the agglomeration as the treatment plant should correspond to the size of agglomeration and future growth to ensure on-going compliance.

Organic design capacity (ODC)

The organic design capacity (ODC) is a technical parameter that indicates the treatment capacity (in p.e.) of the plant. This parameter is relevant for the construction and dimension of treatment plants (i.e. the size of a plant) and is usually linked to a permit system. It refers to the maximum flows and loads of the influent the treatment plant is designed for, which conform to the specified consent standard.

ODC is calculated in the planning phase of a treatment plant or when a plant is re-dimensioned or upgraded. When determining the ODC, growth of the agglomeration should be considered. Apart from its relevance for the size of treatment plants, the ODC provides information about the wastewater infrastructure being (or planned to be) in place for a certain area. On a technical level, detailed guidance(s) exists for its calculation; however, there is no standardized international method and, as a result, Member States use different methods. In case of a complete collecting system, in the absence of leaks and the limitation of overflows, the ODC of the plant will provide a reliable indication of the generated load.

¹ <https://ec.europa.eu/environment/water/water-urbanwaste/info/pdf/terms.pdf>

² Agglomeration means: an area where the population and/or economic activities are sufficiently concentrated for urban wastewater to be collected and conducted to an urban wastewater treatment plant or to a final discharge point, (Article 2(4) of the Directive).

³ <https://www.naturvardsverket.se/Stod-i-miljoarbetet/Vagledning/Avlopp/Maximal-genomsnittlig-veckobelastning/>