

# PointSourceData.txt

This file contains information about point sources. It may hold constant point sources' concentrations and discharges or, for time series of point sources, instead identification to find these in the time series files ([PSTIMESeries.txt](#)). These two types may not be mixed, which one to use is set in [info.txt](#).

HYPE allows to separate eight types of point sources, e.g. wastewater treatment plants, industries, and urban stormwater. Conceptually, all eight are treated the same by HYPE ([see description](#)), but HYPE will separate them in the [annual load result files](#) if these are requested in [output options of info.txt](#). Point source loads are added to main rivers as a constant flux.

Tracers (substance T1) can be added as point sources to the main river with the method above. An alternative use of point sources for tracers is possible though. Tracers can be added to the local river, internal lake, main river or outlet lake. These point sources are not separated into different types of point sources (they are signified by using type zero). These point sources can not be used together with [info.txt](#) output options `printload` or `printwaterbal`.

The point sources file can also be used for water abstraction sinks. If point source discharges volume are set to values  $< 0$ , or the point source type (`ps_type`) is set to minus 1, the point source is interpreted as an abstraction instead. Abstraction can be made from the main river, the outlet lake or the aquifer below the subbasin. There can be only one abstraction from each subbasin (if several the last read will be used).

*PointSourceData.txt* is a tab-separated file located in the [modeldir](#) folder. Point sources are listed row-wise, multiple point sources for each sub-basin are allowed (but not multiple abstractions). The first row contains a column header with variable names. Variable names are not case-sensitive (max. 10 characters, no spaces). Columns with headings unknown to HYPE are skipped while reading the file, but are not allowed to be longer than ten characters. Columns containing character strings, e.g. descriptive meta-data, must not exceed a length of 100 characters. The columns may be in any order. A value must exist for every column and row, i.e. empty cells are not allowed.

The table below describes all *PointSourceData.txt* columns read by HYPE. The general unit (U) is used in tables of parameters and input data where the unit is not defined.

Variable ID	Unit	Description
psid	-	identification of point source or abstraction given as time series (unique)
subid	-	id number for subbasin in which point source is located, integer $< 10^8$
ps_type	-	<b>For ordinary point source:</b> integer signifying type of point source, between 1 and 8. <b>For abstraction:</b> minus one. <b>For alternative tracer point source:</b> not used (set to zero or missing value).
ps_vol	$m^3/d$	point source discharge or, if negative, abstracted water volume. The discharge is given per day regardless of simulation time step.
ps_tpconc	$mg/l$	concentration of Tot-P in point source (irrelevant if water abstraction)
ps_spfrac	-	fraction of Tot-P in point source that is in soluble form (irrelevant if water abstraction)
ps_tnconc	$mg/l$	concentration of Tot-N in point source (irrelevant if water abstraction)
ps_infrac	-	fraction of Tot-N in point source that is in inorganic form (irrelevant if water abstraction)

Variable ID	Unit	Description
ps_occonc	mg/l	concentration of organic carbon in point source (irrelevant if water abstraction)
ps_tsconc	mg/l	concentration of total suspended material in point source (irrelevant if water abstraction)
ps_ssfrac	-	fraction of total suspended material in point source that is suspended material (irrelevant if water abstraction)
ps_t1	μU/L	concentration of tracer T1 in point source (irrelevant if water abstraction)
ps_t2	°C	temperature of point source water (used for T2 simulation) (irrelevant if water abstraction). Can be set to -9999 to add the flow without changing the temperature of the receiving water.
ps_dsiconc	mg/l	concentration of dissolved silica in point source (irrelevant if water abstraction)
ps_asiconc	mg/l	concentration of algae silica in point source (irrelevant if water abstraction)
fromdate	date-time	Gives the start date for the point source. Format: yyyy-mm-dd [HH:MM]. Set to 0 if the source is from before the simulation start. (optional, default is 0, i.e. constant source for the simulation period)
todate	date-time	Gives the end date for the point source. Format: yyyy-mm-dd [HH:MM]. Set to 0 if the source is continuing after the simulation end. (optional, default is 0, i.e. constant source for the simulation period)
ps_source	-	<b>For abstraction:</b> integer code for location of abstraction; from main river volume (1), outlet lake volume (2), main river volume and inflow (3) or aquifer (4). <b>For alternative tracer point source:</b> integer code for location of source; local river (1), local lake (2), main river (3) or outlet lake (4). <b>For ordinary point source:</b> not used (set to zero or missing value). <b>For point source in time series file:</b> integer code for location; main river (3)

Examples of use of *PointSourceData.txt* and of the file structure:

First example: first row: a constant point source of type 1, e.g. waste water, with nutrients; second row: a larger constant point source of type 2, e.g. industrial effluents; third row: abstraction of water from outlet lake.

```
subid ps_type ps_vol ps_tpconc ps_tnconc ps_spfrac ps_infraq ps_source
456 1 10 0.5 40 0.3 0.9 0
765 2 2301 2 100 0.3 0.9 0
4050 -1 -100 0 0 0 0 2
```

Second example: A constant point source of nitrogen and T2 increased 10-fold from March 21 2004.

```
subid ps_type ps_vol ps_tnconc ps_infraq ps_t2 fromdate todate
456 1 10 40 0.7 4 1990-01-01 2004-03-20
456 1 100 40 0.7 4 2004-03-21 0
```

Third example: A general tracer point source to local lake at 1999-08-05.

```
subid ps_type ps_source ps_vol ps_t1 fromdate todate
456 0 2 10 4 1999-08-05 1999-08-05
```

Fourth example, time series point source: first row: a waste water point source, second row an abstraction from the main river and its inflow.

subid	psid	ps_type	ps_source
567	1	1	3
668	2	-1	3