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## Data Article

# Survey data of sewage sludge treatment and disposal routes originated from activated sludge water treatment in France



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## ABSTRACT

This paper presents data collected from a survey on sewage sludge treatment and disposal routes originated from activated sludge water treatment in France. The data of 3,679 wastewater treatment plants – representing 52% of WWTP using activated sludge and 69% of sludge disposed by these WWTP – were collected from several French organisms such as SATESE (technical support for wastewater treatment plants), water supply agencies, internal service of agricultural Chambers and public administrations in 71 French departments. The survey allows a detailed description of the processes used for sewage sludge treatment (i.e. thickening, dewatering, stabilization, drying) as well as the type of disposal routes (i.e. land application, incineration, landfill) and the related amount of sewage sludge disposed in dry matter tons. The data are provided in a raw and analyzed form within the Excel file provided with this article.

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## Specifications table

Subject	Environmental Science
Specific subject area	Wastewater sludge treatment and final use/disposal
Type of data	Table
How data were acquired	Survey from several French organisms such as SATESE (technical support for wastewater treatment plants), water supply agencies, internal service of agricultural Chambers and departmental administrations. The questionnaire as well as the French organisms that provide the data are reported in the supplementary material.
Data format	Raw, Analyzed
Parameters for data collection	Raw data were collected mainly in the form of 71 Excel files (one per department). Each file is unique and data had to be harmonized in a single Excel file before treated and analyzed.
Description of data collection	Data collected include the wastewater treatment plant capacity, a detailed description of each processes involved in sewage sludge treatment, the description of the disposal routes for each WWTP and the amount disposed.
Data source location	France
Data accessibility	With the article

**Value of the data**

- There is a lack of information for detailed sewage sludge treatment processes and disposal routes in France as these data are not available from the French Ministry of Environment.
- Researchers in the field of process engineering or environment sciences (such as Life Cycle Assessment) can use these survey data as they allow technical and environmental assessment of contrasted scenario for sludge treatment and disposal in a specific geographical context.
- These data can be useful for every private or public organism interested in sewage sludge management originated from activated sludge water treatment in France. It allows a better understanding on how sewage sludge is managed from its treatment up to its disposal.
- These data can be used to draft tendencies in sewage sludge management in France and as a reference for further studies as both type of processes used and amount of sludge disposed are provided.

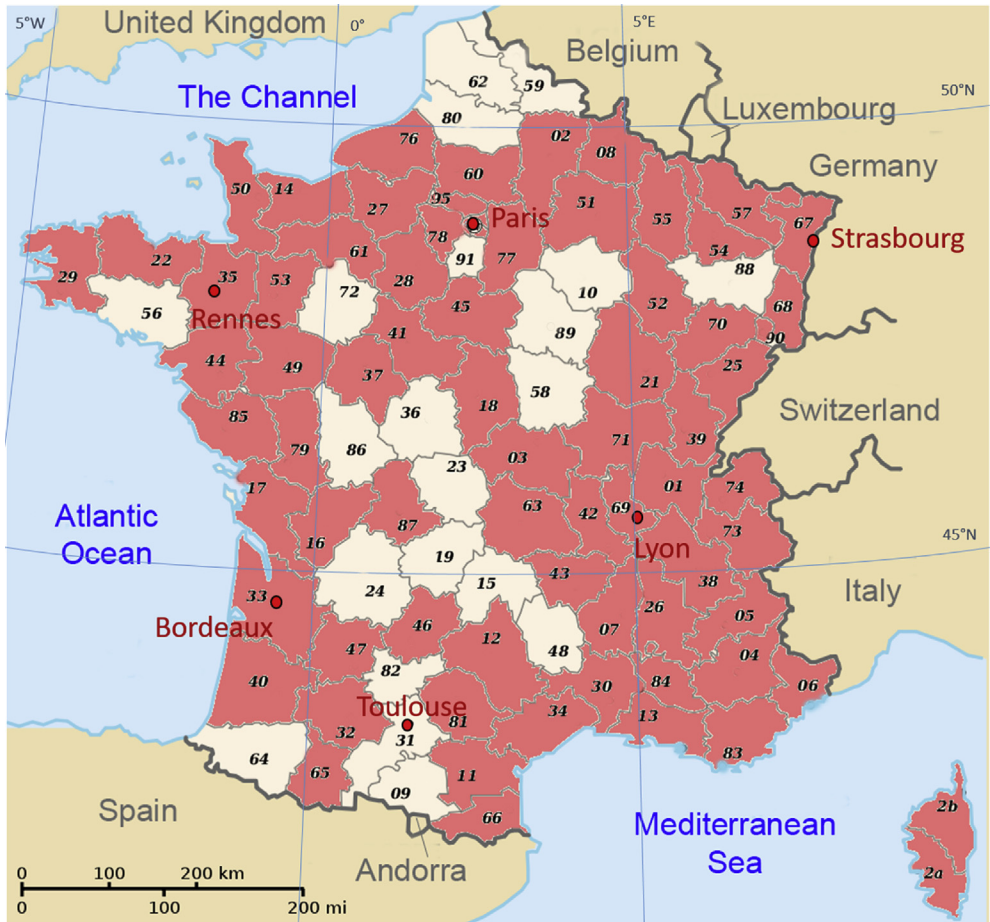
**1. Data**

Sustainable sewage sludge management is crucial since it can contribute to circular economy [1] or to the production of added value products [2,3]. Since no data were available on sewage sludge treatment and disposal routes in France [4], a survey was conducted by the French National research Institute of Science and Technology for Environment and Agriculture (Irstea) in 2014 [5]. This survey aimed at identifying the technologies used during sludge treatment and the disposal routes and amount of sludge disposed for each WWTP using activated sludge as secondary water treatment in France. Data were collected mainly in the form of Excel files from several French organisms such as SATESE (technical support for wastewater treatment plants), water supply agencies, internal service of agricultural Chambers and public regional administrations [5]. The survey questionnaire used as well as the surveyed French organisms for each department are provided in the supplementary material.

Ninety-two French departments were surveyed with a 77% participation rate as institutions from 71 French departments provided their data (Fig. 1). Data were collected for 3,679 wastewater treatment plants (WWTP) for a total of 598,851 dry matter tons of sludge disposed representing respectively 52% of WWTP using activated sludge (i.e. 7,079 WWTP) and 69% of sludge disposed by these WWTP (i.e. 870,653 dry matter tons). Detailed statistics are provided in the supplementary material.

**2. Experimental design, materials, and methods**

Raw data as well as treated data are provided within the supplementary material as an Excel file format.



**Fig. 1.** French administrative departments for which data were available (in red) and non-available (in white) (the background map is from <http://www.cartesfrance.fr>).

### 2.1. Raw data

Raw data compilation was done based on the Excel files provided by the surveyed institutions and includes for each WWTP:

- the department of origin,
- the name of the WWTP (anonymized by using “WWTP” plus a number),
- the WWTP capacity (in person-equivalent (PE)),
- the technology and amount of equipment used for each following sludge treatment step: thickening, dewatering, stabilization, drying and storage.
- the disposal routes and the amount of disposed sludge (in dry matter tons).

The technologies available in the survey for sewage sludge treatment as well as the nature of sludge disposal are presented in [Table 1](#).

**Table 1**

Technologies available in the survey for sewage sludge treatment and disposal.

Sludge treatment and disposal	Available technologies
<b>Sludge treatment steps</b>	
Thickening	Drainage table Drainage drum Drainage grill Gravitational thickener Silo thickener Storage thickener Static concentrator Lamellar decanter Flotation
Stabilization	Liming Anaerobic digestion Thermal hydrolysis Aerobic stabilization
Dewatering	Centrifuge Filtration bag Rhizo-composting Drying bed Drying reed bed Rhizophyte bed Belt filter Filter press Screw press
Drying	Solar drying Thermal drying Wet oxidation
Storage	Silo Bag Storage area Tank Tarp Shed Bucket Geotube Laguna Decanter
<b>Sludge final use/Disposal</b>	
Land application Composting Incineration Landfill External anaerobic digestion unit Cement plant Paper mill Other industrial disposal Transfer to another WWTP On site storage	

## 2.2. Treated data

Survey data were treated as follow. Each WWTP was classified in a category according to its capacity expressed in person equivalent (PE): less than 2,000 PE, between 2,000 and 10,000 PE, between 10,000 and 100,000 PE and higher than 100,000 PE.

A typology of sludge treatment stream was added and defined according to the step included in the sludge treatment:

- Liquid sludge refers to several combinations of thickening and storage or storage solely.

- Dewatered sludge refers to several combinations of thickening, dewatering and storage.
- Digested sludge refers to several combinations of thickening, anaerobic digestion, dewatering, drying and storage steps.
- Dry sludge refers to several combinations of thickening, dewatering, drying and storage steps.
- Sludge treatment streams for which treatment technologies are not described are classified as “Unknown”.

Finally, for each typology of sludge treatment stream, the following treated data are provided:

- Total number of stream
- Total number of stream per WWTP capacity
- Total amount of sludge disposed per type of disposal (in dry matter tons)
- Total amount of stream per WWTP capacity and type of disposal
- Total amount of sewage sludge treated and disposed per WWTP capacity and type of disposal (in dry matter tons)
- Number of type of technology encountered for thickening, dewatering, drying
- Occurrence of sewage sludge treated and disposed per type of treatment and disposal
- Amount of sewage sludge treated and disposed per type of treatment and disposal (in dry matter tons)
- Amount of sewage sludge treated and disposed per type of treatment and disposal (in %)

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## Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dib.2019.104541>.

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