

Where do Biosolids come from?

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If you have paid any attention to biosolids, either as a farmer, treatment plant worker, or concerned citizen, you will most likely have come across a description of biosolids that is something like this 'the nutrient-rich by-product of wastewater treatment'. While that description does provide you with some information, it may not be sufficient to answer all questions or address all concerns. One question that comes up from people who are suspicious about biosolids is 'what is really in there?'. If you are dubious about the safety of biosolids, it is easy to imagine that all sorts of exotic and potentially toxic chemicals are in biosolids, a veritable witches brew. A good way to figure out what might be in the biosolids is to look at where the water that comes into the wastewater treatment plant comes from.

The water coming into the treatment plant can come from some combination of the following places

1. Homes
2. Industries
3. Places of business
4. Storm water runoff from streets

Many municipalities have separate treatment facilities for Stormwater. For those areas, the water entering the treatment plant comes from either homes and businesses or industries.

Each municipality knows where the water it treats comes from. All industries that use the municipal water system have to let the treatment plant personnel know how much water they will discharge and what it is likely to contain. The remainder of the water comes from homes and businesses. The term business refers to things like offices and stores.

In Seattle and Philadelphia, less than 5% of the water coming into the wastewater treatment plants comes from industry. That means that more than 95% comes from homes and offices. In Washington DC the amount of water coming from domestic sources is 335 million gallons per day. An additional 13 million gallons per day enter the DC treatment plants from commercial sources that don't have sufficient metal concentrations to require any permitting. Out of the total daily influent of 348 million gallons per day, only 10 million gallons per day are from permitted industrial sources. These cities are not unusual. For the vast majority of municipalities, the water entering the wastewater treatment plant will come from homes and non- industrial businesses. To really understand what will be in this water, it is important to account for where domestic wastewater originates.

Water in your home

In most homes, there are three rooms where you use water: the kitchen, the laundry room and bathroom. In your kitchen, water will come from the sink and the dishwasher. The laundry

room, it will come from the washing machine. In the bathroom it will be from the shower, sink or toilet. An average household uses its water this way (reported in gallons per person per day)

- Toilets 28
- Toilet leakage 5.5
- Showers 21
- Clothes washing 21
- Faucets 12
- Dishwashers 3.1
- Baths 9

Most toilets use 3.8 gallons per flush. Newer toilets have to make better use of water and require only 1.6 gallons per flush. Older showers use 4 gallons per minute, while low flow showers (although less satisfying) only require 2.5 gallons per minute. Washing a load of laundry with a typical machine uses 40 gallons of water. Using a washer that has an energy star logo will only use 18-25 gallons per load. This means that a little more than a third of the water that enters the treatment plant from people's homes comes from toilets.



When you worry about the potentially toxic chemicals coming into a wastewater treatment plant, it is important to realize that most of this water will come from people's homes. All industries are required to report what they discharge into the municipal wastewater treatment system. The only potential source in wastewater influent for mysterious toxic chemicals are people's homes. Here, chemicals will most likely consist of ingredients in things like shampoos, soaps and toothpaste. While some of these chemicals can have a negative impact in the environment, their potential risk to people through biosolids is minimal. For example, you will have a much greater exposure to chemicals in shampoo when you wash your hair than when those chemicals go through the waste water treatment process and the portion that has not decomposed ends up in the biosolids.