[Effect of hydraulic retention time on microbial community structure in wastewater treatment electro‐bioreactors - ElNaker - 2018 - MicrobiologyOpen - Wiley Online Library (oclc.org)](https://onlinelibrary-wiley-com.uml.idm.oclc.org/doi/full/10.1002/mbo3.590)

Hydraulic retention time (HRT) – pay attention to 10 & 16-h timepoints.

3.3:

* Bacterial counts in bioreactors increased as the hydraulic retention time was increased from 6 to 50 hours.

[The effect of hydraulic retention time on the stability of aerobically grown microbial granules - Pan - 2004 - Letters in Applied Microbiology - Wiley Online Library](https://sfamjournals.onlinelibrary.wiley.com/doi/full/10.1111/j.1472-765X.2003.01479.x)

Conclusion:

* “HRTs between 2 and 12h provided the hydraulic selection pressures favourable for the formation and maintenance of stable aerobic granules with good settleability and activity.”

Viral removal rates:

* 95.5% (conventional activated sludge) & 99.3% (aerobic granular sludge): [Removal of bacterial and viral indicator organisms in full-scale aerobic granular sludge and conventional activated sludge systems - ScienceDirect (oclc.org)](https://www-sciencedirect-com.uml.idm.oclc.org/science/article/pii/S2589914719300763#fig4)
* 98%: [Elimination of human enteric viruses during conventional waste water treatment by activated sludge (cdnsciencepub.com)](https://cdnsciencepub.com/doi/abs/10.1139/m86-170)
* 99.97%: [Assessment of virus removal by a multi-stage activated sludge process - ScienceDirect (oclc.org)](https://www-sciencedirect-com.uml.idm.oclc.org/science/article/pii/0043135476900592)

[A Critical Review on Ultraviolet Disinfection Systems against COVID-19 Outbreak: Applicability, Validation, and Safety Considerations (nih.gov)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7571309/)

* “Disinfection using UV radiation has been a fast-growing chemical-free technology over the past decades. UV radiation is highly efficient at controlling microbial growth in any medium, such as water and air, as well as on any type of surface.”

Wastewater pH & turbidity:

* Insignificant positive correlation: [ijerdv4n2spl\_02-with-cover-page-v2.pdf (d1wqtxts1xzle7.cloudfront.net)](https://d1wqtxts1xzle7.cloudfront.net/38999982/ijerdv4n2spl_02-with-cover-page-v2.pdf?Expires=1626130684&Signature=Pxfx7VcuqCY1ga24NiKNi4me~YgAFXGQ1w3c6VFovecY~W4-B6fkGMLlcO3j-s2t3L~iasj5EsrQRzfbDGqbj2NKLGrHxIw7R4BRKlREh7dIyIRB-7AMoMgY7Uw20rwd6Jd0Ks7xuZV8e3VKmNN8YWS1-2wv-mt3y32B-u3M1ce1lR1cdsn4Am1QHE6qxfi1JQa6cvhfI6WfeIW8jOH~ldkZRMmih0v89ViNUVmtEZwPTBrzyZ3Lrovct3AG8KWnElpBfdJXnJszbEhGbkAisrkJg-m8VCMfqEL68IqnEUJmAgEXOHttG3weVyuwzDwrlEXuy9w5FuAv-RpIcWMAeQ__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA)

[doi:10.1016/S1001-0742(07)60010-2 (sciencedirectassets.com)](https://pdf.sciencedirectassets.com/273588/1-s2.0-S1001074207X60017/1-s2.0-S1001074207600102/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjECYaCXVzLWVhc3QtMSJGMEQCIAbYOneI1PTwjNlmiX1mH8JDk%2F1IOiCDLpvK2gpK4HXFAiB5EuXaRC1G4oVuILcaxSJ9oghjTt4cmP0lxJ50sXZLhSr6AwgfEAQaDDA1OTAwMzU0Njg2NSIMYG4zc7ijxRD%2FsXQFKtcDXM1daxa3%2FWbt3oifbl2vaLgBXtowwBJON2HSnHQ868aPHf56Eot1Q1Gv1eArtwO86KmTsQjFrH9IfBfGLlaPIoK4Lb9P3%2Fm2n60AomnNdmpm6dy7SkwW2dmD3kGvh5oMtp425fy60uVtJHQYkGR2An1FXPOVG7Jd8pCM8SrRwztVy3ev2ruN%2B6ZDdAfScagaXy7NggoYpuLOAFT0HDJTRFwsEvE7FlOpytNqoP4PPPVcDyKK5VIiiUl5AOwo8j1oxwqot1wVByBKYKpdWve6ZP0n%2F3f7Ao5cLdi9t3H8zQGT3DDo85s3grcJmBCOPeLroBGl2QplhX%2Bf3%2FkxJ7GB2CAN%2B8plniIGccznxQHvQ6T9%2BTS6lPF0TuOlvUzYbrl%2BSWIzplOaOzy3a2fqVlKzKTt3%2FhI1mf68fxa7gwurajsoy7HGmAIOAz%2FcR%2FIMguURu2Xj5yyLH2NiHmDIRpSQVDa32gWw3oz6k111vkLGgq8%2FI27LjipKCfW6XYR2v2m6waL4IJIchAIW4jm9nCLJ6OsD5hD5xGPRsJASK1LL09QqSuTE3wMEC9JOsYOppxnooyhszV3FR%2BsVJqAFvalap2nAtJg%2BCqZ6cwFBPGZEG0ifNsP16qUtMJSvvYcGOqYBYymbSbV6s4UytgO0SQ88Y2ovmlDgNP14LNBJNStIDlknds0JKa6ww2TFwuDw4qtKgadi5jf49kmFiipVMUMa3I3FpItYH0F9v8mSG55YWbY9ZUrCeeSXOJqWow3p%2B5xRHA%2F64kpYH178J0e4dzj65fcRgkXCgFQ%2BShGZ0KvABFc9GRh8GCWB%2Fc2PZPUxjFfrtwuk4lqboa43fKOIzLxX1hOnrlUkZg%3D%3D&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Date=20210714T222726Z&X-Amz-SignedHeaders=host&X-Amz-Expires=300&X-Amz-Credential=ASIAQ3PHCVTYWATPN7U5%2F20210714%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Signature=1ed397c6b2445079773c1ed134c4cd844bafb5944bf7db1e7e8296fa77853333&hash=63079d7b529bc9fe9d76be66ff597562b98453e199fa46954b9ae320c331e425&host=68042c943591013ac2b2430a89b270f6af2c76d8dfd086a07176afe7c76c2c61&pii=S1001074207600102&tid=spdf-6edaee8e-76bb-4ca1-8d2c-84de1d55b668&sid=cb8051b153cae0464e3bd2c1478e3d25442dgxrqa&type=client)

* The study found similar bacterial community structures of RS & AS. They had different EF populations, but it was postulated to be due to a difference in plant design.

[Human enteric viruses in a wastewater treatment plant: evaluation of activated sludge combined with UV disinfection process reveals different removal performances for viruses with different features - Lizasoain - 2018 - Letters in Applied Microbiology - Wiley Online Library](https://sfamjournals.onlinelibrary.wiley.com/doi/10.1111/lam.12839)

* Influent (A) -> Post AS (B) -> Post UV (C):
  + HAstV: A > C: p = 0.0128.
  + GII: A > B: p = 0.0010.
  + GII: A > C: p = 0.0002.
  + RVA (Group A Rotavirus): A > C, p = 0.0442.
  + HAdV: A > B, p = 0.0013; A > C, p = 0.0201.
* “since our quantitative PCR detects both infective and defective viral particles, and considering the UV light effect upon viral viability, the concentration values at the final effluent are not at all indicative of infectious viral particles and the results should be taken with caution, avoiding overestimation of the amount of infective particles in the sample.”