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MICROBIOLOGY
PROBLEMS AND THEIR
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Richard, Ph.D. Sear-

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Brown Fort Collins, CO

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Poor Floc Formation,
Pin Floc and Dispersed
Growth Problems 2.

Toxicity 3. Nitrification
and Denitrification

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Proven Success.

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- Filamentous bulking is the number one cause of environmental violations
- A bulking sludge settles slowly, and has an SVI >150 .
- Many sludge thickening and dewatering problems are actually problems due to a bulking sludge
- Filaments can cause bulking due to interfloc bridging, or open floc structure.

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Activated Sludge
Microbiology Problems
and Their Control
Michael Richard, Ph.D.
Sear-Brown Fort
Collins, CO Many
problems can develop
in activated sludge
operation that
adversely affect
effluent quality with
origins in the
engineering, hydraulic
and microbiological

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components of the
process.

Activated Sludge Microbiology Problems and Their Control ...

Dominance of filamentous bacteria in activated sludge can cause problems with sludge settling. At times excessive numbers of filamentous microorganisms interfere with floc

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settling and the sludge becomes bulky. This bulking sludge settles poorly and leaves behind a turbid effluent.

Control of activated sludge, including troubleshooting ...

Chlorination is often used to control filamentous bulking in activated sludge systems. Pure culture and mixed-liquor experiments showed

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that soluble potassium (K⁺) concentrations increased by 2.4 mg/L (80%) and 1.5 to 3.6 mg/L (11 to 30%) in the bulk liquid phase of pure and activated sludge cultures that were exposed to chlorine, relative to unchlorinated controls.

Activated sludge deflocculation in response to chlorine

...

The dominance of

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filamentous bacteria in the activated sludge treatment system can cause problems with sludge settling. At times excessive numbers of filamentous microorganisms interfere with floc settling and the sludge becomes bulky. This bulking sludge settles poorly and leaves behind a turbid effluent.

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Microorganisms in activated sludge | Water Tech Online

Activated sludge is a type of secondary treatment whose primary role is to remove most of the dissolved solids remaining in the waste stream after primary treatment. Activated sludge is an enrichment culture of micro and macro organisms that remove (or change)

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components

considered to be pollutants.

Problems And Solutions

Activated Sludge Microbiology - Ohio Water Environment

...

of the MLSS is the key to orthophosphate removal by activated sludge. However, maintenance of large fractions of viable biomass in activated sludge will select for smaller flocs, causing

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poor settling (Roe and Bhagat, 1982). It is thus important to find a situation of equilibrium between viable biomass and settling performance to

MICROBIAL CHARACTERIZATION OF ACTIVATED SLUDGE MIXED ...

Chlorination is not a cure-all for all activated sludge microbiological problems, as this will

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actually make problems worse if the problem is non-filamentous, e.g. slime bulking, zoogloea bulking or poor floc development. Chlorine can be applied from a chlorinator using chlorine gas feed or as a liquid hypochlorite.

Practical Control Methods for Activated Sludge Bulking and ...

Microbial diversity

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differences within
aerobic granular sludge
and activated sludge
flocs MKH Winkler, R
Kleerebezem , L de
Bruin, PJT Verheijen ,
BA Abbas , JM
Habermacher
BT/Environmental
Biotechnology

**Microbial diversity
differences within
aerobic granular ...**
Biological Wastewater
Treatment: Principles,
Modeling and Design

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Edited by Guanghao
Chen;

Modelling activated sludge processes | Biological ...

The activated sludge process is the most versatile, commonly used wastewater treatment system in North America; however, many activated sludge processes frequently experience operational problems related to

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poor compaction or settleability of secondary solids and loss of secondary solids from the clarifier.

Settleability Problems and Loss of Solids in the Activated ...

Although a number of microbially mediated problems, such as pin point floc, dispersed growth, slime and blanket rising, occur in activated sludge

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plants, the most common problems are, therefore, largely uncharacterized.

Bulking occurs when filamentous organisms extend from flocs into the bulk solution and interfere

Microbiology of foaming in activated sludge plants

Review of the literature shows that the activated sludge process has

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experienced operational problems since its inception.

Although they did not experience settling problems with their activated sludge, Ardern and Lockett (Ardern and Lockett, 1914a) did note increased turbidity and reduced nitrification with reduced temperatures.

Troubleshooting Activated Sludge

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Microbiology Processes

Introduction And

microorganisms present in activated sludge and how the dominance of one species over another, especially filaments, can be an indicator to direct plant troubleshooting. The conditions that promote the growth of common activated sludge filaments are discussed along with methods for their

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control.

Problems And

WWT 009: Activated Sludge Microbiology and Part 2

Bulking sludge happens due to bad settling and thickening of the solids.

Uncontrolled growth of filamentous bacteria influences settling of activated sludge.

Filamentous Bacteria - Problems and Solutions -

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Microbiology **Water ...**

Dr. Michael Richard is a world authority on wastewater treatment microbiology and he provides microbiological analysis and filament identification for bulking, foaming and other treatment problems for activated sludge systems, lagoons, filters or any biological treatment process. This information is used in

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troubleshooting,

Problem And
Solutions
problem diagnosis and
suggestion of remedial
actions for wastewater
treatment problems.

Activated Sludge Microbiology and Filament Identification ...

Dr. Michael Richard is a
world authority on
wastewater treatment
microbiology and has
provided
microbiological
analysis, filament

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Microbiology, Problems And Solutions

identification, and chemical polysaccharide testing for activated sludge systems, lagoons, filters or any biological treatment process to troubleshoot, diagnose problems and suggest remedial actions.

**Michael Richard,
Ph.D. Wastewater
Microbiology**

Activated sludge is also the name given to the active biological

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material produced by activated sludge plants. Excess sludge is called "surplus activated sludge" or "waste activated sludge" and is removed from the treatment process to keep the ratio of biomass to food supplied in the wastewater in balance.

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ecf8427e.
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