

# Is Methicillin-Resistant *Staphylococcus aureus* (MRSA) Present in Influent Wastewater?

Duffin, Emma

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a pathogenic bacteria that can lead to serious complications or even death. With the increase in MRSA infections in recent years, its presence in influent wastewater is concerning. The hypothesis was that MRSA would be found in influent wastewater. Influent samples were collected from five wastewater treatment facilities on three different days. The samples were selectively cultured for bacteria that could be MRSA using a 7% Mannitol salt broth containing the antibiotics oxacillin and polymyxin B and also potassium telluride, an initial indicator for *S. aureus*. Negative and positive controls were created. All cultures showing the black precipitate of a positive telluride test were selectively isolated on Mannitol salt agar plates four times and then on to Trypticase soy agar plates for confirmation testing. Successful isolates were tested for MRSA using gram stain (microscopic inspection), catalase, coagulase and penicillin binding protein (PCBP2a) tests. These tests confirmed the presence of MRSA in 11% of the isolated plates, supporting the hypothesis that MRSA would be present in influent wastewater. MRSA in wastewater presents a health risk to plant workers and the community. To minimize this risk, MRSA testing and treatment should be required.