

**Analisis Pencemaran *Escherichia coli* dan Coliform Total pada Airtanah
Akibat Aktivitas Peternakan Babi di Koya Timur dan Kampung Skouw Sae,
Kota Jayapura**

Herlin Mienatha Simbiak

23/530308/PMU/11769

Program Studi Magister Ilmu Lingkungan
Universitas Gadjah Mada

INTISARI

Airtanah memiliki peran penting dalam menunjang kebutuhan dasar makhluk hidup. Airtanah rentan mengalami pencemaran terutama jika berada di lingkungan dengan pengelolaan sanitasi yang buruk, seperti di sekitar aktivitas peternakan babi. Penelitian ini bertujuan untuk mengidentifikasi karakteristik peternakan babi, menganalisis kualitas airtanah berdasarkan parameter *E.coli* dan *coliform total*, serta mengidentifikasi pengaruh aktivitas peternakan babi terhadap kualitas airtanah di Kelurahan Koya Timur dan Kampung Skouw Sae, Kecamatan Muara Tami, Kota Jayapura. Penelitian dilaksanakan melalui studi lapangan: observasi, wawancara, dokumentasi, serta pengambilan sampel airtanah pada 10 titik sumur dengan total 20 sampel. Analisis bakteriologis dilakukan menggunakan metode MPN. Hasil penelitian menunjukkan bahwa jumlah ternak tertinggi terdapat pada lokasi KT7 yaitu 80 ekor, terendah pada SS2 dan SS5 yaitu 8 ekor. Luas kandang di Koya Timur (KT6–KT10) tergolong padat dengan kepadatan >2 ekor/m². Sistem pemeliharaan di Skouw Sae bersifat tradisional dengan sanitasi buruk, sedangkan di Koya Timur bersifat semi intensif dengan kebersihan lebih baik. Limbah ternak tidak diolah, baik limbah padat maupun cair, dan dibuang langsung ke lahan terbuka atau septik tank. Hasil uji menunjukkan 9 sumur tercemar *E. coli* dan seluruh (10 sumur) tercemar *coliform total*, hal ini menunjukkan semua airtanah tercemar melewati ambang batas baku mutu. Aktivitas peternakan babi memiliki pengaruh yang bervariasi terhadap kualitas airtanah. Keberadaan *E.coli* dan *coliform total* pada airtanah dipengaruhi oleh interaksi antara jumlah ternak, jarak sumber pencemar, sistem pemeliharaan, dan kondisi sanitasi lingkungan. Pengelolaan limbah peternakan tidak memadai dan jarak sumur dekat dengan sumber pencemar merupakan faktor paling dominan dalam meningkatkan risiko pencemaran airtanah.

Kata kunci: Airtanah, Peternakan babi, *Escherichia coli*, *Coliform total*

Analysis Of *Escherichia Coli* and *Coliform Total* Pollution In Groundwater Due To Pig Farming Activities In Koya Timur and Kampung Skouw Sae, Jayapura City

Herlin Mienatha Simbiak

23/530308/PMU/11769

Master of Environmental Science
Gadjah Mada University

ABSTRACT

Groundwater plays a vital role in supporting the basic needs of living things. Groundwater is vulnerable to pollution, especially in environments with poor sanitation management, such as near pig farms. This study aims to identify the characteristics of pig farms, analyze groundwater quality based on *E. coli* and total coliform parameters, and identify the effect of pig farming activities on groundwater quality in Koya Timur Village and Skouw Sae Village, Muara Tami District, Jayapura City. The study was conducted through field studies: observation, interviews, documentation, and groundwater sampling at 10 well points with a total of 20 samples. Bacteriological analysis was conducted using the MPN method. The results showed that the highest number of livestock was found in KT7, namely 80 animals, and the lowest in SS2 and SS5, namely 8 animals. The area of the pen in Koya Timur (KT6–KT10) is classified as dense with a density of >2 animals/m². The husbandry system in Skouw Sae is traditional with poor sanitation, while in Koya Timur it is semi-intensive with better hygiene. Livestock waste is not treated, both solid and liquid waste, and is discharged directly into open fields or septic tanks. Test results showed that 9 wells were contaminated with *E. coli*, and all (10 wells) were contaminated with total coliform. This indicates that all groundwater is contaminated beyond the quality standard threshold. Pig farming activities have varying effects on groundwater quality. The presence of *E. coli* and total coliform in groundwater is influenced by the interaction between the number of livestock, the distance from the source of pollution, the maintenance system, and environmental sanitation conditions. Inadequate livestock waste management and the proximity of wells to the source of pollution are the most dominant factors in increasing the risk of groundwater pollution.

Keywords: *Groundwater, Pig farming, E. coli, Total coliform, Contamination.*