

# Presence of Heavy Metals in Wastewater from Selected Pig Farms in Kuala Langat, Selangor

Pig farming is a **significant contributor of pollution load** in Malaysian rivers. Wastewater from pig farms may contain heavy metals. The presence of heavy metals in wastewater from two pig farms in Kuala Langat, Selangor was determined in this study. The result shows that **Fe and Mn** exceeded the allowable limit, while the **concentration of heavy metals in the sample from retention pond is lower than the concentration in raw wastewater** from the stall.

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#livestock

#pollution

#waterquality

## Background

There are cases of river pollution in Malaysia caused by pig farming. Pig farm wastewater contains:

- Organic matter
- Antibiotics
- Heavy metals

Heavy metals in pig farm wastewater may be originating from the feed additives used in the diet. It helps in maintaining good nutrition and health to optimize production in pig farming.

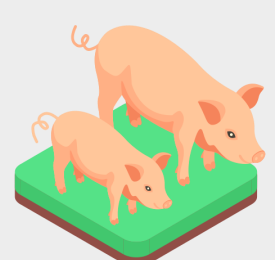


## Method

- 1 Two pig farms in Kuala Langat, Selangor were selected for the study.
- 2 Wastewater were collected from the stall, retention pond, and the drain.
- 3 The concentration of heavy metals in the samples were determined using ICPMS (Perkin Elmer, NexION 350x).

## Research Findings

The analysis revealed that heavy metals are present in pig farm wastewater. Some heavy metals concentration are higher than the allowable limit.



### Stall: Raw wastewater

The concentration of heavy metals are higher in the stall compared to the retention pond.



### Retention Pond: Treated wastewater

The concentration reduces in the retention pond due to the anaerobic / sedimentation process.



### Drain: Wastewater discharged from farm

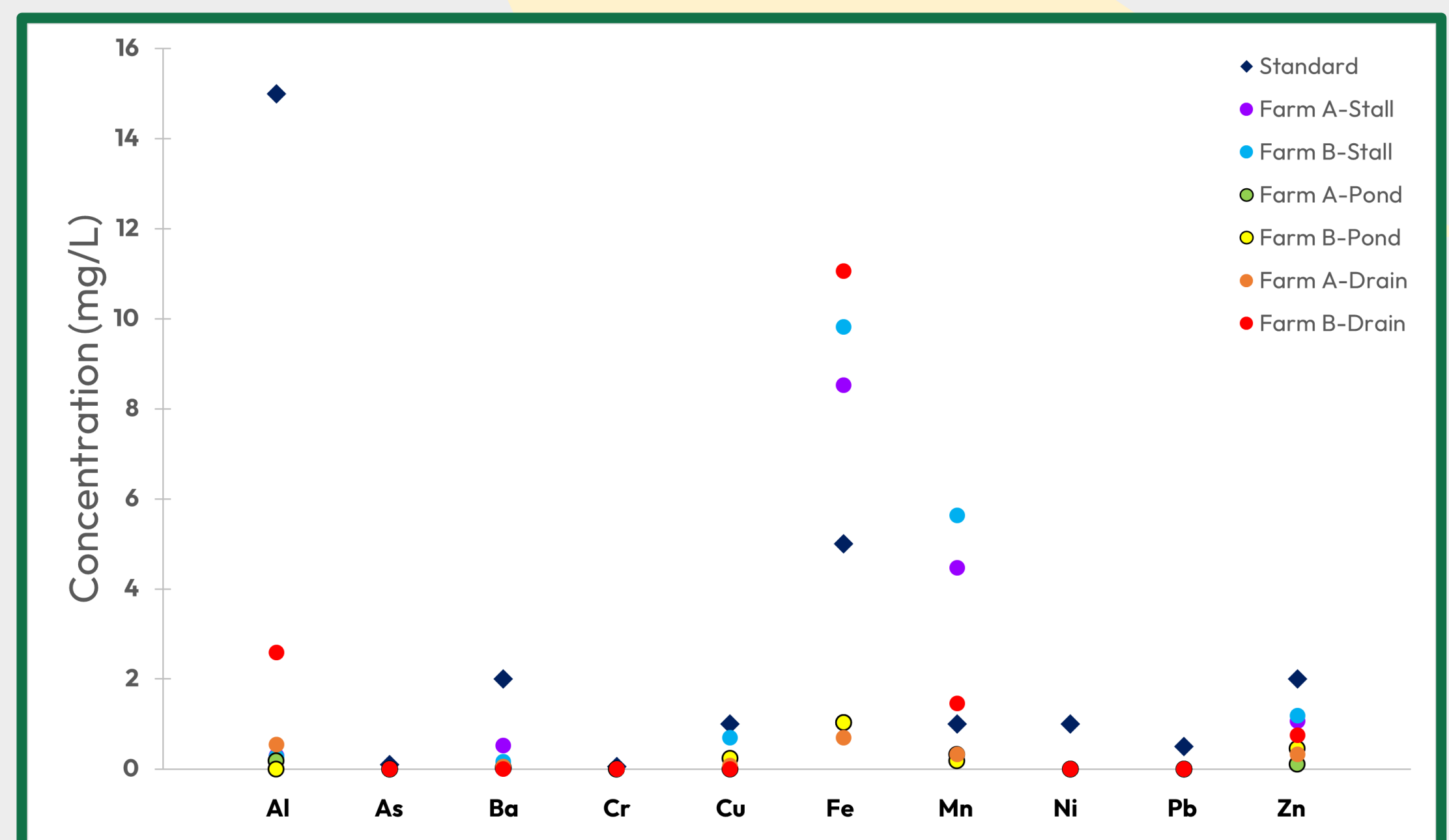
In Farm B, some heavy metals in the drain are significantly higher than the retention pond.

**p = 0.848**

There was no statistically significant difference for the concentration of heavy metals in the stall (p=0.848) and drain (p=0.855) between Farm A and Farm B.

**p = 0.855**

**p = 0.221**



**Figure 1:** Concentration of heavy metals in the samples and the Standard. The standard value refers to the limit of heavy metals for Standard B industrial effluent allowed in the Environmental Quality (Industrial Effluent) Regulations 2009.

### Heavy metals exceeded the allowable limit:

**Fe**

Standard: 5.00 mg/L  
Farm A - Stall: 8.53 mg/L  
Farm B - Stall: 9.82 mg/L  
Farm B - Drain: 11.06 mg/L

**Mn**

Standard: 1.00 mg/L  
Farm A - Stall: 4.47 mg/L  
Farm B - Stall: 5.63 mg/L  
Farm B - Drain: 1.46 mg/L

## Conclusion & Recommendation

The lower concentration of heavy metals in the pond samples compared to the stall suggests that the retention pond may be responsible in removing heavy metals from pig farm wastewater prior to discharge. Further analysis on the levels of heavy metals in the sediment from the retention pond should be studied. Knowledge on the presence of heavy metals in pig farm wastewater is useful to assist with the best practice to manage the waste properly.

## Reference



[bit.ly/3UP2X9r](https://bit.ly/3UP2X9r)