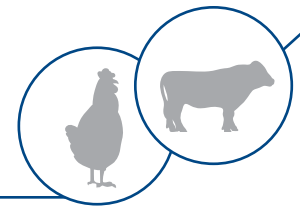


Research Notes

Arm & Hammer Animal and Food Production



BoviBrom and AviBrom presented no issues to wastewater treatment systems.

STUDY OVERVIEW

The objective of the study^{1,2,3} was to evaluate the level of hypobromous acid (HOBr) residuals in wastewater after treatment with BoviBrom™/AviBrom™ at commercial cattle packing plants and poultry processing plants.

Three commercial cattle packing locations:

Plant 1 – water was directed into two diversion pits—blood (non-grease-containing waste) and wastewater. Both were sampled for HOBr residuals from the diversion pits multiple times per day

Plant 2 – samples were taken at the point where the water entered the anaerobic sludge ponds

Plant 3 – water quality samples were generated seven days per week, but there was a question regarding Sundays, when the plant does not process, so residual organic matter was tested and compared to a production day

Commercial poultry processing plant:

Plant 1 – Total HOBr and free HOBr were tested at two sources—processing plant and the waste treatment facility

Cattle plants^{1,2}

PLANT 1		
Biocide residuals in blood samples		
Time	Free Residual	Total Residual
10:00 AM	0.00	0.00
11:00 AM	0.06	0.22
12:30 PM	NA	0.19
1:25 PM ¹	1.42	1.24
1:35 PM ¹	0.51	0.38
2:35 PM	0.20	0.15
3:35 PM	0.00	0.00
5:30 PM	0.20	0.32

¹These are a bit unusual as free should not be higher than total.

PLANT 1		
Biocide residuals in wastewater samples		
Time	Free Residual	Total Residual
10:00 AM	0.10	1.20
10:10 AM ¹	0.00	0.35
11:00 AM	NA	0.00
12:30 PM	NA	0.00
1:25 PM	0.00	0.00
2:35 PM	0.00	0.00
3:35 PM	0.00	0.00
5:30 PM	0.00	0.00

¹This was the 10:00 AM sample, rerun after filtering.

PLANT 2		
Biocide residuals in wastewater samples		
Time	Free Residual	Total Residual
8:30 AM	0.00	0.44
10:30 AM	0.00	0.30

PLANT 3 RESULTS

It was determined in a commercial facility that the chemical oxygen demand (COD), an indirect measure of organic material in wastewater, was high enough at 700 ppm to remove HOBr residuals. This COD concentration was determined to be the lowest COD level on an off-day of production. During a typical processing day, COD levels would be 4,210 ppm.

Poultry plant³

WEDNESDAY, DECEMBER 15

Source	Time	Free HOBr*	Total HOBr (ppm)
Processing effluent	10:10 AM	0.20	0.40
To municipal sewage	10:15 AM	0.10	0.30
To municipal sewage	1:00 PM	0.00	0.10
To municipal sewage	3:40 PM	0.10	0.10

THURSDAY, DECEMBER 16

Source	Time	Free HOBr*	Total HOBr (ppm)
Processing effluent	1:10 AM	0.10	9.5 [†]
Processing effluent	1:20 AM	0.04	0.30
Processing effluent	1:35 AM	0.20	0.40
To municipal sewage	7:20 AM	0.70	0.80
To municipal sewage	10:10 AM	0.00	0.20
Processing effluent	10:40 AM	0.00	0.00
To municipal sewage	12:30 PM	0.20	0.20
Processing effluent	1:00 PM	0.00	0.00
Processing effluent	3:45 PM	0.00	0.00
To municipal sewage	3:45 PM	0.20	0.40

*The HOBr detection limit for the equipment used was 0.01 ppm.

†This value is probably erroneous. It is most likely due to contamination from the borrowed bucket used to acquire the sample. When the bucket was rinsed thoroughly and the wastewater resampled, the HOBr values were consistent with past experience.

CONCLUSIONS

- No issues with HOBr residuals were found in commercial wastewater systems
- HOBr residuals were very small (< 2 ppm) when reaching the wastewater treatment facility
- Wastewater treatment facilities have not had to alter their treatment procedures since starting the use of BoviBrom™ or AviBrom™



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1 Data on file.
2 Data on file.
3 Data on file.