Introduction
The United States produces over 254 million tons of municipal solid waste (MSW) annually. Paper and paperboard are the largest constituents of MSW before recycling (27.0%) (Figure 1). Paper and paperboard include containers and product packaging, newspaper, and direct mail advertisements. Only 67.0% is recycled; the rest is either landfilled or incinerated (EPA, 2015). Due to landfill location restrictions and rapidly decreasing capacity as well as concerns regarding the environmental impact of incinerators, anaerobic digestion is becoming an increasingly popular alternative for both degradation of waste and production of energy (CH₄ gas) (Meng, 2015). Some states have even gone as far as to ban containers/paper from their landfills (Van Haaren, 2010). Despite its relative abundance and molecular composition, substrates containing lignocellulose, such as paper and paperboards, are often touted as difficult to degrade anaerobically (Baba, 2013). However, the chemical treatment that is applied to these types of paper and paperboards for different purposes (e.g. meal packaging), could have a positive impact on their anaerobic biodegradability. This work evaluates the potential of different types of paper and paper boards. Monod parameters were calculated as well.

Methodology
Preparation of substrates and subsequent loading of serum bottle batch reactors

Results
Figure 3. Visual representation of data analysis

\[ \text{SMA} = \frac{\text{SMA}_{\text{max}} S}{K_s + S} \]  

Kinetic parameters, \( \text{SMA}_{\text{max}} \) and \( K_s \), are calculated using Equation 1.

Hypothesis
Materials that have been pretreated (e.g. SBB and OP) will have higher specific methanogenic activity (SMA) due to faster hydrolysis.

Conclusions
As hypothesized, solid bleached board (SBB) had a significantly higher \( \text{SMA}_{\text{max}} \) than the other substrates indicating that the microbiological community is able to utilize this feed source at a faster rate than the others. The half-velocity constant (Ks) was highest for paper towel, but did not show a distinct trend amongst the other substrates. All substrates yield a high recovery of methane (>80%) at the screened concentrations.

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References