

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusion

From investigate and compare the environmental impacts of the proposed manure conversion process to existing management methods in Ohio State, the result shows that the scenario 3B had the lowest emission on Global warming potential (GWP) and Acidification potential (AP). The total amount of GHG estimated on scenario 3B was 322.08 t CO<sub>2</sub>-Equiv. Also, the total amount of AP estimated on scenario 3B was 9.40 t SO<sub>2</sub>-Equiv.

Due to scenario 3B is the best optional on manure management. Because of it uses less energy to dry the manure to manure granule. Another reason that supported the superheated steam drying process (SSD) can significantly reduce to emit the emission is close loop process. According to close loop operated, it is strongly avoided NH<sub>3</sub> emission that effect to AP. By-product from scenario 3B are dried cow manure (biosolids), and either it may be sold to a coal-fired power plant or used for generating heat to produce superheated steam that can help to reduce the feedstock of natural gas to generated superheated steam.

#### 5.2 Recommendations

Although the Life Cycle Assessment (LCA) was successfully conducted for all five scenarios especially the conversion technology uses highly energy-efficient superheated steam drying (SSD) system to produce granular biosolids fuel. But some recommendation could be suggested as follows;

- This analysis is limited to the entire drying process and the components directly involved in the operation phase of the manure management. If it possible, we should have concluded in the manufacturing phase. That can respond the whole of life-cycle such as a composting system and material.

- This analysis is not concluded the economic analysis. That is the best way if we should evaluate the economic implications that we can know how much biosolids can be reduced cost for feedstock to generate superheated steam. Maybe is the one reason that can help to determine use this manure management method in industrial process.