

## **54a Production of Biodiesel from Wastes Associated with Meat Butchering Processes**

*Tracy J. Benson, Mark Zappi, Todd French, and Rafael Hernandez*

Due to increased crude oil costs, as well as, reduction of U.S. dependence on foreign oil, new strategies are being explored to develop biodiesel from various lipid sources. These efforts have dramatically increased interest in the utilization of renewable feedstocks through bioprocessing for fuel production. Slaughterhouse wastes are wastes that would otherwise have to be rendered, incinerated, or decomposed to reduce the inherent BOD before being released into the environment. Even though rendering is a popular method for producing animal foods, there is concern whether this method is capable of eliminating prions and other transmissible diseases. Therefore, this work focuses on the production of an alternative fuel through the reduction of a process waste. Consequently, there is no threat of infectious diseases, as the wastes have been removed from the food chain. These process wastes include the residues from meat saws, organs not used for human food consumption, as well as, cranial material. These all contain fats, oils, and greases (FOG) that can be reacted to form fatty acid methyl esters (FAME's). This paper will present recent analytical and laboratory data which is used to assess the potential for slaughterhouse wastes as a feedstock for biodiesel. Lipids from these wastes have been extracted using numerous operational and chemical dosing strategies for optimum extraction of saponifiable lipids. After transesterification of the lipids into FAME's, gas chromatography was used to determine the fatty acid profile of each lipid source. Also, selected analyses were performed according to ASTM D 6751 specifications that must be met for a FAME to be called "biodiesel."