

## ABSTRACT

Pelinganga, Osvaldo Manuel, M.S., Program of Natural Resources Management, College of Graduate and Interdisciplinary Studies, North Dakota State University, August 2008. The Environmental Impact of Sawmill Residues. Major Professor: Dr. Joseph Zeleznik.

In summer 2007, a case study was conducted at the Pierce sawmill located in Hatton, North Dakota. The Pierce sawmill generated a total wood volume of 46 m<sup>3</sup> from 500 logs. A total volume of 31 m<sup>3</sup> (67.2%) of wood waste was generated. The wood waste generated was distributed as follows: 4 m<sup>3</sup> (7.6%) of sawdust; 2 m<sup>3</sup> (5.1%) of trim; 10 m<sup>3</sup> (21.1%) of bark; and 15 m<sup>3</sup> (33.3%) of slabs, edgings, and rejected cants. The sawmill is not subject to the Clean Air Act, Clean Water Act, or Resource Conservation Recovery Act. The Pierce sawmill is not subject to certain aspects of the Occupational Safety and Health Act due to the small number of employees and low production volume. In order to understand the industry as a whole, a survey was conducted of the seven sawmills in North Dakota. From the 12 sawmills identified in North Dakota, the 7 sawmill operators who responded to the survey generated a total wood waste of 154 m<sup>3</sup>. The wood waste generated was distributed as 116 m<sup>3</sup> (75.4%) of slabs and edgings with bark and 38 m<sup>3</sup> (24.6%) of sawdust. Thirty-six percent of the waste generated was sold. Based on the fact that sawmills reported neither workers' health problems nor neighbors' complaints about the sawmill residues in North Dakota, the environmental impact of sawmill residues is minimal. The environmental impact of sawmill residues was also evaluated in Minnesota due to the fact of the industry being so small in North Dakota. The 593 sawmills that responded to the MN-DNR survey in 1992 generated a total wood waste of 1,882 m<sup>3</sup>. Eighty-eight percent of the residues generated in 1992 were utilized. In 2002, 493 sawmills that responded to the MN-DNR survey generated a total wood waste of 1,386 m<sup>3</sup>. Ninety-

seven percent of the waste generated was utilized. The number of sawmills and amount of wood waste generated in 2003 was reduced to 26% compared to 1992. The reduction in both sawmills and wood waste generated is strongly associated with economic factors. There was no information about the destiny of the unutilized wood waste. The lack of information makes it difficult to predict any environmental or health problems associated with the disposal of sawmill residue. The estimates of sawmill waste generated in Angola were possible through the study conducted by the Forest Outlook Study for Africa (FOSA). The FOSA study conducted in 2001 estimated the production to be 350 to 400 m<sup>3</sup> daily and 85,000 to 100,000 m<sup>3</sup> annually. The estimate was calculated using the formulae developed by USDA.