9.10.1.1 Cane Sugar Processing

9.10.1.1.1 General[1-3]

Sugar cane is burned in the field prior to harvesting to remove unwanted foliage as well as to control rodents and insects. Harvesting is done by hand or, where possible, by mechanical means.

After harvesting, the cane goes through a series of processing steps for conversion to the final sugar product. It is first washed to remove dirt and trash, then crushed and shredded to reduce the size of the stalks. The juice is next extracted by 1 of 2 methods, milling or diffusion. In milling, the cane is pressed between heavy rollers to squeeze out the juice; in diffusion, the sugar is leached out by water and thin juices. The raw sugar then goes through a series of operations including clarification, evaporation, and crystallization in order to produce the final product. The fibrous residue remaining after sugar extraction is called bagasse.

All mills fire some or all of their bagasse in boilers to provide power necessary in their milling operation. Some, having more bagasse than can be utilized internally, sell the remainder for use in the manufacture of various chemicals such as furfural.

9.10.1.1.2 Emissions[2,3]

The largest sources of emissions from sugar cane processing are the openfield burning in the harvesting of the crop, and the burning of bagasse as fuel. In the various processes of crushing, evaporation, and crystallization, relatively small quantities of particulates are emitted. Emission factors for sugar cane field burning are shown in Table 2.5-2. Emission factors for bagasse firing in boilers are included in Section 1.8.

References For Section 9.10.1.1

1. "Sugar Cane," In: *Kirk-Othmer Encyclopedia Of Chemical Technology*, Vol. IX, New York, John Wiley and Sons, Inc., 1964.

2. E. F. Darley, "Air Pollution Emissions From Burning Sugar Cane And Pineapple From Hawaii", In: *Air Pollution From Forest And Agricultural Burning*, Statewide Air Pollution Research Center, University of California, Riverside, California, Prepared for the U. S. Environmental Protection Agency, Research Triangle Park, NC, under Grant No. R800711, August 1974.

3. *Background Information For Establishment Of National Standards Of Performance For New Sources*, Raw Cane Sugar Industry, Environmental Engineering, Inc., Gainesville, FL, Prepared for the U. S. Environmental Protection Agency, Research Triangle Park, NC, under Contract No. CPA 70-142, Task Order 9c, July 15, 1971.