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THE DIRECTOR'S DIGEST
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EVALUATION OF ODOR CONTROL TECHNIQUES IN RENDERING PLANTS

Several different types of odor control systems have been installed in rendering plants. FPRF has made a survey to determine the effectiveness of these commercial installations.

Mr. William Prokop of the National Renderers Association visited the various plants and obtained appropriate air samples in absorption tubes which were then submitted to IIT Research Institute for analysis by a trained sensory panel and by gas liquid chromatography.

The systems tested were all scrubbers of various types. The results from the sensory analysis (Table 1) indicate that all of the treatment systems achieved an odor reduction of 90% or more. Except for Plant E (packed tower scrubber followed by a carbon absorption bed) the odor reduction percentage tended to be directly related to the influent odor concentration. The effluent odor from Plants A and C (equipped with two stage spray scrubbers with soda ash solution in the first stage and chlorine solution in the second stage) was not as unpleasant as the effluent odor from the other systems. The scrubber in Plant D (a venturi scrubber followed by a packed tower scrubber using permanganate solution) achieved a high reduction of the process air odor load. The single stage scrubber in Plant B (using alkali solution) gave good reduction at relatively high odor levels.

The data from the sensory analyses and the gas liquid chromatographic analyses are being studied with the aid of a computer to determine the relationship between the two types of odor evaluation. Preliminary results show that there is a very close correlation (correlation coefficient of 0.99+) between four of the odorous components separated by gas liquid chromatography and the odor threshold determined by the sensory panel. It must be emphasized

however that the panel was a trained panel including persons with high, low and medium odor sensitivity. The odor threshold level for the most sensitive panel member varied from about 0.1 to 0.01 of the average for the panel used in these studies.

A more detailed report on these studies will be made following a complete evaluation of the data.

Table 1. Effectiveness of Odor Control Systems in Rendering Plants

Plant	Influent Air		Odor Reduction %	Degree of Unpleasantness of Effluent Air**
	Type	Odor Conc.*		
A	Total	180	90	20
B	Total	10,000	98	100
C	Total	370	96	15
D	Process	6,000	99	60
E	Process	200,000+	90	200

*Dilution required to reach the threshold level for 50% of the odor sensory panel.

**Based on 100 being moderately unpleasant.